CITY OF CARMEL-BY-THE-SEA
FOREST AND BEACH COMMISSION
MEETING AGENDA
Thursday, November 12, 2015
Regular Meeting – 3:30 p.m.

City Hall, Council Chambers
East side of Monte Verde St. between Ocean & 7th Avenues
Carmel, California

CALL TO ORDER AND ROLL CALL

COMMISSION MEMBERS:
DAVID REFUERZO – CHAIR
KAREN FERLITO – VICE CHAIR
KATHY BANG
JEFF BARON
MAGGIE EATON

ROLL CALL

PLEDGE OF ALLEGIANCE

INTRODUCTION OF FOREST, PARKS, AND BEACH STAFF

Kelley Green, Tree Care Specialist
Michael Feher, Maintenance Worker

APPEARANCES

Thank you for attending the meeting. Anyone wishing to address the Commission on matters not on the agenda, but within the jurisdiction of the Commission, may do so now. Please state the matter on which you wish to speak. Matters not appearing on the Commission's agenda will not receive action at this meeting but may be referred to staff for a future meeting. Presentations will be limited to three minutes, or as established by the Commission. Persons are not required to give their name or address, but it is helpful for speakers to state their name in order that the Secretary may identify them.

CONSENT AGENDA

1. Consideration of the Minutes for the October 8, 2015 Regular Meeting

ORDERS OF BUSINESS

2. Provide Input on the Permit Standards for Installation of Artificial Turf in Carmel

3. Provide Recommendations on Priorities for Implementation of the Shoreline Assessment Report

4. Discussion of the Commission Projects to Celebrate Carmel's Centennial

5. Receive a Report from the Friends of Carmel Forest on their Carmel Centennial Project

6. Review and Comment on the Departmental Work Plan for 2016

REPORTS FROM STAFF AND COMMISSIONERS

7. City Forester's Report
   A. October tree data
   B. Parks activities
   C. Beach activities
   D. Future agenda items

8. Public Works Director's Report
   A. Verbal Update on the Status of the Beach Fire Management
   B. Updates on City Council and Planning Commission Items
   C. Other Items of Interest to the Commission

ADJOURNMENT

Any writings or documents provided to a majority of the Forest and Beach Commission regarding any item on this agenda will be made available for public inspection in the Planning and Building Department located at City Hall, on Monte Verde between Ocean and 7th Avenues during normal business hours.

The next regular meeting of the Forest and Beach Commission will be:
December 10, 2015
Tour of Inspection – as required
3:30 p.m. - Regular Agenda

The City of Carmel-by-the-Sea does not discriminate against persons with disabilities. The City of Carmel-by-the-Sea Telecommunication's Device for the Deaf /Speech Impaired (TDD) number is 1-800-735-2929.

AFFIDAVIT OF POSTING

I, Mike Branson, City Forester, for the City of Carmel-by-the-Sea, DO HEREBY CERTIFY, under penalty of perjury under the laws of the State of California, that the foregoing notice was posted at the Carmel-by-the-Sea City Hall bulletin board, at the Harrison Memorial Library on Ocean and Lincoln Avenues, the Carmel Post Office, and distributed to members of the media on November 6, 2015.

Dated this 6th day of November 2015, at the hour of 4:00 p.m.

Mike Branson
City Forester

CITY OF CARMEL-BY-THE-SEA
FOREST AND BEACH COMMISSION MINUTES
Thursday, October 8, 2015

CALL TO ORDER AND ROLL CALL: 3:45 p.m.

COMMISSION MEMBERS PRESENT: Kathy Bang
Jeff Baron
Maggie Eaton
Karen Ferlito, Vice Chair

STAFF PRESENT: Rob Mullane, AICP, Public Works Director
Mike Branson, City Forester
Matt Feisthamel, Assistant City Forrester
Jim Pingree, Senior Maintenance Worker/Sweeper Operator
Yvette Oblander, Commission Secretary

TOUR OF INSPECTION

The Forest and Beach Commission toured the following site:

1. Scenic Rd. and 10th Ave – Review of Shoreline Assessment Follow-up Maintenance Work
2. Devendorf Park area – Holiday Tree Replacement

ROLL CALL

ABSENT: David Refuerzo, Chair

PLEDGE OF ALLIGIANCE

Vice Chair Ferlito led the Commission in the Pledge of Allegiance

APPERANCES

Mike Branson, City Forester, introduced Maggie Eaton, new Forest and Beach Commissioner.

Rob Mullane, Public Works Director, introduced two City staff members to the Commission:
Jim Pingree, Senior Maintenance Worker/Sweeper Operator
Matt Feisthamel, Assistant City Forester

CONSENT AGENDA

1. Consideration of the Minutes for the September 10, 2015 Regular Meeting

The item was pulled by Vice Chair Ferlito for some minor revisions to Page 3 of the draft minutes.

Commissioner Bang moved **to approve the minutes for this meeting, as amended,** second by Commissioner Baron, and **carried** by the following vote:

AYES:	Bang, Baron, Ferlito
NOES:	None
ABSTAIN:	Eaton
ABSENT:	Refuerzo

ORDERS OF BUSINESS

2. Report on the Status of Implementation of the Shoreline Assessment Report

Mr. Branson noted that this is an update of a Status Report and progress made of the implementation of the Shoreline Assessment Report. The City formed a Task Force to implement short term public safety repairs. The Assessment Team consists of Rob Mullane, Mike Branson, Rob Culver, and Paul Tomasi with assistance from Joe Headley. David Shonman, Coastal Biologist and consultant to the City, provides contract management assistance.

Mr. Mullane, noted that the City has retained Greg Easton, a Certified Engineering Geologist, and will be retaining Scott Hall, Landscape Architect, to assist with implementing some of the specific Shoreline Assessment follow-up items.

Mr. Shonman gave an update on how the City is following up on work in the Shoreline Assessment and getting ready for El Niño Storms and an overview of the following items:

Shoreline landscape barriers:
Areas along Scenic where the wooden barriers are loose, the recommendation to the City is to hold off on the repair until after the El Niño storms. The temporary recommendation is to use rod and cable barriers and sharing up some posts.

Storm Water Outfalls: 4th Ave. and 12th Ave. Cove

- 4th Ave Outflow: The outfall does not yet appear to be in danger of failure, but the city should consider replacement of this structure as a future capital improvement project.
- 12th Ave Cove: The Team is recommending that conditions as the base of the outfall be monitored during the storm season, and when the scour pit appears at the outfall base, it be cordoned-off to protect beach users.

Retaining Wall: 12th Ave. (south side):
Public Works plans to patch erosional voids between the wall's footing and the underlying sandstone.

Scenic Pathway Landscape and Bluff-Cuts:
As with other shoreline-related issues, the landscape tasks will be prioritized, based primarily on the predicted El Niño conditions.

Pathway Resurfacing:
The areas of repair and re-grading to be addressed this fall would be limited to sites with especially poor drainage, and will spot patch several poorly-drained pathway sites between 8th and 12th Ave. during October.

Sand Redistribution:
To help prepare for the predicted El Niño conditions, the team is in the process of retaining a contractor to conduct additional sand redistribution to shore up sites that are most vulnerable to erosion.

Overgrown Vegetation:
All vegetation encroaching on benches, information signs and the discharge ends of storm water outfalls has been cleared or trimmed.

Shoreline Trees:
The City Forester is evaluating the need for tree pruning, and will be directing selective pruning, if necessary.

Storm-Season Protocols:
Special attention is being paid to ensure that there is a clear delineation of who has responsibility for monitoring, repairs, closures, etc.

Signage (Interim):
Public Works staff will work with Planning staff to develop the specifics of the proposed signage.

Mr. Mullane added that the primary focus for the department over the next several weeks is the preparation for the winter storm season. Commissioner Eaton inquired about injuries attributed to these potential safety problems and about potential health risks posed by storm-water flow to shoreline areas. Staff provided responses.

3. Commission Recommendations on Projects to Celebrate Carmel's Centennial

A discussion took place among the Commission and staff on this topic and the observations from the Tour of Inspection. There was also a suggestion that the Commission's recommendation include a third component: the planting of 100 trees over the course of the year; however, other Commissioners preferred to have the Friends of the Carmel Forest lead that effort.

Commissioner Bang moved **to recommend that Chair Refuerzo appoint two ad hoc committees #1 – To assist staff and the landscape architect in the selection of the 4 areas along the Scenic Pathway for re-landscaping, and work with: #2 –Make a plan for replacement next year of the City Christmas Tree,** seconded by Commissioner Eaton and **carried** by the following roll call vote:

AYES:	Bang, Carter, Ferlito
NOES:	None
ABSTAIN:	Baron
ABSENT:	Refuerzo

4. Verbal Update from the 2015 Arbor Day ad hoc Committee

   Flyers have been distributed around the Carmel area. Emails have gone out to Staff and various groups. Green Waste representatives and Water District staff intend to participate and have information booths or materials as part of the event.

5. Verbal update on the Status of the Beach Fire Management

   A letter from the California Coastal Commission was directed to City staff. The letter asserts that in implementing the interim moratorium the City of Carmel-by-the-Sea did not follow the proper permit procedures that are set forth in the City Municipal Code. Mr. Mullane distributed copies of the letter to the Commission. He noted that City staff are meeting with the Coastal Commission staff tomorrow and that he would be reporting back to the Commission with the outcome of the meeting.

   The consideration of the appeal of the City's Beach Fire Management Pilot Program will be at the Coastal Commission's December meeting, which will occur at the Monterey Conference Center.

   Mr. Mullane noted that the implementation of the Emergency ordinance is going pretty well, other than minor graffiti and notes left on the signs.

REPORTS FROM STAFF AND COMMISSIONERS

6. City Forester's Report
   A. September Tree Data
      7 trees were planted
      4 trees replaced and are being tended to
      A topic to potentially cover with a joint Planning Commission meeting is what can be done to try to address the net loss of the forest
   B. Parks Activities
      Clean up in preparation for Arbor Day has just been completed at First Murphy Park
      Dead trees are present in Mission Trails Nature Preserve, and the City is in the process of retaining a contractor to address these and do some clean-up of other debris
   C. Beach Activities
      Staff have scaled back the charcoal cleanup to every 2 weeks
   D. FOCF tree survey
      2015 Tree Survey, begins in November; volunteers are needed
   E. Future agenda items
      Net loss to forest to be addressed; this would be a joint meeting with the Planning Commission

7. Public Works Director's Report
   A. Updates on City Council and Other Commission Actions

Mr. Mullane noted that a Planning Commission Sub-Committee conducted a workshop on September 30, 2015, at which there was a site visit and discussion on North Dunes restoration.

At the October 6, 2015 Council meeting:

- the Mayor recognized Michael Carter for his service on the Commission;
- the Council approved a contract with Scott Hall for assistance with the Scenic Road Pathway Re-Landscaping Project;
- the Council also authorized submittal of a $10,000 grant application to the Community Foundation of Monterey County for Scenic Path landscape barrier improvements;
- the City Attorney discussed short term rentals and indicated that the City would be actively cracking down on short term rentals;
- Commissioner Baron made an announcement regarding the upcoming Arbor Day celebration;
- Rafael Payan from the Monterey Regional Parks District gave a presentation about their mission and funding needs;
- Chief Calhoun gave an overview of the City's Emergency Action Plan; and
- the Council discussed enacting a ban of No Smoking in the Commercial areas of Carmel.

B. Other Items of Interest to the Commission
Green waste has produced Recycling Guide flyers; these are available at Public Works.
There will be a Board and Commission Training on November 2, 2015.
Cal-Am will be commencing some pipe-line flushing the week of October 12, 2015.

ADJOURNMENT

There being no further business to come before the Commission, the meeting was adjourned at 6:41 p.m.

SIGNED:

_____
Karen Ferlito, Vice Chair

ATTEST:

_____
Yvette Oblander, Commission Secretary

CITY OF CARMEL-BY-THE-SEA

Forest and Beach Commission Report

November 12, 2015

To: Chair Refuerzo and Forest & Beach Commissioners

From: Mike Branson, City Forester
Marc Weiner, Acting Director, Community Planning and Building

Subject: Input on Permit Standards for Installation of Artificial Turf

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Installation of artificial turf has become more prevalent in light of California's current drought conditions as a low maintenance, low-water use alternative to grass turf. Because of concerns with impacts on the character of the City and a lack of specific standards for the placement of artificial turf on a site, the City Council adopted Urgency Ordinance 2015-003 in August 2015 which prohibited the installation of artificial turf or foliage materials in Carmel-by-the-Sea for one year. On October 9, 2015, the State of California adopted Assembly Bill (AB) 1164 which would "prohibit a city, including a charter city, county, and city and county, from enacting or enforcing any ordinance or regulation that prohibits the installation of drought tolerant landscaping, synthetic grass, or artificial turf on residential property as specified." This legislation took place immediately as an urgency statute.

AB 1164 does provide for a municipality to "impose reasonable restrictions on the type of drought tolerant landscaping, synthetic grass, or artificial turf that may be installed on residential property…" subject to certain guidelines. In compliance with AB 1164, Community Planning and Building staff have developed interim standards for the installation of artificial turf on private property.

The Forest and Beach Commission is being asked to provide input on the permitting standards for installation of synthetic grass and artificial turf. The Forest and Beach Commission's input will be shared with the Planning Commission, who will also be providing input on this issue prior to City staff bring forward permanent standards to the City Council for the Council consideration.

The City's Residential Design Guidelines discourage lawns that are visible from the right-of-way. While artificial turf is not a lawn in the true sense of the word, it conveys the visual appearance of a lawn to the property and casual observer on the street.

Issues associated with artificial turf or grass were discussed during the consideration of the moratorium earlier this year. These issues include the potential for artificial turf to affect trees due to soil compaction and preparation of the area during installation, the potential for an

increase in soil temperatures, and a reduction in received precipitation and irrigation, particularly where a currently irrigated area is converted to artificial turf.

Some possible areas for Commission discussion include:

- Proximity to trees
- Placement – front and/or back yard installations
- Square footage of coverage allowed
- Screening possibilities
- Quality of the product
- Drainage capabilities and impacts
- Standards for use in non-residential areas

Planning staff will be in attendance to assist with the discussion and field questions on AB 1164, the interim permitting standards, and the City's Design Guidelines, which are included as Attachments 1 through 3.

Attachments:

1. AB 1164
2. Interim Permitting Standards
3. City Residential Design Guidelines regarding turf

Assembly Bill No. 1164

CHAPTER 671

An act to add Section 53087.7 to the Government Code, relating to water conservation, and declaring the urgency thereof, to take effect immediately.

[Approved by Governor October 9, 2015. Filed with Secretary of State October 9, 2015.]

LEGISLATIVE COUNSEL'S DIGEST

AB 1164, Gatto. Water conservation: drought tolerant landscaping.

Existing law generally authorizes every city and county, including a charter city, in this state to make and enforce within its limits all local, police, sanitary, and other ordinances and regulations that are not in conflict with general laws.

This bill would prohibit a city, including a charter city, county, and city and county, from enacting or enforcing any ordinance or regulation that prohibits the installation of drought tolerant landscaping, synthetic grass, or artificial turf on residential property, as specified. The bill would additionally state that this is an issue of statewide concern.

This bill would declare that it is to take effect immediately as an urgency statute.

The people of the State of California do enact as follows:

SECTION 1. The Legislature hereby finds and declares:

(a) With the lowest snowpack ever recorded, California finds itself in 2015 in the fourth year of a historic, prolonged, and potentially devastating drought.

(b) Governor Edmund G. Brown Jr. issued an Executive order on April 1, 2015, which, for the first time in California history, directs the State Water Resources Control Board to implement mandatory water reductions across the state to reduce water usage by 25 percent.

(c) One component of the Governor's Executive order compels the replacement of 50 million square feet of lawns throughout the state with drought tolerant landscaping.

(d) Among a wide variety of drought tolerant landscaping are a variety of native plants and landscaping alternatives, including the installation of synthetic grass or artificial turf.

(e) According to the Department of Water Resources, landscape irrigation represents 43 percent of urban water use. The installation of synthetic grass or artificial turf, in lieu of conventional lawns and landscapes, can directly

reduce outdoor water use to help meet the Governor's mandated 25-percent statewide water use reduction.

SEC. 2. Section 53087.7 is added to the Government Code, to read:

53087.7. (a) A city, including a charter city, county, or city and county, shall not enact any ordinance or regulation, or enforce any existing ordinance or regulation, that prohibits the installation of drought tolerant landscaping, synthetic grass, or artificial turf on residential property.

(b) A city, including a charter city, county, or city and county, may impose reasonable restrictions on the type of drought tolerant landscaping, synthetic grass, or artificial turf that may be installed on residential property provided that those restrictions do not do any of the following:

(1) Substantially increase the cost of installing drought tolerant landscaping, synthetic grass, or artificial turf.

(2) Effectively prohibit the installation of drought tolerant landscaping, synthetic grass, or artificial turf.

(3) Significantly impede the installation of drought tolerant landscaping, including, but not limited to, a requirement that a residential yard must be completely covered with living plant material.

SEC. 3. The Legislature finds and declares the prolonged drought, along with climate change, requires the state to address water conservation goals that will have long-term impacts in this state. The Legislature further finds and declares that drought tolerant landscaping, including the installation of synthetic grass or artificial turf, is a viable landscaping alternative that will further the goal of addressing long-term water conservation. Therefore, allowing property owners in this state to install drought tolerant landscaping, synthetic grass, or artificial turf on their residential properties is a matter of statewide concern, not a municipal affair as that term is used in Section 5 of Article XI of the California Constitution.

SEC. 4. This act is an urgency statute necessary for the immediate preservation of the public peace, health, or safety within the meaning of Article IV of the Constitution and shall go into immediate effect. The facts constituting the necessity are:

In order to address the historic, prolonged, and potentially devastating drought, it is necessary that residents of this state be able to replace water inefficient landscaping with drought tolerant landscaping as quickly as possible; therefore, it is necessary that this act take effect immediately.

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Permitting Standards for Synthetic Grass/Artificial Turf

On October 9, 2015, the State Governor approved AB 1164, which precludes jurisdictions from disapproving proposals for synthetic grass and artificial turf. AB 1164 allows local governments to impose reasonable restrictions on the type of synthetic grass and artificial turf installed. The following is a set of application requirements and design standards for proposals to install synthetic grass (or artificial turf):

Application Requirements:

1. All proposals for synthetic grass require submittal of a Track-One Design Study application to the Community Planning and Building Department. There is no application fee for the submittal of the Track-One Design Study.

2. The application shall include a site plan of the subject property depicting the proposed location and configuration of the synthetic grass. The site plan shall depict all trees on the property and any other trees near the proposed installation in order for staff to evaluate the proximity of the synthetic grass to the trees. The plan shall include a data table identifying the approximate square-footage of the synthetic grass. A drainage plan may be required depending on sloped lots.

3. The applicant shall submit a sample of the proposed synthetic grass in order for staff to evaluate the material.

Design Standards:

1. The synthetic grass and associated base-rock materials shall be located a minimum of six feet from the base of any tree in order to adequately protect tree roots.

2. The applicant shall submit a sample of the proposed synthetic grass for staff evaluation. The City's Residential Design Guidelines encourage maintaining the forested character of the community through the use of natural landscaping. The synthetic grass shall present the appearance of natural grass as recommended by guidelines.

3. The applicant shall demonstrate that the synthetic grass and associated base material is permeable with the ability to percolate water into the soil.

10.0 Landscape Guidelines

Views of buildings that are filtered from the street because of the mix of shrubs and lower story trees are encouraged. This contributes to the "sense of discovery" that is a part of the Carmel design traditions and should be continued. In addition, other landscape elements should contribute to the urban forest image.

Objectives:

- To renew the urban forest
- To maintain the traditional foreground of simple, indigenous plantings
- To maintain a sense of informality and discovery along the street
- To maintain the traditional palette of plant materials
- To conserve water
- To reinforce a sense of visual continuity along the street

10.1 Provide for upper and lower canopy trees when designing the landscape.

- Provide adequate space around all trees required to be planted or preserved through the Design Concept Phase approvals.
- Add trees, consistent with the neighborhood context, to the site and public right-of-way when additional filtering or screening is desired.
- Trees that arch over the street contribute strongly to the character of some neighborhoods and should be preserved and supplemented where this character exists.
- Recognize and plan for the special needs of each tree when designing the landscape. For example, high water use plants are appropriate near redwoods but inappropriate near oaks. Grades around established trees should not be raised or lowered.

Ground covers are preferred in the right-of-way. Multi-stem trees also help filter views.

Plant Selection

10.2 Landscape plans that use native plants and other varieties accustomed to growing along the Central Coast are encouraged.

- Use plants that are similar in character to those established along the block and adjoining properties in order to reinforce a sense of visual continuity along the street, but avoid "copying" nearby landscape plans.
- In general, at least 75% of plant materials on a site should be drought-tolerant. (See section 17.24.180.D&E of the Municipal code.)

Green leafy ground covers are appropriate in the public right-of-way.

Flowering plants may be used to highlight a walkway.

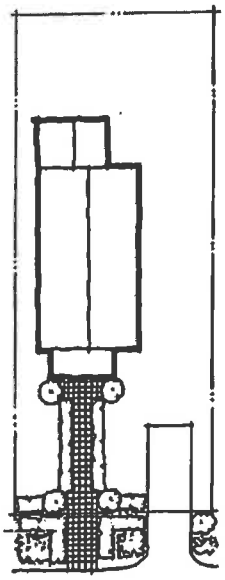
10.3 Planting in areas visible from the street or other public places should continue the forest character.

- Locate plants in relaxed, informal arrangements that are consistent with the urban forest character.
- Avoid formal, unnatural arrangements of plants and paving except in areas out of public view.
- Reserve the use of bedding plants and exotic flowering plants to small accents at walkways, entries or near special site features.
- Lawns visible from the street are inappropriate to the forest setting and should be avoided.

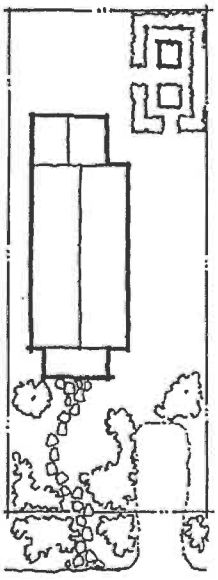
Landscaping in the public right-of-way

10.4 Plants in the public right-of-way should be predominantly green foliage plants, in keeping with the design traditions of Carmel.

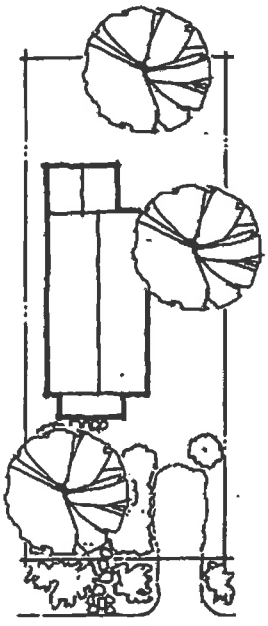
- Leaving the right-of-way natural is encouraged.
- Naturalized landscaping consistent with the City's forest character may be added to the right-of-way and be designed to blend into landscaping on site to enhance the sense of open space.
- If planted, the use of native trees, ground covers and low shrubs is preferred.
- Avoid the use of bedding plants and exotic species in the public right-of-way.



A formal landscape arrangement in front is inappropriate.



A informal landscape arrangement in the front yard is appropriate. The rear yard of the property has more flexibility when designing your landscape.



An informal landscape arrangement throughout the yard is encouraged.

CITY OF CARMEL-BY-THE-SEA

Forest and Beach Commission Report

November 12, 2015

To: Chair Refuerzo and Forest & Beach Commissioners

From: Mike Branson, City Forester

Subject: Prioritization of the Shoreline Assessment Implementation and Forestry Items

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SUMMARY:

In adopting the Fiscal Year 2015-2016 (FY 2015-16) Budget, the City Council allocated $250,000 for shoreline improvements and enhancements to the urban forest. An additional $200,000 was also reprogramed from other capital projects for shoreline area projects. This funding source was referred to as the "Marshall Plan" for shoreline and forest improvements.

The Carmel City Council is requesting the Forest and Beach Commission revisit the Fall 2014 Carmel Shoreline Assessment report and assist in prioritizing projects that should be implemented with this source of funding. While preliminary cost estimates have been received for some items, others are still unknown until more thorough evaluations are completed or plans are developed. In addition to interest in carrying forth shoreline area projects, there are Forestry-related needs that were also a part of the Council's budget deliberations. The Council is interested in input from the Commission on priority projects that are recommended for implementation over the remaining months of this fiscal year (through June 2016).

The primary item for enhancement to the urban forest is increased tree planting and watering to "catch up" with replacing trees that have been removed over the last 10-20 years. This would entail identifying specific planting locations, selecting the proper tree species and size, planting the trees, and watering for 1-3 years. Other projects for the forest include restoration of the native habitats in Mission Trail Nature Preserve, continued work on habitat restoration projects in the North Dunes area, supporting tree planting on private properties in Carmel, and enhancements to the spaces where trees are planted in the commercial district. The Council has approved funding for Invasive Species Removal in the Mission Trail Nature Preserve as well as funding for continued habitat restoration in the North Dunes. Work on these two projects is ongoing and in the planning and permitting phase.

David Shonman's shoreline assessment of Carmel Beach and the Scenic Rd. Pathway identified several areas in need of not just a short term fix, but a more comprehensive and effective repair and maintenance plan for safety and aesthetic reasons. The Shonman report lists several areas in need of maintenance or more involved work. These main areas are described below.

Landscape Barriers

The low wood landscape barriers along the Scenic pathway are over 25 years old and at or near the end of their useful life. Many are loose or decayed and are in need of replacement for safety as well as aesthetic purposes. Over the last few weeks, staff has attached temporary shoring to some of the posts and will also be installing a rod and cable barriers for replacement or supplemental fencing along certain segments. Replacement of all of the low wood landscape barriers with new products would more effectively address security and safety needs; it would also enhance the aesthetic appearance of the barriers along the pathway.

Landscape Renovation and Bluff Cuts

Much of the original landscaping has been lost due to trampling, age, lack of consistent maintenance, and general wear and tear. A landscape architect has been retained to provide guidance on renovation select areas along the pathway to show what could, or should, be possible if the entire pathway landscape was given a makeover. Enhanced landscaping along with other structures and signs, may also assist with preventing or significantly reducing the amount of bluff cuts along the shoreline. The design work has already been funded by the City Council; however additional funding and labor costs would be necessary for implementation.

Stairway Renovation/Repairs

A structural engineer has evaluated the stairways along the Carmel shoreline and provided a report on some short-term and long-term repairs. Staff has recommended that any substantial repairs be deferred until after this winter storm season, when more substantial repairs or replacements may be necessary, particularly if this is an unusually strong storm-season, as is currently anticipated.

Pathway Renovation

Like much of the other structures along the shoreline, the decomposed granite pathway is also showing its age and has areas that are have deteriorated from a lack of consistent maintenance. Small segments of the pathway are in the process of being repaired, however, the entire pathway may need to be renovated for a consistent and attractive look as well as to better address safety concerns.

Sand Redistribution

While the City has done limited sand redistribution over the last several years, a comprehensive program to address all of the areas requiring coverage has not been done in several years. This is in large part due to inadequate funding and staffing. There has also been a less than ideal amount of sand in some years or seasons. When conditions provide a larger volume of sand, the program should be implemented to the fullest extent possible for safety, aesthetic, and regulatory needs.

Beach Profiles

Monitoring of seasonal and longer-term changes in beach volume changes through a regular collection of beach profile data is a requirement in the City's Local Coastal Program. This was also to see if activities such as sand redistribution were affecting the sand levels. Benchmark points were established and an initial profile survey was done in

2002. No sand profiles have been done since that initial work. Recently, the city engineer discovered that some of the benchmark points have been lost and will need to be re-established before any new profiles can be performed.

Repair and Maintenance of Shoreline Structures

A coastal engineer has been retained to assess the City's seawalls, revetments, and retaining walls for integrity and to identify items or components needing repair. Currently, many of the seawall footings are buried and cannot be evaluated until later this winter when enough sand has been scoured from the beach. One of the bluff retaining walls has three areas where portion of the footings have been undermined, and minor repair and maintenance work is recommended in advance of this winter storm season. In addition, earlier this year, minor boulder adjustments were completed on an area of riprap that was accessible and exhibited some level of settling.

Storm water Infrastructure Maintenance/Repair

Much of the storm water infrastructure is in good working condition, and repair/maintenance issues noted during the City's annual inspection program are addressed promptly. It is important to adhere to a regular inspection and maintenance protocol. Two areas that will need more than routine maintenance are at the Fourth Avenue Outfall and the Twelfth Avenue Outfall. The Fourth Avenue Outfall will require a significant reconstruction in the next few years, and the Twelfth Avenue Outfall will need some reconfiguring to address potential safety issues associated with a seasonal scour at the discharge location.

ATTACHMENTS:

1. Status Report Memo from David Shonman
2. Fall 2014 Shoreline Assessment Report

David Shonman
Coastal Biologist

DATE: **October 2, 2015**

TO: **Rob Mullane,** Director Public Works

FROM: **David Shonman**

SUBJECT: **Status Report - Shoreline Assessment Follow-up Items**

The City's Shoreline Assessment Follow-Up Team ("Team") has reviewed and refined the actions recommended in the Fall 2014 Carmel Shoreline Assessment.

Recommendations were prioritized, based on such factors as

- Current maintenance or public safety issues along the shoreline area
- El Niño conditions predicted to occur during late 2015/early 2016;
- Issues in need of more detailed study, planning and/or permitting.

Below is an update of the status of these issues:

1. Shoreline Landscape Barriers (SLBs)

The Fall 2014 Shoreline Assessment and subsequent communications recommended the replacement of several sections of damaged and unstable wooden shoreline barrier rails and posts, as well as the installation of additional barriers. In response to a number of factors, including:

- the possibility that El Niño-related erosion might affect some sites slated for new SLBs;
- questions about the optimal material, design and location of new SLBs;
- the possibility that additional or re-located SLBs might necessitate local or state permits.

The Team has recommended a series of interim measures:

- repair damaged posts and rails, where possible;
- remove SLB sections that are irreparable and replace with rod & cable barriers;
- install limited segments of new rod & cable barriers where necessary to provide interim bluff protection.

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Staff has already assessed and marked SLB sections in need of these interim measures. Rods and cable have been ordered. City staff estimates that these measures will be completed by mid-November.

2. Storm Water Outfalls: 4th Ave. & 12th Ave. Cove

Questions about the condition of these two outfalls were raised in the Fall 2014 Shoreline Assessment. These structures have been inspected by City Engineer Sherman Low, structural engineer Frank Lee, and very recently by engineering geologist Greg Easton (whose report will be forthcoming). All three agree that portions of the 4th Ave. outfall show numerous signs of cracking. In addition, the south-side wing wall and the deflection slab at the base of the outfall's discharge end have been undercut by erosion. Based on the reports of Low and Lee, as well as preliminary discussions with Easton, the outfall does not yet appear to be in danger of failure, but the City should consider replacement of this structure as a future capital improvement project.

The 12th Ave. cove outfall has also been inspected by engineers Low, Lee and Easton. The outfall itself is in good condition, but storm water discharges during early-season rains (when the beach sand level is still high) create a scour pit that can pose a hazard to people walking on the beach. Several long-term options have been discussed, but each will require more detailed study (including observations during upcoming storms). The Team is recommending that conditions at the base of the outfall be monitored during the storm season, and when the scour pit appears at the outfall base, it be cordoned-off to protect beach users. The City will work with engineering geologist Easton to develop a long-term recommendation.

3. Retaining Wall: 12th Ave. (south side)

The Fall 2014 Shoreline Assessment noted that the retaining wall perched atop a long sandstone outcrop along the south side of the 12th Ave. point was being undercut by erosion. This wall has been inspected by engineers Low, Lee and Easton. More detailed study – including an analysis of the rate of sandstone erosion – is needed before a long-term solution can be developed. But during the month of October, Public Works plans to patch the eroded spaces between the wall's footing and the underlying sandstone (as has been done in the past). The City will work with engineering geologist Easton to develop a long-term recommendation.

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4. **Scenic Pathway Landscape and**
5. **Bluff-Cuts**

Landscape Architect Scott Hall is being retained by the City to help re-vitalize the landscape along Carmel's shoreline bluffs and the Scenic Pathway. As with other shoreline-related issues, the landscape tasks will be prioritized, based primarily on the predicted El Niño conditions. Some elements of the landscape plans will also be affected by any relocation of Shoreline Landscape Barriers. Hall will be also be contributing to the Team's multi-faceted initiatives to address the numerous shoreline bluff-cuts. This approach will involve elements such as re-vegetation, barriers, signage, enforcement, etc.

6. **Pathway Resurfacing**

The Team is recommending that immediate steps be taken to address low spots and other drainage issues along the decomposed granite (DG) Scenic Road Pathway. The areas of repair and re-grading to be addressed this fall would be limited to sites with especially poor drainage, and where low-spots contribute to drainage-induced erosion of the coastal bluff. Public Works staff will spot-patch several poorly drained Pathway sites between 8th and 12th Ave.s during October. The City has received cost estimates from outside contractors to fill and resurface a site between 10th & 11th Avenues where a dip in the Pathway grade causes rainwater to drain over the slope edge, resulting in bluff erosion. The timing of this repair will depend on contractor availability. The City will consider re-surfacing the entire Pathway after the winter storm season in concert with the longer-term landscape initiatives discussed above.

7. **Sand Redistribution**

In late May, Public Works carried out limited redistribution of sand to cover exposed revetment rocks at several sites along Carmel Beach. To help prepare for the predicted El Niño conditions, the Team is in the process of retaining a contractor to conduct additional sand redistribution to shore up sites that are most vulnerable to erosion; these include:

- Del Mar slopes
- Base of the 8th Ave. stairway
- Equipment/Emergency sand ramp (between 8th & 9th Ave.s)
- Base of the 9th Ave. stairway

City staff estimates that these measures will be completed by the end of October.

8. **Overgrown Vegetation**

All vegetation encroaching on benches, information signs, and the discharge ends of storm water outfalls has been cleared or trimmed.

9. **Shoreline Trees**

In preparation for the upcoming storm season, the City Forester has determined which trees will need to be pruned; this work will be completed by mid-November.

10. **Storm-Season Protocols**

The Carmel Police Dept. is updating its emergency operations protocols. Members of the Follow-Up Team will be working with CPD staff to ensure that responses to storm/tide-related public safety issues are coordinated between CPD and Public Works. Special attention is being paid to ensuring that there is a clear delineation of who has responsibility for monitoring, repairs, closures, etc.,

11. **Signage (Interim)**

The City currently has temporary signs regarding the interim regulations for beach fires. These signs consist of laminated paper; higher-quality temporary signs are recommended as the rainy season approaches. There is also a need to install additional signage to discourage bluff cuts. Such additional signage may also be needed for the rod and cable segments, including in areas where erosion results in public safety issues. Public Works staff will work with Planning staff to develop the specifics of the proposed signage.

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CARMEL SHORELINE ASSESSMENT

FALL 2014

Draft Report

Prepared by

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and

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Submitted

April 15, 2015

EXECUTIVE SUMMARY

The Fall, 2014 Carmel Shoreline Assessment was conducted between November 15 and December 12, 2014. It is an independent survey of Carmel's beach, dunes, slopes, bluffs, storm water outfalls, shoreline walls, stairs, ramps, and Pathway. The Assessment focuses on conditions that affect the protection and preservation of the shoreline and the safety of its visitors. In addition to documenting individual conditions of concern, the Assessment also highlights complex and long-standing problems, and recommends maintenance, repair and management actions that can help provide effective, long-term solutions. As such, it can be a valuable complement to the Carmel Shoreline Management Plan.

This Assessment is the first to be carried out since Fall, 2003. During this eleven-year interval, several minor conditions grew into larger problems, which will be more difficult and more expensive to address.

Conditions of concern documented along the shoreline fall into several categories; here are a few examples:

Simple

Conditions that can be remedied by simple, direct action from City staff:

- Shoreline information/warning signs were covered by plants or partially buried by dirt or sand (Section 8.0).
    - *Plants that could cover signs should be regularly trimmed/cleared*.

- Bushes along portions of the Pathway have been allowed to grow to a size and shape that block views of the ocean (Section 9.1).
    - *Bushes should be pruned to a height and density appropriate for their location*.

- The Handicap Access Sand Ramp was found to have a one-foot drop-off between the Pathway and the top of the ramp (Section 6.2).
    - *Ramp should be re-contoured when necessary, using white beach sand*.

Interlinked

Conditions caused by a series of factors, some of which occur in other areas of the shoreline. **These multifaceted problems require multifaceted solutions**:

- A portion of a concrete side-wall supporting the 4th Ave. storm water outfall was undercut by erosion caused by people walking on an unauthorized bluff trail (Section 4.1).
    - *Undercut wall should be repaired, along with the bluff-cut that contributed to the erosion of the support wall.*

- A section of Carmel's white sand beach that has been discolored by dirt washed down from the bluff by storm water that pooled on a low portion of the Pathway above (Sections 3.1 and 6.3).
    - *The response should include re-contouring and re-surfacing the low section of Pathway, restoring the eroded bluff, re-vegetating the blufftop, as well as cleaning dirt from the beach.*

Recurring

Conditions that have been observed in previous Assessments. **Long-standing problems require different strategies than those previously used**:

- Storm water outfalls covered by ice plant (Section 4.1).
    - *This recurring problem should be addressed by establishing **standard protocols** that call for plants near outfalls to be trimmed/cleared before the onset of each storm season.*

- Several bluff-cut trails continue to erode shoreline bluffs (Section 3.1).
    - *Unauthorized slope trails (**bluff-cuts**) are a long-standing problem that continues to occur because the City's previous repair attempts have not proven successful. Effective solutions will require addressing all contributing factors, including revegetation, guardrails, signage, monitoring and policing. Such an effort will likely take the combined efforts of City staff from Forestry and Beach, Public Works, Police, Community Planning and Building, and Administration, as well as various commissions and outside contractors (i.e. landscape designers).*

Among all the conditions described in this Assessment, two sets of problems were especially troubling:

Safety Hazards

Conditions that pose safety hazards for shoreline visitors and City staff:

- Many loose, decayed guardrails and posts were found along the bluff edge near the Pathway (Section 9.2).
  - *These sections of guardrail must be replaced. At sites where the bluff cannot adequately support the guardrail posts, steps should be taken to either stabilize the existing bluff or to move the guardrail inland, closer to the Pathway (*NOTE: guardrail re-positioning will require that landscape vegetation and irrigation components near the Pathway and on the blufftop also be modified accordingly).*

- At several sites along the shoreline, granite boulders that had originally been part of revetments, installed to repair damage from previous storms and protect against future damage, have either moved to other locations or have shifted and become perched atop other boulders, creating unsafe conditions (Section 5.2).
  - *The City should engage qualified personnel to re-position these boulders to locations where they can best help maintain the revetments' original design, enabling them to more effectively protect the Carmel shoreline. This will also remove perched rocks and eliminate unsafe crawl spaces.*

- During surveys for this Assessment, seawater was observed washing over the lower section of at least one shoreline stairway during and after storms (Section 6.1). In addition, storm water discharging from a few shoreline outfalls scoured sand from Carmel Beach; in the 12th Ave. cove, this resulted in a two-to-three foot-deep pit.
  - *Each of these conditions existed for only a limited period of time, but clearly posed a potential hazard to people walking on Carmel Beach, especially in the dark. To reduce the level of danger from these conditions, City staff must monitor these sites during/after storms, and during significant high tides, and must develop a way to protect people until conditions abate.*

Deviations from City Policies, Agreements and Design Principles

Conditions that vary from policies, agreements and design principles adopted by the City, including the original Beach Bluff Pathway Project, Carmel Shoreline Management Plan, and Carmel Local Coastal Plan:

- Nearly all plants selected for the original Pathway landscape plan have disappeared (Section 9.1). Along most portions of the Pathway and blufftop, the original species have been replaced by plants that do not

meet the criteria established by the original landscape designers and the Carmel Beach Task Force, while other areas have been allowed to become bare (or covered with chips and bark).

- *City staff and the Forest & Beach Commission should:*
  - *review the original Pathway Landscape Plan to understand its criteria and design intent;*
  - *review what factors led to changes in the plan over the past 28 years;*
  - *select a limited number of high-visibility sites along the Pathway to be re-landscaped and maintained;*
  - *adjust staffing, training and funding, based on lessons learned, so that re-landscaping can be expanded to other areas along the Pathway.*

- The upper portions of many of Carmel's shoreline revetments remain inadequately covered by sand (Section 5.2). Keeping its revetments covered was a commitment that the City made to the Coastal Commission to help address both safety and aesthetic concerns.
  - *The City should*:
    - *re-energize its **sand redistribution** program that proved successful during the decade following completion of the Beach Bluff Pathway Project;*
    - *conduct regular **sand profiles** (based on benchmarks already installed by the City Engineer) to gather quantitative information that can be used to determine when, and to what extent, sand redistribution can best be carried out.*

In total, the difficulty of dealing with long-term, multi-faceted problems, the lack of regular maintenance and monitoring, the deviations from the original Beach Bluff Pathway design intent, along with inadequate staffing and funding, have all combined to produce a shoreline area that falls far below the quality that was once planned for the City of Carmel-by-the-Sea.

CONTENTS

CARMEL SHORELINE ASSESSMENT
FALL 2014

INTRODUCTION

This report details the results of the Fall, 2014 Carmel Shoreline Assessment. As described in the City's Shoreline Management Plan,[1] the Assessment is an independent report designed to assess conditions that affect the protection and preservation of Carmel's shoreline and the safety of its visitors.

The Assessment can be a useful planning, budgeting, training and maintenance tool to help in the management of the Carmel shoreline. Analysis of conditions described in this Assessment will help determine areas in need of improvement and can focus attention on recurring problems that affect the City's beach, dunes, slopes & bluffs, shoreline walls, storm water outfalls, stairs & ramps, and Pathway.

As originally envisioned, the Assessments were to be conducted twice each year – once in the Fall, to help prepare for the upcoming storm season, and then again in the Spring, to determine how storms had affected the shoreline. To date, Assessments have only been conducted during the fall of 2001, 2002, 2003, and now, 2014. The long interval between the current and previous Assessment presented clear evidence of what happens when relatively minor conditions are allowed to grow into larger, more complex problems that will be more difficult and more expensive to address.

Field surveys for this Assessment were conducted between November 15 and December 12, 2014, followed by a few surveys in January and February, 2015, to confirm earlier observations. During this period, the region experienced a few light-to-moderate rainfalls as well as one strong wind/rain storm. This presented opportunities to view how the Carmel shoreline and its structures (including the Pathway, stairways, bluffs and storm water system) responded to these challenging conditions.

Carmel Shoreline Area (Map 1)

This Assessment covers the entire Carmel shoreline, which encompasses an area extending from Carmel Beach (in the west), Pescadero Canyon (to the north), and the City limit at the Frank Lloyd Wright House (to the south). The shoreline's eastern boundary includes the North Dunes as it follows San Antonio Ave. southward from 4th Ave. to Ocean Ave. It then runs west and south to

[1] Shonman, D. and G. D'Ambrosio. 2003. City of Carmel-by-the-Sea Shoreline Management Plan. Approved by City Council Sept 18, 2003. 104p.

Map 1 – Carmel Shoreline Assessment (CSA) – Area of Study

cover the Ocean Ave./Del Mar beach parking areas, where it continues southward along the length of the Del Mar Dunes. From 8th Avenue to the south City limit, this boundary follows the eastern edge of Scenic Road. For purposes of the Assessment, the Carmel shoreline area's eastern boundary (from 9th to 12th Ave.s) also includes all Pedestrian Accessways/Drainage Easements that connect San Antonio Ave. to Scenic Rd.

By necessity, conditions described in this Assessment have been placed into categories listed below, but effective response to each condition might require actions that involve one or more associated categories. Wherever possible, conditions in one section of the Assessment have been linked to conditions in another section. However, an accurate linking of all causes & effects would make this Assessment more complex to use. City staff must be expected to use their knowledge and initiative when dealing with the many interlinked problems along the shore.

Conditions of Concern

The Fall 2014 Assessment was based on observations of all pertinent man-made structures and natural features throughout the City's shoreline area. Photographs depicting many specific conditions are included within the Assessment. In general, only those features requiring comment were noted; features determined to be acceptable were not described in this report.

This Assessment reflects topics described in Section 8 of the Carmel Shoreline Management Plan. Each area was visually assessed for four critical factors:

- **Safety** – any features that might present a danger to shoreline users, including, but not limited to, tripping hazards (e.g. plants growing on beach access stairways or on pedestrian accessways, loose steps, pathway obstructions), loose handrails and guardrails, low branches, loose revetment rocks, holes and voids, etc.
- **Shoreline Protection** – any features installed to help protect the Carmel shoreline from damage caused by wave action and storm water runoff, including, but not limited to, integrity of shoreline revetments, seawalls and retaining walls, obstructed storm water inlets, basins, pipes, outfalls, unauthorized bluff trails, etc.
- **Coastal Viewshed** – any features that unnecessarily obscure views of the shoreline and Carmel Bay.
- **Carmel Shoreline Plans and Guidelines** – any features that vary from City goals and policies related to the Carmel shoreline, including the Carmel Local Coastal Plan, Carmel Shoreline Management Plan, and the Carmel Beach Bluff Pathway Environmental Impact Report (EIR).

The shoreline conditions assessed for this report are divided into nine categories:

1.0 Beach
2.0 Dunes
3.0 Bluffs
4.0 Storm Water System
5.0 Shoreline Armoring Structures
6.0 Shoreline Access
7.0 Public Support Facilities & Amenities
8.0 Signage
9.0 Shoreline Landscape

Within each category, conditions needing attention are listed in geographic order, from north to south. Each condition is identified by a specific three-digit number (e.g. 1.1.1 or 6.2.4) that reflects its location within the Assessment. For most conditions, rectifying actions are recommended (in CAPITAL LETTERS).

Themes

At its most basic level, this Assessment can be thought of as a collection of snapshots, each describing conditions observed at a specific location and time. Some conditions, like large puddles of rainwater covering sections of the Pathway, or a pit scoured into the beach by storm water discharged from one of the City's outfalls, might disappear in only a few days or weeks. But while they exist, these conditions pose hazards to shoreline users. Others, such as an uncovered trash receptacle, a warning sign or storm water outfall that is overgrown by plants, or Pathway guardrails that are decayed and loose, can be easily remedied by maintenance, repair and/or replacement.

This Assessment can be an especially valuable tool when used to identify problems that recur from year-to-year, or to focus on conditions that affect more than one shoreline element and extend through more than one staff member's area of responsibility. Here are a few examples:

Recurring Problems:
Several conditions described in this Assessment have been reported in previous years. Plants draping over the discharge ends of storm water outfalls were documented in every Assessment (2001, 2002, 2003 and 2014). As described in Section 4.1.2, this continuing problem could be addressed by modifying management and training to ensure that trimming outfall vegetation before the onset of the rainy season becomes a high priority.

Bluff-cuts (unauthorized paths cut by foot traffic into the bluff) cause a host of problems, including trampling of protective slope vegetation, erosion of bluff

material, undercutting of shoreline protection structures, and the delivery of dirt onto Carmel's white sand beach. Bluff-cuts have been long-standing, vexing problems, and have been documented in this, and all previous, Assessments. City staff has taken some steps to find a remedy, but as discussed in Section 3.0, effective, long-term solutions will require a coordinated effort involving Public Works, Forestry & Beach, Police, Fire, Administration (and possibly Community Planning & Building), as well as experienced landscape design contractors.

Interlinked Problems:
Many conditions of concern along the Carmel shoreline are the result of a combination of interlinked forces. As mentioned above, some conditions that degrade the quality of Carmel Beach start with rainwater falling on land located well above the shore. How this storm water is handled when it reaches Scenic Road will determine whether or not it will damage the Pathway, shoreline bluffs, and/or the beach itself. And the degree of bluff and beach damage depends, in part, on such factors as foot traffic using unauthorized bluff-cuts, the presence of guardrails, bluff vegetation, effective signage and policing. In dealing with complex systems such as this, a **team approach**, coordinated among City staff and contractors, can often create the best perspective for long-term solutions. This method will prove effective when dealing with many problems along the Carmel shoreline.

As these examples demonstrate, problems affecting Carmel Beach are often multifaceted … and their solutions should also be multifaceted.

Conditions along Carmel's shoreline are clearly complex, but do not need to be overwhelming. One of the most important tools for dealing with these problems is early detection.

Monitoring and Inspections:
As described in the Shoreline Management Plan, **monitoring is one of the best management tools for protecting the City's shoreline and its visitors**. It is the most effective way to catch problems while they are still small and relatively inexpensive to address. While these Shoreline Assessments have noted conditions of concern during the Fall of 2001, 2002, 2003 and 2014, they are no substitute for timely monitoring. As mentioned throughout this Assessment, specific sites and elements should be monitored at specific times:

- all stairways and storm water outfalls – during and after rainstorms and very high tides;
- all shoreline trees – after strong windstorms;
- the Vehicle Access Sand Ramp and the Handicap Access Sand Ramp – on a regular basis; and
- the City's shoreline irrigation system – throughout the year.

Most monitoring will be done by City staff – they spend the most time on the Carmel shore, and are most familiar with how it is affected by natural and human impacts. Staff personnel must be encouraged to constantly be on the lookout for conditions of concern, even those outside of their areas of responsibility.

In addition to the monitoring mentioned above, some shoreline elements (e.g. stairways, sea walls, retaining walls and rock revetments) should be inspected by qualified specialists (e.g. structural engineers, certified engineering geologists, *et al*). These inspections should be conducted at intervals determined in consultation with the City Engineer. To be complete, the inspections must include observations of the bases, footings and foundations of each structure. This can only be possible when the sand level is low, a condition that usually occurs during severe winters. Because developing new contracts may be a time-consuming process, the City is encouraged to establish contracts with experienced, qualified engineers months before the onset of the storm season. Contracts should specify that these specialists will be available to conduct at least a portion of their inspection when the bases of these structures are exposed.

The combination of monitoring by City staff and inspections by technically qualified personnel will help the City make effective progress toward dealing with its extraordinary shoreline.

Consistency in Maintenance and Repair

With its changing winds, waves, tides, and levels of sea and sand, Carmel's shoreline is a dynamic system. In its own way, so too is the City; political, financial and operational conditions in the City change over time.

During the period since the previous Assessment (Fall, 2003), funding and staffing of the departments most closely involved with the management, maintenance and protection of the shoreline have decreased. This has limited City staff 's ability to carry out many of the actions required to keep important shoreline elements (beach, Pathway, landscaping, etc.) in the top notch condition deserving of this treasured part of Carmel.

Compounding this decreased level of support is the veering away from programs, plans and design guidelines, often developed years earlier by previous City personnel, commissions, task forces and consultants.

The current staff has clearly worked hard to maintain the basic components of the shoreline. But what has been lost are some of the very things that keep Carmel special in the hearts of its residents and visitors. A landscape with naturally trimmed plants rather than square hedges, trash and recycling containers kept

within stone enclosures rather than industrial dumpsters, wood rails and posts that are well-maintained rather than decayed and falling down.

To some, these might seem like minor issues of style, but they are characteristics that contribute to a look and feel that brings visitors back year after year after year, and encourages others to settle down here. These are among the design traditions that have evolved over the years to maintain the sense of a small village by the sea. The original plans for the Carmel Beach Bluff Pathway Project, developed by the esteemed landscape designer Robert Royston and his staff, under the direction of the Carmel Beach Task Force, approved by the City Council and the California Coastal Commission, were in keeping with Carmel's design traditions. These plans and guidelines should be reviewed, understood and honored.

Assessment Responses & Actions

This Assessment is based on observations of conditions that affect the protection and preservation of Carmel's shoreline and the safety of its visitors. As in the two previous Assessments, a draft version has been circulated to the City Forester and the Superintendent of Public Works for their comments and responses; these can be written on separate pages, and will be incorporated into the final version. Where appropriate, responders are encouraged to refer to the specific number identifying each condition (e.g. 6.1.1).

Based on these responses, the final version will show the status of each condition described in the Assessment, rating each with a single-letter code that appears in a box to the left of each response:

R = **R**epaired, replaced or otherwise remedied

O = **O**n-going (City has responded in the past but condition still persists)

M = **M**aintenance (will be attended to during upcoming maintenance cycle)

F = **F**uture (will be remedied when funds and/or time permit)

N = **N**o work is needed at this time.

Several of the conditions may have already changed by the time this draft Assessment was submitted. Some conditions may have been remedied by City staff or contract workers. Others may have been altered by changing weather and ocean conditions. But all conditions listed in the draft Assessment represented an accurate portrait of the Carmel shoreline during the period between November 15 and December 12, 2014.

No part of this Assessment is meant to take the place of regular (weekly/monthly) inspections or monitoring by City staff or consultants (e.g. qualified structural engineers, engineering geologists, et al). Conditions along the Carmel shoreline are extremely dynamic, and structures such as walls, revetments and stairways, as well as dunes, bluffs and trees, are all exposed to natural and man-made forces that can compromise their integrity and pose a threat to the public's safety. The City is urged to continue and strengthen its program of monitoring and inspection.

1.0 BEACH

General Conditions

By most metrics, Carmel Beach appeared to be in reasonably good condition when the current Assessment began in mid-November. The sand level on the beach was still high, in spite of a few previous storms. However, three issues stood out as problematic:

- Discoloration of sand from beach fires and dirt;
- Exposure of the City's protective rock revetments due to insufficient sand redistribution; and
- Short-term erosion of beach sand from storm water discharge.

As described in Section 1.1, below, much of the sand south of 10th Ave. was discolored by coals from beach fires. These coals range in size from tiny specks to chunks several inches long; each contributes to degrading Carmel's signature white sand beach. During the current Assessment, five specific sites within the beach fire zone had extensive patches of fire-associated debris, including partially burned wood mixed with kelp washed onto the beach by wave action. As in the past, it was noted that several beach fire sites also contain other debris, like glass, metal implements and trash, all of which reduce the quality of Carmel Beach and increase hazards for people who use the beach.

The City's white sand is also discolored by dirt displaced from the bluffs by people using unauthorized trails, referred to as **bluff-cuts**, by storm-water run-off or a combination of forces. Bluff-cuts have a critical impact on the Carmel shoreline and are discussed in detail in Section 3.1 of this Assessment.

At many locations along the Carmel shoreline, beach visitors can see large granite rocks piled up against the base of the bluffs. These are the visible parts of a series of engineered rock revetments, installed by the City to repair storm damage and provide protection from future storms. Most of the shoreline revetments were built in 1983, in response to damage incurred during the previous winter's El Niño storms. In addition, a few smaller revetments were built at other locations on the Carmel shore, both before and after 1983.

Restoration and maintenance of these revetments is discussed in Section 5.2 , but one important process involves Carmel's beach sand. To reduce the aesthetic impact and safety concerns related to these granite boulders, and to help compensate for loss of beach area, the City made a commitment to the California Coastal Commission to keep its shoreline revetments covered with beach sand. This was an outgrowth

of **sand redistribution**, which had been regularly used to maintain the high sand hill at the foot of Ocean Ave. as far back as the 1960s. With approval from the Coastal Commission, the City carried out sand redistribution for several years after the El Niño repairs, successfully keeping its shoreline revetments covered. However, in recent years, many revetments have remained exposed, in spite of several sand redistribution attempts. The City must carry out these efforts in a more consistent and effective manner.

The third condition of concern is related to storm water discharged onto Carmel Beach at some of the City's shoreline outfalls. At nineteen locations, storm water collected from many parts of the City is discharged onto the beach, often with tremendous force. At two locations, storm water flowing from outfalls has cut shallow channels into the sand extending across the width of the beach. In the 12th Ave cove, storm water outfall discharge has scoured a pit that was observed to be nearly three ft. deep. These conditions exist during and after rainstorms. Within a few days to a few weeks, these features are usually leveled out by natural forces; however, while these conditions exist, they present a clear hazard, especially for people who walk on Carmel Beach in the dark. This is further discussed in Section 4.1.

General Recommendations

Only one of the conditions of concern described above is dealt with in this section: the impact of open beach fires on Carmel's white sand (Section 1.1). The City Council's recent adoption of a pilot program to test the use of 26 **beach fire containers**[2] shows that the City is well aware of, and is ready to address, the long-standing problems caused by open fires on Carmel Beach. As noted in the Recommended Action section below, there will still be a need for on-going cleanup of the debris associated with beach fires, as well as strengthened public education and code enforcement.

[2] Also referred to as: fire kettles, fire bowls or fire rings

1.1 SAND DISCOLORATION - Fires

1.1.1a 10th Ave. to South City Limit

- **Condition**: Much of Carmel Beach south of 10th Ave. showed varying degrees of discoloration by remnants of beach fires. Several sites were covered by extensive patches of coals, partially burned firewood and other fire-associated debris:
  - Beach south of 11th Ave. stairs
  - Cove north of 12th Ave
  - Cove north of 13th Ave
  - Cove south of 13th Ave
  - Beach south of Santa Lucia

  Along the beach near 11th & 12th Ave.s, and the stretch between Santa Lucia Ave. and Martin Way, coals and chunks of partially burned firewood were mixed in with kelp washed in by storm waves.

- **Comments:** In addition to discoloring beach sand, beach fire sites are often littered with broken glass, cans, metal implements and other material; at some sites, people have used small revetment rocks as fire rings. Beach fire sites are often associated with bluff-cuts, which are used to deliver firewood down to the beach.

⇨ **Recommended Action**:

- CITY PLANS TO LIMIT BEACH FIRES TO 26 BEACH FIRE CONTAINERS INSTALLED SOUTH OF 10TH AVE. FOR A ONE-YEAR PILOT PROGRAM TO HELP DECREASE AMOUNT OF FIRE-DEBRIS ON THE BEACH.
- CITY SHOULD CONTINUE & STRENGTHEN ON-GOING BEACH FIRE-RELATED PROGRAMS
  - ENSURE THAT THE CONTRACT FOR WASTE HAULING SERVICES INCLUDES DETAILED SPECIFICATIONS FOR CLEANING FIRE-DEBRIS FROM BEACH;
  - INCREASE PUBLIC EDUCATION & CODE ENFORCEMENT ACTIVITIES (WILL REQUIRE CARMEL POLICE DEPT. INPUT ON WORDING OF SIGNS);
- CITY SHOULD CONSIDER PLACING TRASH CANS ON BEACH IN FIRE ZONE.


Fig 1#1


Fig 1#2


Fig 1#3


Fig 1#4

1.1.2 **Sand Discoloration - Erosion** (Section 3.1)

1.2 BEACH EROSION

1.2.1 **Beach Erosion - Storm Water Discharge** (Section 4.1.3)

Section 1.0 - BEACH

COMMENTS & RESPONSES

2.0 DUNES

General Conditions

The Del Mar Dunes and North Dunes are remnants of a once-extensive dune system that existed when the City of Carmel was founded. Both areas are characterized as "disturbed" from both current and previous human activity, as well as the growth of invasive plant species. Each area is part of the City's Del Mar Master Plan, and the North Dunes and Del Mar Dunes Habitat Restoration Plan.

At present, some restoration and re-vegetation has been undertaken by two groups (Carmel-by-the-Sea Garden Club and MEarth Carmel). In addition, a more extensive program is now underway, led by dune restoration specialist Joey Dorrell-Canepa.

Both dune areas were surveyed for this Assessment; no issues related to safety, shoreline protection, or coastal viewshed were found.

A few conditions are noted below:

2.1 NORTH DUNES

2.1.1 Dead Cypress Trees

- **Condition**: Several dead Monterey Cypress trees have been left standing in the North Dunes area. The City is in the process of deciding what should be done.

Fig 2#1

- **Condition**: Many stands of the "narrow-leaf ice plant" (*Conicosia pugioniformis*), an invasive plant introduced from South Africa, are growing in the North Dunes. While not as aggressive as the more common South African ice plant (*Carpobrotus edulis*) also growing along the Carmel shoreline, both should be removed as part of any restoration program in the North Dunes.

Fig 2#2

2.2 DEL MAR DUNES

2.1.1 Private Drain Pipe

- **Condition**: A few of the houses in the Del Mar Dunes have pipes that drain onto the City's dunes. It is likely that these transport drain storm water away from their houses.

⇨ **Recommended Action**: CITY SHOULD VERIFY THAT PRIVATE DRAIN PIPES, WHICH DISCHARGE ONTO CARMEL'S DEL MAR DUNES, DO NOT CAUSE EROSION OR OTHER NEGATIVE IMPACTS.

Fig 2#3

Section 2.0 - DUNES

COMMENTS & RESPONSES

3.0 SHORELINE BLUFFS

3.1 BLUFF EROSION

General Conditions

Carmel Beach is located at the lowest elevation of all land within the City limits. Along the shoreline from 8th Ave. to Martin Way, people must traverse steep bluffs in order to move to and from the beach.

Over the decades, the City has built nine stairways and maintained three sand ramps for safe beach access, but some people continue to create/use **bluff-cuts** (unauthorized trails cut into the bluffs) for this purpose. Bluff-cuts trample and kill vegetation, channel and accelerate storm water run-off, erode shoreline slopes, and, at some locations, transport dark dirt and other bluff material down onto Carmel Beach's white sand.

During the planning stage of the Carmel Beach Bluff Pathway, landscape designers, along with City staff and the Beach Task Force, identified bluff-cutting as a critical challenge to the Carmel shoreline protection program.

In addition, some of the bluff-cuts located south of 10th Ave. also contribute indirectly to sand degradation because these paths are often used to bring firewood down to the beach for use in open fires, which are the primary cause of the discoloration of Carmel Beach (Section 1.1).

Over the past 30 years, the City has used a number of methods to repair existing bluff-cuts and discourage new ones from being created. However, substantial damage from this on-going problem was still evident during the current assessment – the number of bluff-cuts was reminiscent of conditions seen in the early 1980s, before the Beach Bluff Pathway Project.

For many years, City staff has placed large logs over portions of several bluff-cuts (Fig.s 3#1, 3#7, 3#14). Most of these logs have been oriented along the main axis of the bluff slope, many situated at steep angles. None of these sites show evidence of recent revegetation, and most still exhibit fresh footprints, indicating continued and recent use. Clearly, this method of repairing/discouraging bluff-cuts has not worked well.

General Recommendations

While these bluff-cuts have been a vexing problem, the fact that some have continued to exist for more than ten years sends a clear and permissive message to beach users. The City must work to find effective and aesthetic solutions to this important and long-standing problem.

The most effective response will require a multipronged approach that uses a combination of plantings, guardrails, signage, public education and policing. Such an approach should be developed into a standard restoration/rehabilitation program that could be used to heal erosion caused by bluff-cuts, storm water run-off, and other forces.

While each bluff-cut might have a unique set of conditions, here are some general recommendations:

- **The best response will be a prompt response.** Allowing bluff-cuts and their subsequent damage to continue to exist just invites more use and more damage, requiring more expensive solutions later;
- At most sites, an effective response will involve actions on the bluff, at the blufftop, and along the Pathway;
- If a specific site lacks enough soil for good plant growth, use pressure-treated wood (or other material) to create ample beds of soil;
- While bluff-cut repairs are in progress, install plastic netting to protect new plants from being trampled. Placing a mat of green plastic netting across a bluff-cut (at the same angle as the slope) might help to deter trampling;
- Enforce Section 12.32.165 of the Carmel Municipal Code, which prohibits travel to and from the beach without using stairs or sand ramps. Issuing citations does send a message. Consult with Carmel Police Dept. on the proper wording, location and number of signs required for effective enforcement.
- Because many persistent bluff-cuts are south of 10th Ave, (within the zone where beach fires are allowed), schedule enhanced police patrols during 1-2 hours before sunset, when wood for beach fires is often delivered (sometimes using bluff-cuts).
- If these steps prove ineffective, then work to develop better responses. Persistent bluff-cuts might require advice/guidance from a professional landscape designer. In some cases (e.g. 13th cove), installation of a new stairway access might be the most appropriate solution.

- Bluff-cutting along the Carmel shoreline will be an on-going and (sadly) never-ending problem. To be effective, the City's responses, including monitoring and repair, must also be on-going and continuous.

Protection of the Carmel shoreline is a goal worthy of solving the bluff-cut problem.

3.1.1a **Bluff north of 9th Ave. Stairway**

- **Condition**: Bluff-cut treated with log. Fresh foot prints and recent damage show continued use.

⇨ **Recommended Action**:

- REPAIR BLUFF EROSION AS PER GENERAL RECOMMENDATIONS LISTED ABOVE;
- DEVELOP MORE EFFECTIVE ALTERNATIVE THAN SLOPE-LOG

Fig 3#1

3.1.1b **Bluff between 10th Ave. Stairway (south) and 11th Ave. Stairway**

- **Condition**: Run-off from rainwater collected in Pathway dip causes slope erosion and deposition of dirt onto beach below.

⇨ **Recommended Action**:

- WHEN PATHWAY IS RESURFACED, DIP ABOVE BLUFF DAMAGE SHOULD BE RAISED TO MATCH ADJACENT GRADE;
- REPAIR BLUFF EROSION AS PER GENERAL RECOMMENDATIONS LISTED ABOVE.

Fig 3#2

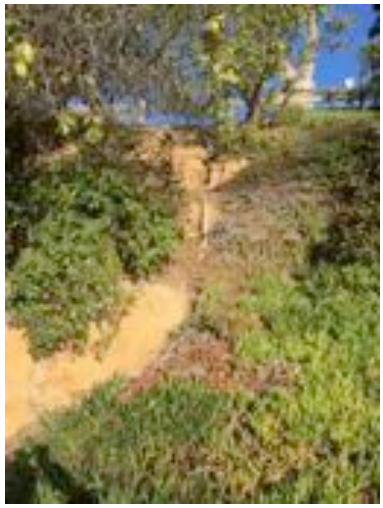

Fig 3#3

Fig 3#4

3.1.1c **Bluff between 10th Ave. Stairway (south) and 11th Ave. Stairway**

- **Condition**: Unvegetated bluff-face eroding, discharging dirt onto beach sand below

⇨ **Recommended Action**: REPAIR BLUFF EROSION AS PER THE GENERAL RECOMMENDATIONS LISTED ABOVE.

Fig 3#5

Fig 3#6

3.1.1d **Bluff north of 11th Ave. Stairway**

- **Condition**: Bluff-cut treated with log installed at steep angle.

⇨ **Recommended Action**:

- REPAIR BLUFF EROSION AS PER GENERAL RECOMMENDATIONS LISTED ABOVE;
- DEVELOP MORE EFFECTIVE ALTERNATIVE THAN SLOPE-LOG.

Fig 3#7

3.1.1e **Bluff south of 11th Ave. Stairway**

- **Condition**: Storn water run-off passing over an un-opened dry weather diverter over-topped curb during storm, eroding upper portion of bluff, damaging plants & causing bluff erosion below.

⇨ **Recommended Action**: REPAIR BLUFF EROSION AS PER THE GENERAL RECOMMENDATIONS LISTED ABOVE.

Fig 3#8

Fig 3#9

3.1.1f **Bluff between 11th and 12th Ave.s**

- **Condition**: Steep bluff-cut exposes pieces of plastic GeoWeb and PVC irrigation pipe. Lack of vegetation exposes site to run-off erosion and invites foot traffic. Reported in previous Assessments.

⇨ **Recommended Action**:

- REPAIR BLUFF EROSION AS PER THE GENERAL RECOMMENDATIONS LISTED ABOVE.
- WHEN REPORTED IN PREVIOUS ASSESSMENTS, STAFF COMMENTS INDICATED LACK OF SOIL HINDERED REPLANTING
  - EFFECTIVE RESPONSE SHOULD INCLUDE STEPS TO CREATE BEDS OF AMPLE SOIL.

Fig 3#10

Fig 3#11

3.1.1g **Bluff between 12th Ave. and 13th Ave. Cove**

- **Condition**: Bluff-cuts create deposits of dark dirt onto beach sand. Previous City response to the upper section of one of the bluff-cuts utilized a log; bluff-cut has now widened, with fresh foot prints alongside log.

⇨ **Recommended Action**:

- REPAIR BLUFF-CUT AS PER GENERAL RECOMMENDATIONS LISTED ABOVE;
  - DEVELOP MORE EFFECTIVE ALTERNATIVE THAN SLOPE-LOG

⇨ **Alternative Recommended Action**:

- BUILD A NEW STAIRWAY AT SITE
  *NOTE: The beach at the bottom of this bluff is one of the most popular sites on Carmel Beach; improved access here is imperative!

Fig 3#12

Fig 3#13

Fig 3#14

3.2 BLUFF HOLLOWS and VOIDS

General Conditions

Until the late 1970's, some portions of the shoreline bluffs behind seawalls and retaining walls were backfilled with dirt that contained plant material. As this material decomposed over time, voids and hollows were created within these bluffs. Carmel's shoreline bluffs are off-limits to the public, but these voids/hollows could still pose a hazard for City staff, as well as those few citizens who bluff-cut.

All accessible bluff-fill areas behind seawalls and retaining walls were walked and surveyed; no hollows or voids were detected. This is likely due to steps taken by City staff during the 1990s.

Section 3.0 – SHORELINE BLUFFS

COMMENTS & RESPONSES

4.0 STORM WATER SYSTEM

4.1 SHORELINE OUTFALLS

General Conditions

Nearly all of Carmel is located above the beach. Most rainwater that falls on the City flows down streets and through pipes toward the shoreline. There, it is discharged onto Carmel Beach through a system of pipes and outfalls with a water-handling capacity that was significantly improved during repairs following the 1982/83 El Niño storms. During periods of moderate- to heavy rainfall, the volume of storm water discharging from any of the City's major outfalls onto Carmel Beach can be very forceful.

With few exceptions (listed below), the City's shoreline outfalls appear to be in good condition.

The first condition of concern is the undercutting of part of the structure supporting Outfall #1 (at 4th Ave.); the damage appears to have been the result of foot traffic on an unauthorized trail (Section 4.1.1a).

The remaining shoreline outfall conditions in need of attention appear to be problematic only during rainstorms and a one- or two-week period immediately afterward:

- Seaward ends of three outfalls were partially covered by plants, which could trap storm water debris (Section 4.1.2a,b & c); and
- Storm water discharge from two outfalls each created channels that cut across the beach, while water from a third outfall scoured a nearly 3 ft-deep pit into the sand (Section 4.1.3a, b & c).

The conditions mentioned immediately above become problems for only a short time during the year, and may be easily overlooked. Once the rainy season passes, ice plant that covers outfalls will blend in with the surrounding vegetation. And within a few weeks after a rainfall, the two channels and the pit scoured by storm water discharge had been leveled out by purely natural forces. But during storms (and just afterward), these conditions could have caused major problems: blockages of storm water flow, and hazards for those who walk on the beach, especially in the dark.

General Recommendations

Carmel has been well-served by its storm water system, especially since modifications during the 1980s mentioned above. A certain amount of limited outfall-generated beach erosion might be acceptable provided that it doesn't pose a hazard to the public or cause long-term erosion. With this in mind, the City should seek ways to mitigate these few storm water discharge problems.

The City should develop and use standard protocols, with actions to be taken before, during and after storms. These should include:

- Trimming/clearing all vegetation away from the discharge ends of storm water outfalls well before the onset of the storm season;
- Monitoring storm water discharge on the shoreline during and after storms. If conditions are found that pose hazards to beach users (even during the dark), then the City should:
    - notify the public (with strategically placed signs) that those who walk on the beach during these periods could encounter hazardous conditions; and
    - cordon-off portions of the beach (using galvanized eye-rods and cord) where discharge-generated channels and pits interfere with safe travel.

NOTE: This is similar to the recommendations in Section 6.1, which call for shoreline stairways to be monitored and then closed when storm & tide conditions make access unsafe.

The discharge pit scoured into the sand near the 12th Ave. stairway (Section 4.1.3b) might have a structural solution: the City should seek the advice of a structural engineer regarding construction of a structure that can be added to the outfall base to deflect discharge water irrespective of sand level. During the planning of this structure, the City would be wise to consider the impact of two additional factors on any changes to the outfall:

- Certain sections of the shoreline are affected by a fast-moving **lateral current** that flows along some portions of the back beach, usually from north to south. This water becomes trapped behind a low, naturally formed, sand berm, and its rapid flow along the beach bluffs and walls should be taken into consideration when designing any structure in the back beach;[3]
- Review photos taken when the 12th Ave. outfall was built, to determine if erosion of its sandstone bluff will be a factor.

[3] Described in the City of Carmel-by-the-Sea Shoreline Management Plan.

4.1.1 **Outfall Structure**

4.1.1a **Outfall #1 (4th Ave.)**

- **Condition**: Landward end of the southern wall is undercut by erosion caused by foot-traffic on a bluff-cut trail. (*NOTE: Other observers have noted that the slab at base of outfall is too small to effectively deflect storm water discharge.)

⇨ **Recommended Action**:

- WALL SHOULD BE CHECKED BY QUALIFIED ENGINEER;
  - REPAIR OR REBUILD, IF NECESSARY
- CONSIDER INSTALLING LARGER SLAB TO DEFLECT STORM WATER DISCHARGE
- FOCUS IMMEDIATE ATTENTION ON REPAIRING BLUFF-CUT. CONSIDER BACK-FILLING AND REVEGETATION OF SLOPE
- ELIMINATE HIGHLY INVASIVE PAMPAS GRASS.

Fig 4#1

Fig 4#2

4.1.2 **Outfall Obstructions**

Blocked storm water outfalls can become plugged with debris, interfering with discharge.

4.1.2a **Outfall #4 (8th Ave.)**

- **Condition**: Partially blocked by overhanging ice plant. (NOTE: This condition was reported in Fall 2002 & 2003 CSAs)

⇨ **Recommended Action**:

- DEVELOP & FOLLOW PROTOCOLS FOR CLEARING/TRIMMING ICE PLANT AT LEAST A FEW FT. FROM OUTFALL'S DISCHARGE END BEFORE ONSET OF STORM SEASON, AS PER GENERAL RECOMMENDATIONS.

Fig 4#3

4.1.2b **Outfall (between 9th and 10th Ave.s)**

- **Condition**: Blocked by overgrown ice plant and other vegetation.

⇨ **Recommended Action**:

- DEVELOP & FOLLOW PROTOCOLS FOR CLEARING/TRIMMING ICE PLANT AND OTHER VEGETATION AT LEAST A FEW FT. FROM OUTFALL'S DISCHARGE END BEFORE ONSET OF STORM SEASON, AS PER GENERAL RECOMMENDATIONS.

Fig 4#4

4.1.2c **Outfall #9 (South of 10th Ave.)**

- **Condition**: Partially blocked by overgrown ice plant

⇨ **Recommended Action**:

- DEVELOP & FOLLOW PROTOCOLS FOR CLEARING/TRIMMING ICE PLANT AT LEAST A FEW FT. FROM OUTFALL'S DISCHARGE END BEFORE ONSET OF STORM SEASON, AS PER GENERAL RECOMMENDATIONS.

Fig 4#5

4.1.3 **Outfall-Generated Erosion**

Storm water outfalls along the Carmel shoreline should not generate bluff or beach erosion.

4.1.3a **South of 9th Ave.**

- **Condition**: During/after a mid-December rain storm, discharge from Outfall #6 carved a channel (1-1.5 ft deep) into beach sand close to the bluff; channel became shallower as it flowed seaward. Could be a hazard to foot traffic, especially after dark.

⇨ **Recommended Action**:

- DEVELOP AND FOLLOW STANDARD STORM WATER DISCHARGE PROTOCOLS, AS PER GENERAL RECOMMENDATIONS:
  - MONITOR OUTFALL DISCHARGES DURING & AFTER STORMS.
  - NOTIFY PUBLIC OF POTENTIAL HAZARD (e.g. WARNING SIGNS, WARNING TAPE, GALVANIZED EYE-ROD & CORD BARRIER, OR OTHER METHOD).

Fig 4#6

4.1.3b **12th Ave. North Cove**

- **Condition**: Discharge from Storm Water Outfall #11 has created a 2.5 ft. deep pit. Could be a hazard to foot traffic, especially after dark.

⇨ **Recommended Action**:

- DEVELOP AND FOLLOW STANDARD STORM WATER DISCHARGE PROTOCOLS, AS PER GENERAL RECOMMENDATIONS:
  - MONITOR OUTFALL DISCHARGES DURING & AFTER STORMS.
  - NOTIFY PUBLIC OF POTENTIAL HAZARD (e.g. WARNING SIGNS, WARNING TAPE, GALVANIZED EYE-ROD & CORD BARRIER, OR OTHER METHOD).
- CONSIDER MODIFYING BASE OF OUTFALL TO DEFLECT STORM WATER DISCHARGE.

Fig 4#7

4.1.3c **South of Santa Lucia Ave.**

- **Condition**: During/after an early-December rain storm, discharge from Outfall #15 carved a channel (12" deep) into beach sand close to the bluff; channel became shallower as it flowed seaward. Poses a hazard to foot traffic, especially after dark.

⇨ **Recommended Action**:

- DEVELOP AND FOLLOW STANDARD STORM WATER DISCHARGE PROTOCOLS, AS PER GENERAL RECOMMENDATIONS:
  - MONITOR OUTFALL DISCHARGES DURING & AFTER STORMS.
  - NOTIFY PUBLIC OF POTENTIAL HAZARD (e.g. WARNING SIGNS, WARNING TAPE, GALVANIZED EYE-ROD & CORD BARRIER, OR OTHER METHOD).

Fig 4#8

4.2 STORM WATER INLETS

Blocked inlets can trap debris and cause erosion from uncontrolled storm water run-off.

- **Condition**: All storm water inlets were found to be clear of obstructions.

4.3 PEDESTRIAN ACCESSWAYS/DRAINAGE EASEMENTS (PA/DE)

- **Condition**: All PA/DEs between San Antonio & Scenic Rd. were found to be clear of obstructions. Plants from adjacent private properties were well-trimmed and did not encroach on PA/DEs.

Section 4.0 – STORM WATER SYSTEM

COMMENTS & RESPONSES

5.0 SHORELINE ARMORING STRUCTURES

5.1 SEAWALLS and RETAINING WALLS

General Conditions

Since 1958, the City has built seawalls and retaining walls to protect its shoreline bluffs. Seawalls are structures whose foundations may be impacted by direct wave action, while retaining walls are perched higher on the bluff. Some of the oldest walls were built of "golden granite" rocks, held together by mortar. More recent walls have been built of reinforced concrete, covered with a facing of golden granite.

City documents, including the Shoreline Management Plan, often place these two types of protective walls into separate categories, but some walls along the Carmel shoreline are a combination of both:

- the seawall at 12th Ave. Point, with its southern perched retaining wall that extends toward the 13th Ave. cove (Fig.s 5#1, 5#2);
- a seawall and its perched retaining wall south of 13th Ave. (Fig.s 5#3, 5#4).

One characteristic these two wall types have in common is that both can be affected by **selective erosion**, a process which occurs when a hard granite wall is founded in, or butts against, softer material such as sandstone. Over a relatively short span of time, the sandstone erodes, leaving a gap between it and the wall. During the current Assessment, this erosion was observed at the base of the perched retaining wall that extends from the point at 12th Ave. toward the 13th Ave. cove (Section 5.1.1a). A similar condition was previously observed between the seawall south of 13th Ave. and the adjacent sandstone in February, 2004 – it was subsequently patched.

NOTE: While this Assessment was in the final editing stage, the City met with a certified engineering geologist regarding its shoreline walls; no date for a full inspection has yet been set.

General Recommendations

- Have all seawalls and shoreline retaining walls inspected by a qualified engineer:
  - Seawall foundations should be inspected when sand level is low; therefore contract should be established well before storm season;

- Previous observations have documented that the rock at the base of the seawalls on both north and south sides of 13th Ave stairway are undercut;
    - These should be closely inspected and repaired as needed;
- Consider use of artificial rock, or other material, as cap for exposed sandstone to prevent selective erosion.

5.1.1 **Structure**

Due to moderate weather and ocean conditions preceding the current Assessment, the bases of all City seawalls were covered by beach sand, preventing observation of any foundations. The outward sides of the bases of most shoreline retaining walls were visible; while technical analysis must await inspection by a structural engineer or certified engineering geologist, evidence of erosion at the base of one retaining wall was clearly evident (Section 5.1.1a). The seaward faces of all shoreline sea walls and retaining walls were all visually scanned for loose facing stones – none were seen. Walls were also checked for significant mortar-cracks; with the exception noted below, no other cracks were seen.

5.1.1a **Retaining Wall - 12th Ave. Point to 13th Ave. Cove**

- **Condition**: Portions of the retaining wall base have been undercut by selective erosion of the underlying sandstone. At some locations, gravel from a French drain behind the wall has migrated seaward under the wall.
  NOTE: Bluff behind retaining wall was checked to determine if loss of French drain rocks affected bluff drainage; no hollows or voids were found.

⇨ **Recommended Action**:

- WALL SHOULD BE CHECKED BY QUALIFIED ENGINEER;
- GAP BETWEEN BASE OF WALL AND UNDERLYING SANDSTONE SHOULD BE REPAIRED;
- BLUFF FILL-MATERIAL BEHIND WALL SHOULD BE CHECKED DURING RAINY PERIOD TO DETERMINE IF FRENCH DRAIN IS STILL EFFECTIVE;
- CONSIDER CAPPING THE EXPOSED SANDSTONE WITH MATERIAL (e.g. ARTIFICIAL ROCK) TO PREVENT FURTHER SELECTIVE EROSION AND UNDERMINING OF RETAINING WALL

.

Fig 5#1

Fig 5#2

5.1.1b **Seawall/Retaining Wall between 13th and Santa Lucia Ave.s**

- **Condition**: Vertical crack in mortar at boundary between seawall and retaining wing-wall (at sandstone rock).

⇨ **Recommended Action**:

- CRACK IN MORTAR SHOULD BE FILLED WITH APPROPRIATE MATERIAL TO PREVENT WATER SEEPAGE AND DAMAGE TO FASCIA STONES;
- CONSIDER CAPPING THE EXPOSED SANDSTONE WITH MATERIAL (e.g. ARTIFICIAL ROCK) TO PREVENT FURTHER SELECTIVE EROSION AND UNDERMINING OF RETAINING WALL.

Fig 5#3

Fig 5#4

5.1.2 Vegetation

Overhanging plants can mask cracks in mortar or obstructions of important drainage weep holes.

- **Condition**: Portions of the seawalls (shown below) were covered by salt bush (*Atriplex* sp.), ice plant (*Carpobrotus* sp.) and other overhanging vegetation. This vegetation helps "soften" appearance of massive hard walls, but also obscures mortar and weep holes from inspection.

  - Seawall at 10th Ave.

Fig 5#5

  - Seawall North of Martin Way

Fig 5#6

Fig 5#7

⇨ **Recommended Action**:

- REMOVE DEAD PLANTS & TRIM/THIN REMAINING PLANTS;
- CONDUCT ANNUAL CLOSE INSPECTION OF WALLS BEHIND OVERHANGING PLANTS.

5.2 REVETMENTS

General Conditions

In response to damage sustained by Carmel's shoreline during the 1982/83 El Niño storms, the City installed a series of engineered rock revetments at several locations along the back beach during Phase I of the Carmel Beach Rehabilitation Project (1983). These were engineered structures, designed and supervised by an engineering-geologist who specialized in coastal protection. Each revetment was built to withstand waves of the size and force calculated to impact Carmel Beach.

As described in the Shoreline Management Plan, the primary revetments consisted of 400-600 lb. granite "core stones" stacked up against the shoreline bluffs over a layer of filter fabric, then covered with 3-5 ton granite "armor stones." The base layer of armor stones was locked into a keyway cut into the bedrock under the beach. Under qualified supervision, the armor stones were precisely installed to achieve a slope of 1.5:1, which produced an angle-shaped structure that reached a depth of 15 to 20 ft. below the current sand level, and whose base extended 20 ft. seaward from the bluff edge.

Also during Phase I, smaller rock revetments were strategically emplaced to protect some storm water outfalls along the shore. These utilized rocks much smaller than the multi-ton armor stones.

In addition to the revetments installed during the 1983 Project, others were built with varying degrees of design and supervision, some as early as 1978, while others date after 1983.

Among the shoreline elements most in need of attention are the many granite boulders that have either moved away from protective revetments or have shifted and become perched atop other boulders, creating unsafe conditions.[4] Movement of revetment boulders, termed **migration**, is a characteristic of shoreline revetments. Without intervention, loss of boulders can eventually weaken the revetment's ability to provide protection for the shoreline bluffs and storm water outfalls. The remedy is to reposition migrated boulders by placing them back onto the revetment at locations where they will help maintain the structure's original design. This process, called **redressing**, has been used in the past to help restore portions of Carmel's shoreline revetments.

[4] It is thought that most of these rocks were from revetments built either before or after Phase I of the Carmel Beach Rehabilitation Project (1983).

A second condition of concern is the long-term exposure of revetment boulders. As described in Section 1.0, the City committed to keep its shoreline revetments covered with beach sand to help address safety and aesthetic issues. In addition, it also allayed the Coastal Commission's concerns about loss of beach caused by the revetment's significant breadth. Using sand to cover the boulders addresses these concerns without decreasing the revetment's ability to protect against erosion. Once the boulders have been adequately covered with sand, beach visitors can have a broader area for people to enjoy, both visually and functionally. But unlike a permanent cover, once the sand is washed away by winter storm waves, the boulders' irregular faceted surfaces, as well as the spaces in-between, serve to deflect and absorb wave energy, lessening the potential for erosion.

To accomplish this task, sand is bulldozed from the lower beach and pushed over the top of each exposed revetment. This **sand redistribution** was based on a procedure used as early as the 1960s by Carmel's Public Works Dept. to maintain safe public beach access at the foot of Ocean Ave.

Sand redistribution, utilizing contractors supervised by City staff, was successfully conducted after the installation of shoreline revetments in 1983, and continued through the early 2000s. However, in recent years, many revetments have remained exposed, in spite of several sand redistribution attempts. To help protect Carmel Beach's visual quality and public safety, and to keep its commitment to the Coastal Commission, the City must carry out these efforts in a more effective manner.

General Recommendations

Revetment Redressing: Redressing Carmel's shoreline revetments should be conducted with the advice/guidance of an engineering geologist experienced in the maintenance of these structures. Redressing will help return the revetments to a condition where they can most effectively protect the City's shoreline, as well as remove potentially hazardous perched boulders and dangerous crawl spaces along the beach.

Because each of the City's engineered revetments extends many feet under the sand, redressing is best done when the sand level is low – a situation that occurs on Carmel Beach during particularly stormy winters. However, conditions that remove sand from the beach are not usually conducive for revetment redressing. An alternative strategy

would be to photograph revetments when they are exposed during the winter, and then redress them later in the year when conditions allow.

Revetment Coverage: In discussions with current and previous City staff, it is clear that there is a difference of opinion regarding how much sand must be available in order to effectively cover the shoreline's exposed revetment boulders. Unfortunately, information that could answer this question has not yet been gathered.

As discussed in the Carmel Shoreline Management Plan, the City was required by the Coastal Commission to conduct **beach profile surveys** along its shore. The information gathered from these surveys could have been used to help determine when, and to what extent, sand redistribution should be conducted. As part of this program, a series of benchmarks was installed on Scenic Road, but no surveys were ever conducted.

In the absence of accurate volumetric information, sand redistribution efforts will need to be conducted based on previous experience. Because this procedure is an important shoreline management tool, the City will benefit from discussions with former staff members who were directly involved in previous successful sand redistribution efforts.

A better understanding of how Carmel's white beach sand changes over time is a very important tool for managing its shoreline; the City is urged to commence beach profile surveys.

5.2.1 Sand Cover

- **Condition**: Many of the City's shoreline revetments were only partially covered, exposing perched boulders and dangerous open crawl spaces. (Section 5.2.2)

⇨ **Recommended Action**: AS PER THE GENERAL RECOMMENDATIONS, ABOVE, THE CITY SHOULD ACTIVELY CARRY OUT SAND REDISTRIBUTION TO ENSURE THAT SHORELINE REVETMENTS ARE COMPLETELY COVERED TO PROTECT PUBLIC SAFETY AND ENHANCE SHORELINE AESTHETICS.

5.2.2 **Structure**

All revetments should be inspected for loose, perched, or migrating boulders.

- **Condition**: Loose, perched, and/or migrating boulders were observed at the sites listed below. Due to moderate winter conditions, other shoreline revetments could not be assessed because sand levels were unseasonably high.

  - Storm Water Outfall #2 (@ Foot of Ocean Ave.)

Fig 5#8

  - Revetment/Storm Water Outfall #4 (@ North of 8th Ave.)

Fig 5#9

Fig 5#10

- Revetment @ Base of 11th Ave. Stairway

Fig 5#11

- Revetment @ South of 11th Ave.

Fig 5#12

Fig 5#13

- Revetment in cove North of 12th Ave.


Fig 5#14


Fig 5#15


Fig 5#16


Fig 5#17

- Revetment between 13th & Santa Lucia Ave.s


Fig 5#18


Fig 5#19

⇨ **Recommended Action**:

- BOULDERS IN EXPOSED REVETMENTS SHOULD BE REDRESSED BY EXPERIENCED PERSONNEL FAMILIAR WITH THESE SHORELINE PROTECTION STRUCTURES;
    - AS PER GENERAL RECOMMENDATIONS, REVETMENT BASES SHOULD BE PHOTOGRAPHED WHEN THEY ARE EXPOSED DURING THE WINTER, AND THEN REDRESSED LATER IN THE YEAR WHEN CONDITIONS ALLOW.
    - PERCHED BOULDERS AND HOLLOW SPACES SHOULD BE REARRANGED FOR PUBLIC SAFETY;
    - REVETMENTS CURRENTLY COVERED WITH SAND SHOULD BE INSPECTED FOR THESE CONDITIONS WHENEVER SAND LEVEL ALLOWS. CITY SHOULD CONTINUE SAND REDISTRIBUTION EFFORTS;
- ALL EXPOSED REVETMENTS SHOULD BE COVERED WITH SAND, AS PER GENERAL RECOMMENDATIONS.

Section 5.0 – SHORELINE ARMORING STRUCTURES

COMMENTS & RESPONSES

6.0 SHORELINE ACCESS

6.1 STAIRWAYS

General Conditions

All of the City's shoreline stairs are exposed to salt spray throughout the year. The lower sections of some stairs (e.g. Martin Way), may be inundated by seawater during storms and high tides. And for many months, other stairs (e.g. 11th Ave.) may be buried under beach sand. These conditions, especially exposure to salt, can have a negative effect on shoreline access stairways, especially their metal screws, bolts, plates and other critical hardware.

While the current Assessment was being conducted, a structural engineer from Gerald A. Graebe & Assoc.s carried out an in-depth inspection of all the City's shoreline stairways. The results of that inspection should be considered along with this general assessment of the shoreline.

While Carmel's shoreline stairs are expected to provide safe access to and from the beach, there are times when conditions are challenging, and even unsafe. For example, during the current Assessment, the Martin Way stairs were observed several hours after a rainstorm had passed. Weather conditions had become moderate and several people were seen walking on the Pathway – a few who descended the stairway encountered seawater washing over the bottom steps. The tide was approx. +5.0 ft, and water was carried toward the stairway by a rapid **lateral current**[5] that sometimes flows along the seawall at this section of Carmel Beach. Fortunately, visibility was good and these people turned back before reaching the bottom; a trip down these City stairs by unwary visitors in the dark would have put them at risk.

General Recommendations

Stairway Inspections: The inspection of Carmel's shoreline stairways by Graebe & Assoc.s is the first by a structural engineer in recent memory. Given that these structures must withstand forces such as wave impact, exposure to salt and occasional burial under beach sand, this level of examination is imperative. How often structural inspections need to be conducted should be determined with the advice of the City Engineer. These

[5] Lateral Current is described in Section 4.1 of this Assessment

engineering reports can be complemented by annual general observations made by City Staff as well as regular Shoreline Assessments.

Stairway Monitoring: The conditions encountered on the Martin Way stairway during and after a winter rainstorm could have been hazardous to anyone using the stairway, especially in the evening. The City should develop and use **standard protocols** to ensure that the public can safely use Carmel's shoreline access stairways. These should include:

- Monitoring
  - during significant high tides; and
  - during and after storms;
- Special attention should be paid to the impact of any lateral flow, which often occurs along the back beach and seawalls near the Martin Way stairway and other locations during storm periods;
- If conditions on a stairway, or at its base, are unsafe, then the stairway should be closed to public use until safe conditions return;
- Signs should be installed to inform and warn the public about possible hazardous conditions, especially at night;
  - Signs should be developed with the cooperation of the Carmel Police Dept.

NOTE: These protocols should apply to any shoreline access stairway where waves wash over the base and/or steps during significant high tides or during/after storms (e.g. this condition has been observed at the 13th Ave. stairway during previous years).

6.1.1 **Safety**

Passage up and down shoreline stairways should be safe and convenient.

6.1.1a **10th Ave. (South) Stairway**

- **Condition**: Base of stairway is partially blocked by *Myoporum* branches

⇨ **Recommended Action**: TRIM VEGETATION TO PROVIDE UNOBSTRUCTED ACCESS

Fig 6#1

6.1.1b **Martin Way Stairway**

- **Condition**: Stairway descends into seawater brought in by direct wave action and lateral current during and after storms.

⇨ **Recommended Action**:

- DEVELOP AND FOLLOW STANDARD STORM/HIGH TIDE PROTOCOLS, AS PER GENERAL RECOMMENDATIONS:
  - MONITOR SHORELINE STAIRWAYS DURING SIGNIFICANT HIGH TIDES AND DURING & AFTER STORMS;
  - UTILIZE TIDE PREDICTION TABLES TO PREPARE FOR UPCOMING TIDES, ESPECIALLY THOSE THAT OCCUR DURING THE NIGHT;
  - CLOSE STAIRWAYS UNTIL SAFE CONDITIONS RETURN;
- INSTALL INFORMATION AND WARNING SIGNS TO NOTIFY THE PUBLIC OF POSSIBLE HAZARDS.

Fig 6#2

6.1.1c **Santa Lucia Stairway**

- **Condition**: Some steps and mortar are cracked and broken.

⇨ **Recommended Action**: STEPS SHOULD BE RE-POINTED TO MATCH NEW RESTROOM STAIRS

➔ **Response (Comment/Action/Date):**

R STEPS WERE RE-POINTED BY PUBLIC WORKS BEFORE NEW RESTROOM WAS OPENED TO PUBLIC

Fig 6#3

6.2 SAND RAMPS

General Conditions

The condition of the Handicap Access Sand Ramp was disappointing. As noted below, the ramp's slope appeared to be steeper than originally designed, and its sand was a foot lower than the level of the adjacent Pathway, making access difficult, even impossible, for those of limited mobility. Added to this were a PVC irrigation pipe and red wires (part of the irrigation control system) crossing the ramp just a few feet seaward of the Pathway edge – these were tripping hazards for foot traffic and exposed important irrigation system components to damage.

As stated in the Carmel Shoreline Management Plan: "The City of Carmel has an abiding commitment toward making its shoreline as accessible as possible, given the existing topographic conditions." The Handicap Access Sand Ramp was designed to help the City carry out this commitment by making Carmel's white sand available to people of limited mobility. It can be accessed from the Pathway or by a curb ramp from Scenic Road; the two parking spaces adjacent to the curb ramp are marked exclusively for Handicap Parking.

As part of the beach access system, these sand ramps are just as important as Carmel's stairways. Given their composition, however, the sand ramps are much more dynamic and therefore require closer monitoring and on-going maintenance. The level and slope of each ramp can change very quickly. While this might not cause problems along most portions of the ramps, abrupt changes in the Handicap Access Sand Ramp adjacent to the Pathway poses a clear hazard.

Portions of the ramp were covered with tan-colored "dirt" rather than Carmel's white beach sand. Over time, some of this material has moved down to cover a portion of the beach itself. This adds to the problem of sand discoloration described in Section 1.0.

General Recommendations

Sand Ramp Maintenance: Primary maintenance of the City's sand ramps should occur during the annual sand redistribution process (Sections 1.0 and 5.2.1). If the amount of available sand is truly limited, it is recommended that maintenance of the City's access sand ramps be a top priority.

Given how rapid changes to the sand level of the Handicap Access Sand Ramp can affect safety, City staff should pay especially close attention to ramp conditions adjacent to the Pathway. At any time of year, if the ramp's sand level is too low, new beach sand should be imported from a nearby area to ensure a smooth transition between the Pathway and ramp. When maintaining Carmel's Handicap Access Sand Ramp, the City should use **only** white sand to cover the ramp.

6.2.1 **Obstructions**

Safe pedestrian travel on beach access sand ramps should not be obstructed.

6.2.1a **Handicap Access Sand Ramp (between 8th & 9th Ave.s)**

- **Condition**: Sand level of ramp is too low and slope appears steeper than originally designed. There is a sudden one-foot drop-off between the Pathway and the top of the sand ramp, making it unsuitable for by people of limited mobility. Low sand level has also exposed PVC irrigation pipe and electric wires from shoreline irrigation system, creating a tripping hazard.

⇨ **Recommended Action**:

- MAINTAINING PROPER SAND LEVEL & SLOPE MUST BE A HIGH PRIORITY:
  - RECONTOUR DURING SAND REDISTRIBUTION OPERATIONS AND WHENEVER NECESSARY;
  - IF NECESSARY, IMPORT SAND FROM OTHER AREAS OF CARMEL BEACH;
- ENSURE THAT IRRIGATION PIPE & WIRES ARE PROTECTED AND ADEQUATELY COVERED;
- USE ONLY WHITE CARMEL BEACH SAND TO COVER RAMP

Fig 6#4

Fig 6#5

Fig 6#6

6.3 BEACH-BLUFF PATHWAY

General Conditions

The Carmel Beach Bluff Pathway is clearly one of the most popular improvements that the City has made to its shoreline. It enables pedestrians to enjoy unparalleled vistas of Carmel Beach and the Bay, and to have easy access to the numerous stairs and two sand ramps that lead down to the beach.

When the Pathway was being designed, the City chose to use decomposed granite (DG) for its "natural" appearance, rather than hard paving. In spite of its many benefits, DG is more susceptible to erosion than harder materials. Over time, the wear-and-tear of pedestrian use can damage the Pathway surface. In addition, uneven DG can allow rainfall to create puddles and mud which make pedestrian travel somewhat difficult, especially for people of limited mobility. And in a few locations, uncontrolled runoff of rain water from the Pathway was observed to erode nearby bluffs and slopes. It is clear that much of the Pathway is in need of new DG resurfacing, leveling and re-contouring.

One portion of the Pathway that deserves special treatment is located north of the 11th Ave. stairway (Section 3.1.1b). Here, the elevation of the original Pathway was lowered for a short distance to help pedestrians avoid a low-hanging tree branch. In past years, the tree died and was removed, but the dip in the Pathway still remains. During this Assessment, rainwater was observed filling the depression and then flowing over the edge of the bluff, causing slope erosion and washing dirt down onto the beach below.

General Recommendations

To ensure an even walking surface, the Pathway should be resurfaced with decomposed granite (DG). The DG recipe recommended in the RHAA plan appears to have held up well, and should be used in any future resurfacing.[6] As with the original laying of the Pathway, care should be taken to match the grade of the Pathway with elements such as curb-access ramps, stairway thresholds, and stone patios.

Any Pathway re-surfacing should be coordinated with changes to landscape plants and guardrails recommended in Section 9. The suggested movement of some guardrails away from the bluff edge (to

[6] The Pathway DG mix used in the original RHAA plan consisted of 95% decomposed granite + 5% cement. The cement was tinted with Davis Concrete Color ("Mesa Bluff" no. 5447), mixed dry at 2 lbs./94 lb. bag of I-II Portland Cement.

ensure stability) may affect which plants are best suited for a given site; additionally, the distance between a guardrail and the Pathway may affect where people sometimes walk and stand. Coordination of Pathway re-surfacing, guardrail re-location and planting, will help avoid conflicting actions.

As described in the General Conditions, above, erosion affecting the bluff north of 11th Ave. is associated with a portion of the Pathway intentionally designed to dip under a low tree branch. With the removal of the tree, the City can now raise the Pathway grade at this site to match the surrounding topography. This should be a component of any resurfacing of this section of Pathway. It will eliminate both the pooling of rainwater and run-off erosion of the adjacent bluff.

6.3.1 **Obstructions**

Safe and convenient travel along the Pathway should not be obstructed.

6.3.1a **9th to 12th Ave.s**

- **Condition**: Uneven Pathway surface susceptible to pooling of water and mud during & after rains, creating hazards for pedestrians. At some locations, these completely cover Pathway width, forcing people to walk on landscape vegetetation.

⇨ **Recommended Action**:

- PATHWAY IN NEED OF RESURFACING, AS PER GENERAL RECOMMENDATIONS.
- ENSURE CROWN-SHAPE TO NEW SURFACE TO ENHANCE PROPER DRAINAGE.

Fig 6#7

Fig 6#8

6.3.2 **Erosion**

Run-off from Pathway should not cause bluff erosion.
(see Section 3.1)

6.3.3 **Handicap Accessibility**

Safe and convenient travel along the Pathway should not be obstructed.

All interfaces between the pathway, stone patios, stairway thresholds, and curb-access ramps were smooth (transition equaled less than ½ inch). However, as noted above (Section 6.3.1a), rain- and mud-puddles on the Pathway during and after storms, and the poor condition of the Handicap Access Sand Ramp (Section 6.2.1a), create difficulties for people of limited mobility – these should be remedied.

6.4 **PEDESTRIAN ACCESSWAYS/DRAINAGE EASEMENTS** (*see* Section 4.3)

Section 6.0 – SHORELINE ACCESS

COMMENTS & RESPONSES

_____

7.0 PUBLIC SUPPORT FACILITIES AND AMENITIES

7.1 RESTROOMS

General Conditions

Public restroom at the Ocean Ave./Del Mar parking lot and the new facility at Santa Lucia Ave. were clean and in excellent working order. The bluffs above the Santa Lucia restroom (both north and south of stairway) are likely to attract bluff-cutting foot traffic.

General Recommendations

An important key to protecting the bluffs above the new Santa Lucia Ave. restroom will be the elimination of unauthorized bluff-cut trails. This is discussed in more detail in Section 9.2.2c.

7.2 WASH-OFF STATIONS

General Conditions

With one exception noted below, the wash-off stations were in excellent condition; faucets and drains were operating as designed.

7.2.1a 8th Ave. Stairway

- **Condition**: Faucet is not connected to water system. Previously reported: CSA Fall 2001, '02 and '03.

⇨ **Recommended Action**:

- CONNECT WASH-OFF STATION TO WATER SYSTEM.

Fig 7#1

7.3 TRASH/RECYCLING CONTAINER ENCLOSURES

7.3.1 Secure Enclosure

All trash enclosures should be convenient and kept clean for public use and trash/recycling services.

7.3.1a Ocean Ave./Del Mar Parking Lot

- **Condition**: All trash/recycling containers in this area are uncovered for easy public use, but these open containers invite feeding by gulls & crows. NOTE: All trash/recycling containers along the **Pathway** are covered, but appear to be well-used by public.

⇨**Recommended Action**:

- CONSIDER USING CONTAINERS THAT DISCOURAGE FEEDING BY WILDLIFE;
  - ADD LIDS WITH HOLES FOR TRASH/RECYCLING
  - WORK WITH WASTE-HAULER TO DEVELOP EFFECTIVE REPLACEMENT CONTAINERS THROUGHOUT SHORELINE AREA

Fig 7#2

7.3.1b **13th Ave. Stairway Patio**

- **Condition**: Extra trash & recycling carts placed in front of enclosure, replacing large green dumpster which had been there for more than a year.

⇨**Recommended Action**:

- INSTALL 2ND STONE ENCLOSURE AT SITE OF PREVIOUS DUMPSTER
  - SHOULD BE LARGE ENOUGH TO HOLD ADEQUATE NUMBER OF SMALLER TRASH/RECYCLING CONTAINERS TO HANDLE VOLUME GENERATED BY VISITORS AT THIS SITE

Fig 7#3

Fig 7#4

7.4 BENCHES

7.4.1 General

All benches along the shoreline were found to be in excellent condition.

7.5 BACKFLOW PREVENTER

7.5.1 Pathway South of 13th Ave.

- **Condition**: Backflow preventer installed adjacent to Pathway with shut-off valves easily in-reach.

⇨**Recommended Action**: CONSIDER SURROUNDING WITH STONE OR WOOD ENCLOSURE TO DETER VANDALISM.

Fig 7#5

Section 7.0 – PUBLIC FACILITIES & AMENITIES

COMMENTS & RESPONSES

8.0 SIGNAGE

General Conditions

Signs along the City's shoreline are meant to inform and, in some cases, warn, the public. Most of these are located along the Pathway, on/near beach access stairways and ramps, or on the Pedestrian Access/Drainage Easements that connect San Antonio Ave. with Scenic Rd. For years, the City has sought to have enough signs to notify shoreline users of beach conditions and municipal regulations, without creating visual clutter.

During this current Assessment, it became clear that nearly all signs along the Carmel shoreline are in need of replacement. Many show the results of exposure to weathering, which is harsher than conditions encountered at other City parks. Many signs are marred by rusting from fastening screws, while others are cracked or partially broken. And, like the guardrails discussed in Section 9.2, several ACCESS signs are mounted on posts that have been severely decayed by weathering – they will soon fail.

In addition to problems with the signs themselves, a few of the City's information/warning signs are unreadable because they have become overgrown by surrounding plants. And the sign affixed onto the trash enclosure at the 8th Ave. stairway, which informs about fires, alcohol and sleeping on the beach, is almost totally buried under sand and dirt. In each of these cases, **important information cannot be communicated to the public because regular maintenance has not kept these signs clear.**

General Recommendations

The City has authorized funds for a new Waterfront Sign Program. During the design stage of the Beach Bluff Pathway Project (1980s), the City's Beach Task Force, landscape designers and City staff. deliberated extensively on the subject of signage. The records of those discussions and their resulting recommendations would be valuable to review while the City contemplates its current sign program.

Some of the issues considered during that original Pathway project include:

- Location – placing signs where they are most likely to be seen by shoreline visitors (different signs may require different placement – some signs will be most effective facing toward the Pathway, while others should face toward the beach);
- Visibility – keeping adjacent vegetation trimmed so that signs are not obstructed; this will require regular monitoring as well as trimming. The City should also strive to prevent its shoreline information signs from being buried by dirt or sand, as observed on the side of the trash/recycling enclosure at Scenic Rd. and 8th Ave.
- Material – given the harsh conditions that characterize the shoreline, choice of proper materials for sign construction, including posts and fasteners, will be critical;
- Wording - this is of utmost importance. Signs that have too much information are often ignored by the public, but signs that are not properly worded might not be enforceable by the police. Therefore, the wording of signs that inform about City regulations pertaining to fires, bluff-cutting, alcohol and other issues should be cleared with the Carmel Police Dept. before adoption. This should also apply to sign location.

Those involved in developing new shoreline signs for the City should also become familiar with the signage program of the California Dept. of Parks and Recreation (CDPR). Nearly all State Parks within 50 miles of Carmel are also located along the ocean's edge, and are thus exposed to the same human impacts and natural forces that are encountered along our local shoreline. Many elements of CDPR's signs could be applied to Carmel's new sign program, including materials, colors, wording and use of internationally understood symbols.

8.1 **VISIBILITY** (Obscured/ Unreadable/Damaged Signs)
Official signs should be kept in good repair and regularly maintained to ensure that they are readable.

8.1.1a **North Dunes**

- **Condition**: Beach information sign obscured by overgrown vegetation

⇨**Recommended Action**: KEEP VEGETATION TRIMMED SO THAT SIGN WILL BE VISIBLE TO THE PUBLIC.

Fig 8#1

8.1.1b **Wash-off Station at 8th Ave. stairway**

- **Condition**: Beach information sign mostly buried under sand/dirt

⇨**Recommended Action**: MOVE SIGN TO NEARBY LOCATION WHERE IT WILL BE VISIBLE TO THE PUBLIC

Fig 8#2

Fig 8#3

8.1.1b **Trash Enclosure at 11th Ave. (south) stairway**

- **Condition**: Beach information sign badly damaged. (NOTE: reported in previous Assessments)

⇨**Recommended Action**: REPLACE ALL INADEQUATE SIGNS, AS PART OF WATERFRONT SIGN PROGRAM

Fig 8#4

Section 8.0 - SIGNAGE

COMMENTS & RESPONSES

9.0 SHORELINE LANDSCAPE

9.1 PATHWAY VEGETATION

General Conditions

Landscape plants are clearly an important component of the Carmel Beach Bluff Pathway. In addition to their aesthetic value, plants play an important role in discouraging the creation and use of erosion-generating bluff-cuts by people who take shortcuts to access the beach.

The plants used in the original Pathway plan were selected by landscape designers at Royston, Hanamoto, Alley and Abey (RHAA), with direction from the Carmel Beach Task Force and City staff. These species met several important criteria, including low water-use, low maintenance, and ability to thrive in our "Mediterranean" climate; in addition, their flowers and leaves blended well the coastal landscape theme.

Today, almost none of the species from the original RHAA shoreline landscape plan remain at the site. At many locations, the original species have been displaced by more prosaic plants such as New Zealand spinach (*Tetragonia* sp.), mirror plant (*Coprosma* sp.) and acacia (*Acacia* sp.). At other locations, planter areas that once held landscape plants are now covered by bark and chips, or just bare ground.

This move away from the original landscape species had been noted during the earliest Carmel Shoreline Assessments (2001 and 2002). At some locations, decisions to introduce new plants were made by City staff not familiar with the RHAA plan. In other cases, aggressive exotic plants already growing along the shoreline, such as ice plant (*Carpobrotus* sp.) and acacia, were allowed to out-compete the landscape plants. During the current Assessment, as in previous years, some fast-growing species (i.e. ice plant) were observed to have partially covered important storm water outfalls, while others have hidden some of the City's shoreline information signs.

The original Beach Bluff Pathway and landscape received much public and professional acclaim, but it has not been maintained over the years. The reasons are multifaceted but likely include:

- funding
- staffing
- training
- lack of understanding of the landscape plan; and
- lack of appreciation of the many important roles that the landscape plays in the protection and public enjoyment of the shoreline.

General Recommendations

The Beach Bluff Pathway plan that was approved by the City of Carmel in the 1980s was ambitious and set a high standard – it is hoped that the City will live up to this standard.

The first step toward recapturing the qualities of the original landscape plan should be to make an honest appraisal of lessons learned:[7]

- What worked and what didn't?
- Did any of the original plants prove ill-suited for conditions at the site? Why?
- Are there any new species that should be added to the list of acceptable plants?
- What role did problems with the irrigation system (including pipes, fixtures, controllers and underground water tank) play?
- What level of staff and/or contractors will be required to maintain the shoreline and its landscape?
- What level of funding will be required to maintain the shoreline and its landscape?
- What would an effective management program look like?
- What administrative and training changes will be needed to ensure that approved plans and programs will be followed by staff?

Based on the answers to these and other related questions, solutions need to be developed to begin the next step:

- **re-landscaping a limited number of high-visibility sites along the Pathway.**

[7] This process might best be accomplished by the Forest and Beach Commission, with input from City Staff.

Experience gained at these sites will help determine the level of effort and funding that will be required to plant and maintain a viable and appropriate landscape. This information will be valuable in expanding the landscape to other locations along the shoreline. Such a process could take years, but the results will be a landscape that enhances Carmel's shoreline and public's enjoyment.

9.1.1 **Plant Selection**

9.1.1a **Pathway (Total Length, from 8th Ave. to South City Limit)**

- **Condition**: Nearly all landscape plants now growing along the Pathway, including mirror plant (*Coprosma* sp.), New Zealand Spinach (*Tetragonia* sp.) and acacia, were not components of the original approved species list.

⇨**Recommended Action**:

- DEVELOP PROGRAM TO REVITALIZE PATHWAY/BLUFF LANDSCAPE AS PER GENERAL RECOMMENDATIONS LISTED ABOVE;
- REVIEW RHAA PLAN TO UNDERSTAND ORIGINAL DESIGN INTENT;
- SET CRITERIA TO APPRAISE ALL PLANTS
  - ENSURE THAT DEVIATIONS FROM PLAN ARE APPROVED BY FOREST & BEACH COMMISSION;
- BEGIN RE-INTRODUCING APPROVED PLANTS IN AREAS SELECTED TO MEET THESE CRITERIA:
  - MAKE A SIGNIFICANT VISUAL IMPACT ON THE PUBLIC; AND/OR
  - PROVIDE PROTECTION FOR AN IMPORTANT ASPECT OF THE PATHWAY/BLUFF LANDSCAPE

9.1.2 **Poorly-trimmed Vegetation**

9.1.2a **Pathway at Sand Ramp (between 8th and 9th Ave.s)**

- **Condition**: Malva Rosa (*Lavatera assurgentiflora*) encroaching on public bench.

⇨ **Recommended Action**:

- TRIM TO KEEP BENCH CLEAR OF FOLIAGE;
- PRUNE TO MAINTAIN HEIGHT AND WIDTH APPROPRIATE FOR EACH SITE
  - AVOID ALLOWING PLANTS TO BLOCK VIEWS OF OCEAN;
  - USE "DROP-CROTCH" PRUNING TO MAINTAIN NATURAL "INFORMAL" APPEARANCE;
- REMOVE SELECTED PLANTS TO AVOID AN UNBROKEN WALL OF VEGETATION.

Fig 9#1

9.1.2b **Pathway between 8th & 9th Ave.s (near Handicap Access Ramp)**

- **Condition**: Acacia trimmed into solid cube-shaped hedge that blocks pedestrian views of ocean.

⇨ **Recommended Action**: MAINTINING AN ACACIA HEDGE AT THIS SITE MIGHT BE AN ACCEPTABLE METHOD OF KEEPING PEDESTRIANS ON THE PATHWAY, BUT THIS COULD BE ACHIEVED WITH A LOWER HEDGE THAT DOES NOT OBSCURE VIEWS, OR WITH A GUARDRAIL.

IF ACACIAS ARE RETAINED:

- PRUNE TO MAINTAIN HEIGHT AND WIDTH APPROPRIATE FOR EACH SITE
  - AVOID ALLOWING PLANTS TO BLOCK VIEWS OF OCEAN;
  - USE "DROP-CROTCH" PRUNING TO MAINTAIN NATURAL "INFORMAL" APPEARANCE;
  - REMOVE SELECTED PLANTS TO AVOID AN UNBROKEN WALL OF VEGETATION.

⇨ **Alternative Recommended Action**:

- DEVELOP & IMPLEMENT PLAN TO RE-LANDSCAPE PATHWAY BETWEEN 8TH AND 9TH AVE.S;
  - THIS SHOULD BE ONE OF THE SITES SELECTED FOR LANDSCAPE REVITALIZATION, AS PER GENERAL RECOMMENDATIONS, ABOVE;
  - CONSIDER REPLACING WITH PLANTS FROM APPROVED PATHWAY LANDSCAPE LIST;
  - BECAUSE SAND IS ADJACENT TO THE ROAD AT THIS SITE, CONSIDER OPPORTUNITIES TO USE NATIVE DUNE GRASS *Leymus* sp.

Fig 9#2

9.1.2c **Bluff just north of 9th Ave. stairs**

- **Condition**: Large Cypress tree partially obscured by overgrown acacias.

⇨ **Recommended Action**:

- REMOVE ACACIAS TO SHOWCASE CYPRESS;
- DEVELOP & IMPLEMENT PLAN TO RE-LANDSCAPE SITE
  - THIS SHOULD BE ONE OF THE SITES SELECTED FOR LANDSCAPE REVITALIZATION, AS PER GENERAL RECOMMENDATIONS, ABOVE;
- AS PART OF ANY LANDSCAPE PLAN, REVEGETATE & REHABILITATE ANY BLUFF-CUTS.

Fig 9#3

9.1.2d **Pathway near 10th Ave. Stairway (north)**

- **Condition**: Mirror plants (*Coprosma* sp.) trimmed into cube-shaped hedge.

⇨ **Recommended Action**:

- RE-ASSESS USE OF MIRROR PLANTS, AS PER GENERAL RECOMMENDATIONS LISTED ABOVE;
- USE "DROP-CROTCH" TRIMMING TO MAINTAIN NATURAL "INFORMAL" APPEARANCE.

Fig 9#4

9.1.2e **Pathway just north of Martin Way**

- **Condition**: Mirror plant (*Coprosoma* sp.) trimmed into solid cube-shaped hedge that blocks pedestrian views of ocean.

⇨ **Recommended Action**: MAINTINING A MIRROR PLANT HEDGE AT THIS SITE MIGHT BE ACCEPTABLE, GIVEN ITS PROXIMITY TO STEEP DROP-OFF. BUT PEDESTRIAN SAFETY COULD BE ACHIEVED WITH A LOWER HEDGE THAT DOES NOT COMPLETELY OBSCURE VIEWS OR WITH A GUARDRAIL.

- PRUNE TO MAINTAIN HEIGHT AND WIDTH APPROPRIATE FOR EACH SITE
  - AVOID ALLOWING PLANTS TO BLOCK VIEWS OF OCEAN;
  - USE "DROP-CROTCH" PRUNING TO MAINTAIN NATURAL "INFORMAL" APPEARANCE;
  - THIN BY REMOVING SELECTED PLANTS TO AVOID AN UNBROKEN WALL OF VEGETATION;
- CONSIDER USING PLANTS FROM APPROVED LIST.

Fig 9#5

9.1.3 **Bare Planters Areas**

9.1.3a **Pathway from 8th Ave. to South City Limit**

- **Condition**: Many planter areas are now devoid of plants. Some are covered with chips and bark, others are bare. This is a major deviation from the City's approved landscape plan.

⇨ **Recommended Action**:

- DEVELOP PROGRAM TO REVITALIZE PATHWAY/BLUFF LANDSCAPE AS PER GENERAL RECOMMENDATIONS LISTED ABOVE;
- REVIEW RHAA PLAN TO UNDERSTAND ORIGINAL DESIGN INTENT;
- SET CRITERIA TO APPRAISE ALL PLANTS;
  - ENSURE THAT DEVIATIONS FROM PLAN ARE APPROVED BY FOREST & BEACH COMMISSION;
- BEGIN RE-INTRODUCING APPROVED PLANTS IN AREAS SELECTED TO MEET THESE CRITERIA:
  - MAKE A SIGNIFICANT VISUAL IMPACT ON THE PUBLIC; AND/OR
  - PROVIDE PROTECTION FOR AN IMPORTANT ASPECT OF THE PATHWAY/BLUFF LANDSCAPE
- USE "DROP-CROTCH" TRIMMING TO MAINTAIN NATURAL "INFORMAL" APPEARANCE.

Fig 9#6

Fig 9#7

9.2 PATHWAY GUARDRAILS/FENCES

General Conditions

Carmel's shoreline landscape consists of more than plants. For the public's safety and to help protect Carmel's fragile shoreline slopes and landscape, the City installed wooden guardrails at selected sites along the Pathway. During the current Assessment, each section of guardrail was checked for stability. Several sections were found to have loose rails and/or decayed/wobbly posts. While the guardrails were never intended to take the place of fences, the combination of loose or decayed rails, unstable posts and a steep bluff creates unsafe conditions.

General Recommendations

- Unstable guardrails and support posts should be **promptly** replaced, possibly with more substantial, durable pressure-treated 8x8 posts already in use along the Pathway between 9th & 10th Ave.s and between Santa Lucia Ave. & Martin Way;
- At locations where guardrails have been weakened due to bluff erosion, it might be necessary to first stabilize the bluff, or to relocate the guardrail to a more stable location, perhaps closer to the Pathway (making more space available for landscape plants);
- Some guardrails built or repaired after completion of the Beach Bluff Pathway were fastened with nails. The original Pathway design specifications called for using bolts for all wood structures. This should be honored.

9.2.1 **Guardrail Repair/Replacement**

9.2.1a **Pathway just south of 9th Ave. Stairway**

- **Condition**: Guardrail posts are wobbly.

Fig 9#8

9.2.1b **Pathway between 11th & 12th Ave.s**

- **Condition**: Access-sign post badly decayed.

Fig 9#9

- **Condition**: Guardrails not securely fastened to post.

Replace nails with bolts

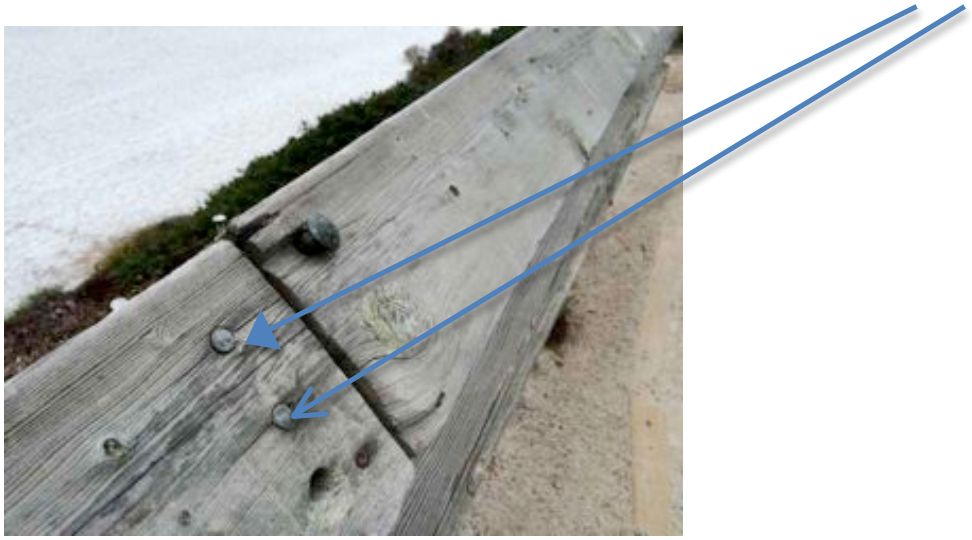

Fig 9#10

- **Condition**: Guardrails badly decayed and not securely fastened.

Fig 9#11

Fig 9#12

9.2.1e **Pathway between 12th & 13th Ave.s**

- **Condition**: Access-sign post badly decayed.

Fig 9#13

9.2.1d **Pathway north of Santa Lucia Ave.**

- **Condition**: Access-sign post badly decayed.

Fig 9#14

⇨**Recommended Action for 8.2.1**:

- REPAIR OR REPLACE AS PER GENERAL RECOMMENDATIONS LISTED ABOVE;
- IF GUARDRAILS & POSTS ARE CLOSE TO BLUFF EDGE, CONSIDER MOVING CLOSER TO PATHWAY (AND ADDING PLANTS TO SEAWARD SIDE).
- USE BOLTS INSTEAD OF NAILS IN ALL WOOD STRUCTURES ALONG SHORELINE, AS PER ORIGINAL DESIGN.

9.2.2 **New Guardrails Needed**

9.2.2a **Pathway just north of 9th Ave. Stairway**

- **Condition**: New guardrail needed to protect bluff

⇨**Recommended Action**:
- INSTALL AS PER GENERAL RECOMMENDATIONS LISTED ABOVE

Fig 9#15

9.2.2b **Pathway between 13th & Santa Lucia Ave.s**

- **Condition**: Sections of green plastic fencing have been installed along portions of the bluff. Some of these "temporary" fences have been in use for more than two years. They are unsightly and conflict with the original Pathway design intent.

⇨**Recommended Action**: REMOVE AND REPLACE WITH NEW GUARDRAILS AS PER GENERAL RECOMMENDATIONS LISTED ABOVE

Fig 9#16

Fig 9#17

9.2.2c **Pathway above new restroom and north of Santa Lucia Ave. stairs**

- **Condition**: New restroom will attract bluff-cutting foot traffic.

⇨**Recommended Action**:

TO DISCOURAGE SHORT CUTS AND PROTECT BLUFFS,

- INSTALL NEW GUARDRAILS AS PER GENERAL RECOMMENDATIONS LISTED ABOVE;
- ADD APPROPRIATE PLANTS, BOULDERS, ETC., AS PER GENERAL RECOMMENDATIONS LISTED IN Section 9.1.1;
- INSTALL WARNING SIGNS PROHIBITING BLUFF-CUTTING TO PREVENT BLUFF EROSION (COORDINATE WITH CARMEL POLICE DEPT);
- ENFORCE SECTION 12.32.165 OF THE CARMEL MUNICIPAL CODE WHICH PROHIBITS BLUFF CUTTING;
- INSTALL GALVANIZED EYE-ROD AND CABLE TO PREVENT FOOT TRAFFIC AROUND SOUTH SIDE OF RESTROOM

Fig 9#18

Fig 9#19

Section 9.0 – SHORELINE LANDSCAPE

COMMENTS & RESPONSES

SHORELINE ISSUES TO BE CONSIDERED

In addition to specific conditions described in this Assessment, there are some issues that should also be considered by the City; these are not yet issues of immediate concern, but should become part of the community's conversation about its shoreline:

1. **Nighttime Beach Use**

   In various sections of this Assessment, there are references to conditions on stairways and on the beach that become more hazardous when encountered at night, for example:
   - when seawater is washing over the lower steps of a stairway;
   - when high tides have brought a foot or more of water to the stairway base; or
   - when a storm water outfall discharge has scoured a channel or pit in the beach sand.

   Each of these conditions would be relatively easy to avoid if encountered during daylight hours, but could prove hazardous at night.

   Carmel Beach is open to public use during both day and night hours. With few exceptions (alcohol use, fires, camping/sleeping, and underage curfew), the City has very few rules about nighttime beach usage. Yet, some conditions pose more danger at night. Common sense clearly dictates that people should be more cautious when walking on the beach in the dark, or during/just after storms, but does the City have a greater responsibility when it comes to protecting those who visit the beach at night? This would be worth discussing during a Forest and Beach Commission meeting.

2. **Artificial Rock**

   When most people think about Carmel Beach, they likely envision beautiful white sand and sparking blue water. These are undeniably the key natural elements that attract both visitors and residents to our shoreline. But there are artificial components that are necessary to protect the shoreline and its visitors. Included among these are stairways, seawalls, storm water outfalls, and rock revetments. With the exception of the last element, the rest of these were designed to remain in public view throughout the year.[8]

   As described in Section 5.1, when waves strike locations where a hard granite shoreline wall (either seawall or retaining wall) has been built adjacent to softer

[8] As mentioned in Section 5.2, if properly covered with sand, the revetments can stay out of sight for most seasons.

sandstone, an ever-widening gap will begin to form between the two. This is due to a process, referred to in this Assessment as **selective erosion**, in which less-resistant material (sandstone) erodes at a faster rate than the neighboring granite. As the gap continues to erode, seawater will gain access behind the wall, eventually threatening the whole structure.

Several years ago, along the beach between 13th Ave. and Santa Lucia, the City repaired a gap between a seawall and the adjacent sandstone; its subsequent patch seems to be holding, but will eventually widen as the sandstone continues to erode.

Gap in seawall between 13th & Santa Lucia (2004)

Repaired gap (2009)

All of Carmel's shoreline walls, composed of granite and mortar, and founded in softer rock, will eventually experience selective erosion. By remaining vigilant, the City can plug gaps and strengthen footings before long-term damage occurs. However, selective erosion of the footings of Carmel's seawalls can only be observed, and addressed, when the sand level is low, an event that occurs during severe winter conditions.

Given these forces, the City would benefit from any alternative that continues to provide shoreline protection, but without the maintenance associated with selective erosion.

Over the past few decades, new materials have been developed that might help solve this problem. At locations along the shore, to the north in Pebble Beach and southward below Carmel Point, artificial rock that looks strikingly similar to the native granite outcroppings, has been installed for shoreline protection. If this material proves effective, it might be feasible to use artificial rock as a cap over sandstone located adjacent to seawalls and retaining walls.

There is still much more to be understood about this alternative, especially regarding how artificial rock holds up to ocean forces over the long term, but it is well worth further investigation. The City is urged to seriously consider this

alternative, beginning with consultation with qualified shoreline protection experts.

Artificial Rock

AUTHORS

Biologist **David Shonman** has protected shorelines and coastal habitats for over 30 years. He has conducted numerous studies of coastal systems, restored coastal dunes, protected endangered and threatened species, and coordinated repairs to storm-damaged shorelines in central and northern California. In 1983, he worked with Assistant City Administrator Greg D'Ambrosio to coordinate the emergency repairs to Carmel Beach (Phase I - Carmel Beach Rehabilitation Project). During the next five years, he helped coordinate the design and implementation of Phase II, which included the Scenic Road Pathway, landscaping and beach access stairs. David prepared the Carmel's first Emergency Shoreline Protection manual; he also developed and carried out a series of shoreline assessments designed to identify and correct vulnerable portions of Carmel shoreline from coastal erosion. In 2003, he was the primary author of the Carmel Shoreline Management Plan, which is now part of the City's Local Coastal Program.

Greg D'Ambrosio served as Carmel Forester from 1970 to 1983. During this time, he was responsible for the City's forests and parks, including Carmel Beach. In 1985, he became Assistant City Administrator, and played key roles in the City's Phase I and Phase II repairs to the Carmel shoreline after the 1982/83 El Niño storms. Greg focused on protecting and enhancing the Carmel shoreline up through his retirement in 2005; he continues in this task as an active Carmel citizen.

CITY OF CARMEL-BY-THE-SEA

Forest and Beach Commission Report

November 12, 2015

To: Chair Refuerzo and Forest & Beach Commissioners

From: Mike Branson, City Forester

Subject: Forest and Beach Commission-Recommended Projects for Carmel's Centennial

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During the October 2015 meeting, the Commission selected two projects to be included in the City's Centennial program:

1. replacement of the Carmel holiday tree at Junipero and Ocean Avenues, and
2. assisting staff and the City's landscape architect in the restoration scope and design for four segments of landscaping along the Scenic Road Pathway.

The Commission recommended that sub-committees be convened for each of these projects. The appointment of two commissioners to each sub-committee would be by action of the Commission Chair.

The Scenic Road Pathway landscape renovation was identified as part of the shoreline assessment, and work by Scott Hall, the City's landscape architect, has recently commenced. Mr. Hall will be developing a restoration design for five or six areas, and has already identified candidate areas in consultation with staff and David Shonman. The Commission sub-committee will work with Mr. Hall and City staff to refine proposed restoration plans and provide input on measures to restore bluff cut areas along the path. Mr. Hall's scope of work noting the six candidate sites is attached as Exhibit A.

There are several alternatives for the City holiday tree replacement project:

1. Replacing the current tree with a new living tree in the same location.
2. Selecting another existing tree in the vicinity of the current tree, either in Devendorf Park or along the nearby streets, to be the new holiday tree.
3. Selecting a new area to plant a new holiday tree, either in Devendorf Park of along the nearby streets.
4. Selecting an area for the annual installation of a large cut tree that would be the holiday tree.

The City Council is requesting that each Board or Commission submit their event/program/idea with a proposed budget for consideration by the City Council no later than December 11, 2015, so that it can be placed on the January 2016 Agenda. As such, the sub-committee would need to develop a recommendation on the preferred alternative in advance of the next meeting of the Forest and Beach Commission on December 10, 2015, so that the full Commission can take

action. While Alternative 2 would not require additional funding, the other three alternatives would have costs, and the sub-committee, with assistance from City staff, should try to develop cost estimates for these three alternatives to meet the Council's request. The City Council will decide what will be budgeted for the event.

ATTACHMENT:

Exhibit A – Hall Landscaping Scope of Work

August 24, 2015

City of Carmel-by-the-Sea
Attn. Robert A. Mullane, AICP
Public Works Director
City of Carmel-by-the-Sea
P.O. Drawer G
Carmel, Ca 93921

Re. Scenic Road Beach Walk Landscape Renovation

Dear Rob,

The following is a revision based upon our phone discussion last week in review of the August 4th proposal to the City of Carmel to allow sufficient time for scope of design and meetings. Additionally as little was discovered digitized in the City Engineer's files for Scenic Road and the general design area, my goal is to update the original 1985 Royston landscape plans into this format.

The Scenic Avenue Beach Walk defines the single largest City Park holding. The path has been enjoyed as access and views by local residents and visitors for years. It is the crown jewel of the City. The walk, plantings and general shoreline elements have deteriorated greatly over nearly 25 years. Both coastal biologist David Shonman and local community activist Greg D'Ambrosio have followed up from discussions with you to ask me to send along a design proposal.

The approach contains an updated baseline plan from which to build upon the existing 1985 landscape design to help identify the existing irrigation system condition from Eight Avenue to Martin Way at the South end of Carmel Beach. Five identified areas are suggested to be renovated in this agreement will also include new updated irrigation design. The success for any landscape project is a working & efficient water delivery system along with a structured maintenance program.

The idea here is that Five Easy locations as derived from the Shonman Beach Assessment report from fall 2014 provides a guide to specific areas which may be modeled for the remainder for the entire path as the City fully develops the renovation of the beach walk in terms of monies and maintenance.

Irrigation is the key to the planting startups and later success. This year will dictate how much planting may be accomplished if drought conditions persist. The Public Works staff needs a road map of what exists and a diagram how to go forward to update future possibilities. A lot has been improved in three decades for efficient water delivery since the original design. To start I will need the spring and tank verification, i.e. current flow rates from the Del Mar location. It is my understanding that past history tank fill rates in wet years of 60 gpm and dry years yielded 4-5 gpm. The As-Built of the 25,000 gallon tank installed five to seven years ago along with the original 1985 Irrigation line drawing from the tank origin to Martin Way and any staff notes or documentation will be needed to complete an accurate assessment from which to build a solid plan.

H a l l L a n d s c a p e D e s i g n 582 Lighthouse Ave. Suite # 4
Pacific Grove , CA 93950 (831) 655-3808 e-mail scott@halllandscape. #3405

City of Carmel-by-the-Sea
Attn. Robert A. Mullane, AICP
Public Works Director

Re. Scenic Road Beach Walk Landscape Renovation

In the Agreement the five areas which are the standout model landscape areas for proposing landscape re-planting, irrigation, signage and review of wall revetments and slope conditions are defined. Any geotechnical engineering, soils reports or general engineering is beyond the scope of these design services.

An unanswered questions in my mind after I passed along the route the other day are the street planters. There are a few street planters which in some cases trees should dominate and not add plant competition. The remaining ones are not included in the proposal at this time.

To understand the extent of each of the five zones for design they are defined from landmarks along the bluff and path. While I believe the important initial areas are to be shown it would be smart to have an initial scope meeting once the base plan digitizing is complete. A group walk the length of the Beach Pathway is important. In addition for the history and shoreline concerns which overlaps my proposed work, I would ask that you and I along with David Shonman and Greg D'Ambrosio accompany and City staff who will be involved accompany us.

Meetings, duration and how many are always tricky. The itemization will serve as a realistic guideline. The billing is an hourly per my office rates for tasks accomplished. The sums given for meetings and design are estimates to track and help monitor the design work. An explanation on tasks accomplished each week are part of the billing summation.

I look forward to working with you.
Best regards,
Scott

H a l l L a n d s c a p e D e s i g n 582 Lighthouse Ave. Suite # 4
Pacific Grove , CA 93950 (831) 655-3808 e-mail scott@halllandscape. #3405

Scott Hall, landscape architect
Hall Landscape Design

Work Order Agreement

August 03, 2015

City of Carmel-by-the-Sea
Robert A. Mullane, AICP
Public Works Director
City of Carmel-by-the-Sea
P.O. Drawer G
Carmel, Ca 93921

Project: Beach Walk along Scenic Renovation Corridor –
Eight Avenue south to Martin Way

Project Scope: Landscape Plans / mobilization - plan configuration digitized – design
Based upon the City of Carmel's As-Built 1985 Beach Walkway Plans

1. Meetings with City Staff
2. Five locations / solutions along the path
3. Irrigation As-Built for the entire existing system and report for future water delivery
4. Plan review meetings with City Staff, City Commissions & City Council

I. Design Mobilization
   A. Project Mobilization tasks
      a. Convert City landscape plans to AutoCAD format from 1985 Scenic Beach Pathway Plans & As-Built
      b. Field review and adjust to site changes for base plan current information
      c. Draft changes and convert to overall drawing

   B. Landscape Scope along Scenic Identifies & represents (5) locations as identified with the City Coastal Biologist; but is subject to discussion and review to modify with City Staff.
      a. Locations for review proposed new planting, slope protection & signage:
         1. Eight Avenue to Ninth Avenue
         2. North Tenth Avenue to 100 ft. south of 10th stairway
         3. Twelfth Avenue south along pathway
         4. Breached slope at Thirteenth Ave down slope recommendations failing wall
         5. Renovate planting & grading at Santa Lucia restroom building / stairway
         6. Subset of additional consideration not included in the contract are the street planters Eight Avenue to Martin Way

      b. Irrigation: map and verify all zones from Ocean Avenue (Del Mar) water storage south to end of the original irrigation design 1985 at or near Martin Way.
         City to supply the original 1985 Royston Plans & installation contractor's As-Built drawings & any City staff notes.
         1. Original plan valve locations & evaluate with written report / plan notes
         2. Overlay the five (5) new landscape renovated areas listed above I-B with updated new efficient irrigation delivery zones as required for planting

Project: Beach Walk along Scenic Renovation Corridor –
Eight Avenue south to Martin Way

II. Meetings

A. Allotted time with City Coastal Biologist …. 5 hours
B. Meetings with City Director of Public Works 7 hours / updates
C. City Public meeting including two (2) Beach & Forestry Commission 6 hours; one (1) Planning Commission meeting - 4 hours & Possible one (1) City Council meeting – 3 hours

III. Reimbursement & Schedule of Fees

A. Reproductions to be billed separately from the agreement
   1. Scans Plots for review, presentation and etc.
   2. Engineering
B. Office Fee Schedule
   - Principal Design + Meetings ……$90 hourly
   - Principal Production…….. $80 hourly
   - Staff / Design……. $65 hourly

IV. If the above scope of design services is acceptable as defined in items I, II, & III Please sign here or use this to generate a City agreement to be signed.

The purpose of this estimate is to act as a point from which to bill against for Design services for the City-of-Carmel-by-the-Sea Scenic Pathway as defined above.

1. Landscape Renovation & Report …….. $17,150
2. Irrigation Review & As Build along Scenic ……$ 5,220
3. Meeting time estimate ……... ……. $ 2,250

Total aggregate cost ……$24,620

Signed by:

Rob Mullane _____
Director Public Works date:

CITY OF CARMEL-BY-THE-SEA

Forest and Beach Commission Report

November 12, 2015

To: Chair Refuerzo and Forest & Beach Commissioners

From: Mike Branson, City Forester

Subject: Friends of Carmel Forest-Recommended Project for Carmel's Centennial

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Maria Sutherland, President of the Friends of the Carmel Forest, has been invited to present an overview of the project that they recommend be included in the City's Centennial Celebration. Ms. Sutherland will provide a summary of their project at the meeting. If any supporting materials are available in advance of the meeting, these will be separately transmitted.

It is anticipated that the implementation of this project will be largely the role of the FoCF organization; however, the level of City staff assistance should be discussed as part of this item, as well as any desired input from the Commission.

CITY OF CARMEL-BY-THE-SEA

Forest and Beach Commission Report

November 12, 2015

To: Chair Refuerzo and Forest & Beach Commissioners

From: Rob Mullane, AICP, Public Works Director

Subject: Public Works Department Work Plan for 2016

Recommendation:

Review and comment on the Public Works Department 2016 Work-Plan.

Background and Discussion:

Each year, the City Council develops a set of Key Initiatives for City staff to work on over the course of the calendar year. The setting of these Key Initiatives over the last few years has resulted in a very ambitious list of priority projects, and while staff has made progress on several of the projects, the City organization has had significant turmoil and turn-over, which has precluded substantial progress on many of the Key Initiatives. Moreover, City departments, including the Public Works Department, have key vacancies and have been understaffed for the last several years.

It is anticipated that this year's focus for the City Council in developing Key Initiatives will be on staffing up and training new staff, and that as a result, a shorter and more realistically-achieved list of Key Initiatives will be developed. In addition, there will also be a focus on the City's Centennial and the events and projects associated with this year-long celebration. As such, staff encourages the Commission to participate in the workshops to develop the City's Key Initiatives for 2016, but staff is not seeking a recommendation from the Commission on specific projects for the Council's consideration (beyond the two Centennial projects that the Commission has already recommended).

Instead, staff is seeking input from the Commission on the departmental work-plan for 2016, and this is attached for Commission review and comment. The work-plan includes an overview of the major accomplishments for 2015, followed by operational priorities, and then a list of division-specific future projects and initiatives. These future projects and initiatives are grouped into high-priority items (those that are anticipated to be completed in the next 6 months), medium priority items (those to be completed in a 6- to 18-month timeframe), and longer-term priorities (those that will not be initiated or have substantial progress until 18 months or more from now).

While the plan focuses on the next 12-18 months, it includes items are likely to be addressed beyond that: in the 18-month to 36-month time-frame.

Grouping the future projects and initiatives by priority is important, as it reflects the realities of our current staffing and resource levels. It also helps focus our work on an achievable work-plan, while remaining mindful of other projects that can only be addressed effectively once the current high priority items are completed. The work-plan is a snap-shot in time and will be updated and revised by the departmental management team as items are completed and as new items are added or reprioritized. During the course of the year, new projects will be added, including some high priority items. Depending on progress made on the high priority items, some level of reprioritization may be necessary to maintain a realistic workload. Staff anticipates presenting the plan and having it reviewed by the Commission on an annual basis.

The Departmental Work-Plan will also assist in developing the Department's budget, the planning for which will begin in January or February, with the release of a provisional City budget anticipated in May 2016.

ATTACHMENT:

1. Departmental Work Plan for 2016

ATTACHMENT 1 TO ITEM 6
DEPARTMENTAL WORK PLAN

THIS ITEM WILL BE PROVIDED SEPARATELY

OCTOBER 2015

City Trees Removed (upper/lower)		OCT 31(30/1)	YTD 147(118/29)	2014 142
w/ Dolores bet. 3rd & 4th	25" Monterey pine			
WCA list attached	22 trees			
MTNP	33", 24", 28" Monterey pines			
n/ 2nd bet. Lobos & Carpenter	15" Monterey pine			
ne 2nd & Monterey	30" Monterey pine			
FHP	18", 12", 14" pines			

City Trees Planted (upper/lower)		OCT. 10(7/3)	YTD 96(50/46)	2014 39
First Murphy Park	2 - 15 gal. oaks, 15 gal. Canary Is. Pine, 15 gal Catalina ironwood			
nw corner Lincoln & 6th	15 gal. Canary Is. Pine			
n/ 7th bet Mlincoln & Monte Verde	15 gal. Canary Is. Pine			
s/ 7th bet Mission & San Carlos	5 gal Canary Is. Pine			
e/ San Carlos bet 7th & 8th	5 gal Canary Is. Pine			
n/ 5th bet San Carlos & Dolores	5 gal Canary Is. Pine			
e/ San Antonio bet 13th & Santa Lucia	5 gal. cypress			
w/ Lincoln bet. 9th & 10th	5 gal Monterey pine - r			
n/ 8th bet. Lincoln & Monte Verde	5 gal. Canary Is. Pine - r			
25951 Ridgewood	1 gal. Monterey pine - r			
w/ Casanova bet. 8th & 9th	1 gal. Monterey pine - r			

r' denotes replacement of a tree that was recently planted and still watered - not in monthly total

Private Removal Permits (upper/lower)		15(5/10)	91(56/62)	114
e/ Lopez bet. 2nd & 4th	16" oak			
w/ Torres bet. 10th & 11th	12", 16" oaks			
sw corner Santa Rita & 5th	12" Monterey pine, 6" acacia			
se corner Dolores & 13th	30" Monterey pine			
25988 Ridgewood	24" oak			
w/ San Carlos bet. 13th & Santa Lucia	15" oak			
w/ Junipero bet 10th & 11th	14" oak			
ne corner of Lincoln & 13th	10" oak			
e/ Santa Fe bet. 3rd & 4th	30" Monterey pine			
12th & Junipero	36" Monterey pine			
s/ 10th bet. Casanova & Camino Real	15" oak			
w/ Dolores bet. 8th & 9th	15" Monterey pine			
n/ 8th bet. Santa Fe & Torres	12" oak			

Private Planting Requirements		OCT. 4(1/3)	YTD 26(18/10)	2014 49
	15 gal. lower canopy			
	5 gal. upper canopy			
	15 gal.lower canopy			
	15 gal. lower canopy			

Construction Permits (remove/prune)		1(0/2)	12(6/16)	15
e/ Casanova bet. 13th & Santa Lucia	8" Arbutus, 18" Holly			

Construction Planting Requirements			7(6/10)	9
	2 - 5 gal. lower canopy			

Private Pruning Permits		2	19	20
w/ Camino Real bet. Ocean & 7th	8" pine limb			
se Dolores & 13th	3 - 6" pine limbs			

Trees Under Care	
City watered	165
City irrigated	16
Private watered	4

City Pruning by contractors			
level I - total tree	6	34	227
level II - hazard /emergency	4	9	24
level III - specific purpose	4	9	17

Construction Finals	Planted

Contracts

Pruning contract with West Coast Arborist - $82,000

DEAD TREES FOR WEST COAST ARBORISTS OCTOBER 2015

1. 2055 Ridgewood – 33” pine
2. e/ Monte Verde bet. Ocean & 7th – 32” pine
3. w/ Monte Verde bet. Ocean & 7th – 16” pine
4. w/ Monte Verde bet. Ocean & 7th – 24” pine
5. e/ Monte Verde bet. 7th & 8th – 12”, 14”, 13”, 20” pines
6. w/ Monte Verde bet. 7th & 8th – 30” pine
7. nw corner of Carmelo & 9th – 30” pine
8. ne corner of 6th & Lincoln – 20” pine
9. s/ 6th bet. Lincoln & Monte Verde – 32” pine
10. ci/ Junipero bet. 10th & 11th - 30” pine
11. e/ Junipero bet. 10th & 11th – 30” pine
12. ci/ Ocean bet. Junipero & Mission – 33” pine
13. e/ Mission bet. 7th & 8th – 30” pine
14. e/ Mission bet. 7th & 8th – 30” pine
15. n/ 13th bet. Mission & San Carlos – 31” pine
16. w/ Santa Fe bet. 2nd & 3rd – 30” pine
17. ne Santa Fe & 2nd – 16” black acacia
18. ci/ Lincoln bet 1st & 2nd – 36”, 37” pines

TOTAL 22 trees