

CALIFORNIA COASTAL COMMISSION

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**Th17b**

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STAFF REPORT: REGULAR CALENDAR

Application No.: 6-17-0596

Applicant: City of Encinitas and California
 Department of Parks and Recreation

Agent: Brian Leslie

Location: Cardiff State Beach west of Coast Highway 101
 between the San Elijo Lagoon inlet and the
 Seaside/South Cardiff State Beach parking lot,
 Encinitas, San Diego County

Project Description: Excavate existing cobble and riprap along back
 beach, import 9,000 cy of 2-4 ton rock, and use sand
 deposited from San Elijo Lagoon dredging to
 construct a 2,900-ft. long x 60-ft. wide dune system
 underlain by a cobble toe and reconfigured rock
 revetment; construct 5-ft. wide, public footpath
 adjacent to Coast Highway 101 and six lateral access
 points extending from the footpath across the dunes to
 the beach.

Staff Recommendation: Approval with Conditions

SUMMARY OF STAFF RECOMMENDATION

The purpose of the proposed project is to create a 'living shoreline' dune system to provide protection for Coast Highway 101. Coast Highway 101 is a major coastal access route that

has historically been damaged and flooded when the beach is narrow and large wave events coincide with high tides, necessitating Commission action including emergency permits (e.g., CDP #6-02-066, CDP #6-10-22-G, and CDP #G-6-16-0009). Coast Highway 101 is fronted by Cardiff State Beach and unengineered, undersized riprap approximately 25 feet in width located along the back beach adjacent to the highway. Cardiff State Beach is an approximately 100 feet wide cobble-sand beach used for a wide variety of beach and ocean activities. Parallel parking is available along the west side of the northern reach of the highway; however, getting to the beach currently requires traversing across the existing riprap and there is no pedestrian access along the shoulder of the highway extending north/south through the subject site.

Sandy beach-dune systems accrete and erode with the seasons and provide a natural buffer for whatever exists behind them. The Cardiff Living Shoreline Project is one of the first projects to apply a soft solution to California's serious coastal erosion problem and thus intends to serve as a pilot project to better understand the engineering and effectiveness of more natural, shoreline protection systems. Rather than add additional rock or build a seawall to protect Coast Highway 101, the project proposes to construct a 60-ft. wide, 2,900 ft.-long dune system seeded with a native plant palette along the back beach of Cardiff State Beach to reduce wave erosion and overtopping of the highway, protection that should last until approximately 2050. Because the beach can be very narrow during the winter when extreme events pose the greatest coastal hazard, the dunes will be underlain by a cobble berm located along the seaward toe of the dunes, constructed with material onsite, and a rock revetment located along the landward side of the dunes, constructed with the existing riprap and additional imported rock to fill in gaps in the revetment template. The cobble toe will provide the "first line of defense" to protect the toe of the dunes, and the rock revetment would then provide the "last line of defense" for Coast Highway 101, in case the cobble berm and sand dunes are completely eroded during storm events. To form the dune hummocks over the cobble berm and revetment, up to 20,000 cy of sand from the San Elijo Lagoon annual inlet dredging program (CDP #6-16-0248) will be used. The San Elijo Lagoon inlet sediment closely matches the grain size of the sand within the proposed project.

In addition, the project proposes to construct a 5-ft. wide, ADA-compliant, public footpath parallel to the dune system along the western side of Coast Highway 101. To facilitate access from the footpath across the dunes, six beach access points will be located within the northern portion of the project area, where parking exists and beach usage is highest. Post and rope fencing is proposed along the entire western edge of the pedestrian trail and six beach access points to delineate pedestrian and habitat areas.

As designed, the entire system would be covered by sand year round, which will provide new recreational beach area, public access opportunities, and dune habitat. It is expected that the proposed dune system will erode and require maintenance over time, particularly as sea level rises. As a result, sand from the San Elijo Lagoon annual inlet dredging program was identified as an annual sand source to help repair erosion of the dune system. The dune design includes a 15-ft. wide sacrificial erosion zone starting at the seaward edge of the dunes, where dune planting would be minimized so that it can provide an erodible buffer for the dune habitat area. This sacrificial zone would be annually rebuilt as needed with up to 10,000 cy of sand from the San Elijo Lagoon annual inlet dredging program.

The project has been designed to preserve public ocean views for those traveling on foot, by bike, or in the car along the highway. Since the beach is currently lined with riprap, the proposed dunes are expected to improve the visual quality of the beach and provide a softer, more natural ocean view from the highway.

The construction schedule for this project is based on close coordination with two other, previously authorized projects occurring at Cardiff State Beach. From September 2017 to February 2018, the San Elijo Joint Power Authority is working in the northern segment of the subject project area to replace the landside of their ocean outfall pipeline (CDP #6-16-0099). Then, from February to March 2018, 300,000 cy of dredge material from the San Elijo Lagoon Restoration Project will be placed on Cardiff State Beach. This beach nourishment will raise and widen the beach entire profile, essentially rebuilding the beach upon which the proposed dunes would subsequently be created. In March 2018, the subject application proposes to initiate work and construct the project in the following phases:

- March - early April 2018: Trench the back beach to construct the cobble berm and revetment; construct pedestrian pathway;
- Early April - May 2018: Refill trench and build dunes with sand from the San Elijo Lagoon annual inlet dredging program in a manner that is similar to existing inlet operations (i.e., trucks end-dump sand and smaller construction equipment contour the dunes); install temporary sand fences to mitigate sand blowing onto Coast Highway 101 and the pedestrian path as well as a permanent post and rope fencing and signage.
- Late Summer to Fall 2018: Seed and plant dunes.

Because the project includes reconfiguring the existing riprap on Cardiff State Beach and importing approximately 9,000 cy of additional rock to construct the buried rock revetment, it must be consistent with Section 30235 and Section 30253 of the Coastal Act related to shoreline protection devices and new development, respectively. The existing roadway is at risk, and requires protection in order to maintain public access and circulation for both local and regional transportation needs. The existing unengineered riprap does not provide adequate protection for Coast Highway 101 and also has impacts to public access, recreation, and visual quality. The proposed project is intended to be an interim solution to provide and maintain protection for the highway until approximately 2050, at which time alternative solutions will be needed. Those alternatives must include consideration of relocating the highway, elevating the highway, or removing lanes of the highway to avoid the need for shoreline protection. The subject application provides time for the City to develop a long-term solution to the coastal hazard exposure problem along this shoreline. The proposed project represents the most feasible option at this time and will have a positive impact on public access, recreation, and habitat while significantly reducing the vulnerability of Coast Highway 101 to current extreme events and coastal hazards until 2050.

Special Condition #1 requires the applicants to construct the project in conformance with the approved final plans. Given the experimental nature of the project, **Special Condition #2** limits the duration of the approval to a period of five years from the date of Commission

action and requires the applicants to submit a complete coastal development permit amendment application for the re-authorization of the project for an additional five year term.

A robust physical and biological monitoring program has been developed to study this system to both inform other coastal communities considering such adaptive measures and inform the maintenance and adaptive management of this project. **Special Condition #3** requires the applicants submit a Final Adaptive Management and Monitoring Plan that involves developing a long-term strategy for Highway 101, pursuing beach nourishment projects, maintaining the proposed dune system based on defined maintenance triggers, adapting the proposed dune system based on performance, and abandoning the proposed dune system and accelerating a long-term strategy if necessary. **Special Condition #9** requires the applicants to submit a Final Dune Creation and Monitoring Plan that includes monitoring of reference sites, a planting plan, and regular maintenance activities such as non-native vegetation control and trash removal. Moreover, in order to ensure that the approved revetment is adequately maintained, **Special Condition #4** requires that such maintenance or repair occurs in a timely manner incorporating all Best Management Practices (BMPs).

While implementation of the project would not result in any permanent impacts to beach habitat, there is the potential for temporary impacts to sensitive species and water quality during the construction phase of the project. **Special Condition #6** requires that the applicants survey the area prior to construction activities and, if sensitive species are found, coordinate with CDFW and USFWS to avoid any impacts. In addition, because the California grunion spawning occurs between early March and late August, should any dune maintenance work need to occur below the wrack line during this period, **Special Condition #7** requires the applicants to prepare a Grunion Monitoring and Avoidance Plan that is implemented prior to and during construction activities to protect California grunion and their eggs. **Special Condition #8** requires the applicant to submit and implement either a Construction and Pollution Prevention Plan (CPPP) or a Stormwater Pollution Prevention Plan (SWPPP), which requires BMPs be implemented to minimize erosion and the discharge of sediment off-site and to minimize discharge of construction pollutants to coastal waters, including the San Elijo Lagoon and the Pacific Ocean. **Special Condition #8** also prohibits construction operations from Memorial Day weekend to Labor Day to alleviate impacts to public access and recreation during the busy summer months. **Special Condition #9** requires the applicants to submit a Final Staging and Storage Plan for Executive Director review and approval to ensure that the stockpile area on Cardiff State Beach is used as proposed and that the other staging activities occur off the beach. **Special Condition #10** requires that the applicants submit a Final Public Access Plan for the review and approval of the Executive Director that will detail provisions for public access during construction and post-construction, including fencing and signage.

Commission staff recommends **approval** of coastal development permit application 6-17-0596 as conditioned.

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EXHIBITS

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[Exhibit 2 – Site map](#)

[Exhibit 3 – Site photos](#)

[Exhibit 4 – Coastal hazards](#)

[Exhibit 5 – Beach sections](#)

[Exhibit 6 – Dune simulation](#)

[Exhibit 7 – Fence design](#)

[Exhibit 8 – Six access points](#)

[Exhibit 9 – Planting schematic](#)

[Exhibit 10 – Proposed amendment sand placement sites](#)

[Exhibit 11 – Stockpile and staging](#)

[Exhibit 12 – Visual simulations](#)

I. MOTION AND RESOLUTION

Motion:

*I move that the Commission **approve** Coastal Development Permit Application No. 6-17-0596 subject to the conditions set forth in the staff recommendation.*

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

Resolution:

The Commission hereby approves coastal development permit 6-17-0596 and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permit complies with the California Environmental Quality Act because either 1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or 2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

II. STANDARD CONDITIONS

This permit is granted subject to the following standard conditions:

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. **Interpretation.** Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.

4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

III. SPECIAL CONDITIONS

This permit is granted subject to the following special conditions:

1. Final Plans.

- (a) **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT,** the applicants shall submit, for the review and written approval of the Executive Director, one full-size set of construction plans that conforms with the plans submitted to the Commission prepared by Moffatt & Nichol, titled Plans for the Construction of the Cardiff Beach Living Shoreline in the City of Encinitas (95% Submittal) dated September 1, 2017.
- (b) The applicants shall undertake development in conformance with the approved final plans unless the Commission amends this permit or the Executive Director provides a written determination that no amendment is legally required for any proposed minor deviations.

2. Authorization Period and Reporting Requirement.

- (a) This Coastal Development Permit authorizes the approved development for a period of five years from the date of Commission action. After such time, the authorization for continuation and/or retention of any development approved as part of this permit shall cease, unless reauthorized by the Commission pursuant to a permit amendment, such as provided in (b) of this condition.
- (b) If the applicants wish to retain the project beyond the five-year term for which this permit provides authority and to continue maintenance of the project using sand from the San Elijo Lagoon annual inlet dredging program to nourish the dune, then no later than six months prior to the end of that five-year term, the applicants or successor in interest shall submit a complete coastal development permit amendment application for the reauthorization for an additional five-year term, with the goal of further protecting Coast Highway 101 from wave hazards and tidal action. The amendment application shall include the results of the required biological and physical beach monitoring reports, in order to evaluate the effectiveness and impacts of the project; address changed circumstances and unanticipated impacts; consider modifications to the location and design of the

dune system; and consider measures necessary to minimize any adverse impacts to coastal resources or public access resulting from the continuation of the project and implementation of the Adaptive Management Plan. Failure to either (1) obtain a permit amendment authorizing the applicants to retain the project for an additional term or (2) remove the project shall constitute a violation of the terms and conditions of this Coastal Development Permit, unless the Executive Director grants additional time for good cause.

- (c) Five years from the date of issuance of this Coastal Development Permit, the applicants shall submit a report to the Executive Director, documenting the status of the project, including the Adaptive Management Program. The report shall summarize the results and findings of the annual biological and physical monitoring reports, required pursuant to Special Conditions #3 and 9. Should the monitoring reports reveal any unanticipated significant adverse habitat or public access impacts not addressed in the initial Commission authorization, or that the nourishment events are not maintaining a dune system over the approved revetment pursuant to the maintenance triggers pursuant to Special Condition 3, the Executive Director may require the submittal of a permit amendment application for the review and approval by the Commission to address and evaluate for any unanticipated adverse resource impacts or require any mid-course corrections or adjustments to the Adaptive Management Program. Failure to submit a permit amendment application in response to the Executive Director's direction, pursuant to this paragraph, shall constitute a violation of the terms and conditions of this Coastal Development Permit.
- (d) The Coastal Development Permit amendment application submitted by the permittee for an additional five-year term, pursuant to (b) of this special condition, shall include an evaluation of feasible alternatives to the retention of the rock revetment in its current location should adaptive measures outlined in Special Condition 3 fail to consistently maintain the dune system over the five-year period. Project alternatives evaluated shall include, but not be limited to, removal of part or all of the revetment, construction of an alternative shoreline protective structure in a more landward location, and options for reconfiguration of Coast Highway 101 to reduce coastal hazards. The information concerning these alternatives shall be sufficiently detailed to enable the Coastal Commission to evaluate the feasibility of each alternative for addressing site shoreline protection, public access, and sensitive resource issues under the Coastal Act and the City of Encinitas Local Coastal Program.

3. Final Adaptive Management and Monitoring Plan.

- (a) **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit, for the review and written approval of the Executive Director, a Final Adaptive Management and Monitoring Plan that is in substantial conformance with the plans submitted to the Commission prepared by the San Elijo Lagoon Conservancy, California State Coastal Conservancy, City of Encinitas, and Moffatt & Nichol, titled Draft Adaptive Management and

Monitoring Plan for the Cardiff State Beach Living Shoreline Project dated October 2017. The final Adaptive Management and Monitoring Plan shall include the following:

- i. Quantifiable and measureable criteria shall be developed for performance questions for which the physical monitoring plan is being prepared, including, at a minimum:
 - A. Viability of an actively managed artificial dune system for shore protection;
 - B. Methodology and additional data needed to evaluate responses to modest rates of sea level rise;
 - C. How the adequacy of the dune size will be determined;
 - D. How the dynamic stability of the dune system and influence of the associated beach width will be determined;
 - E. How the sand losses for established native dune vegetation will be measured and what, if anything, will be used for comparison;
 - F. How the level of protection for the roadway will be measured and how the effects of the cobble berm will be dissociated from the dune sand, the dune vegetation and the buried revetment; and
 - G. Event characteristics (overflow rate, water depth, duration of overtopping, etc.) that will be documented by the City during 'extreme events' and what triggers will be used to characterize an event as extreme.
 - ii. Triggers for adaptive management efforts shall be clearly established along anticipated management methodologies that could be applied to assist in maintaining the dune system over the term of the permit. No changes to the design shall occur without written approval from the Executive Director.
 - iii. Triggers for project abandonment, if necessary, shall be clearly established along with a schedule for reporting to the Executive Director on the reasons for abandonment, elements of the project that will be removed, elements of the project that will be retained and continuation or changes to the other associated projects such as the San Elijo Lagoon Inlet Dredging. If the triggers for project abandonment are met, within 30 days of reporting the Executive Director, the applicants shall apply for a permit or permit amendment to restore the beach to the pre-project condition, or agreed upon condition that reflects current conditions of the site.
- (b) The applicants shall undertake development in conformance with the approved final plans unless the Commission amends this permit or the Executive Director provides a written determination that no amendment is legally required for any proposed minor deviations.

4. Future Maintenance Authorized.

By acceptance of this permit, the applicant acknowledges and agrees to the following:

- (a) Future maintenance and repair of the beach-dune system, including underlying cobble toe and rock revetment, as specified above, may be completed without a new Coastal Development Permit for a period of five years commencing from the date of Commission action on this permit consistent with the final approved Adaptive Management and Monitoring Plan for the Cardiff Beach Living Shoreline Project consistent with the following limitations:
 - i. Prior to the commencement of any such repair or maintenance work, the applicants must obtain written authorization from the Executive Director of the California Coastal Commission. The applicants shall submit a written report prepared by a professional engineer for aspects of repair and maintenance regarding revetment placement. For other repair and maintenance, the report may be prepared by an environmental resources specialist with appropriate qualifications acceptable to the Executive Director. The report shall be submitted for the review and approval of the Executive Director and shall identify the proposed maintenance and repair work, method for performing work, analysis of the necessity for the work, and a quantification of any additional rock to be added to the revetment. The maintenance and repair report shall be submitted at least 60 days in advance of the proposed work to allow time for review by the Executive Director. The Executive Director's review will be for the purpose of ensuring that the nature of the work, the method proposed for the work, and all other aspects of the proposed work is consistent with the provisions of this condition.
 - ii. No future repair or maintenance, enhancement, reinforcement, or any other activity affecting the rock revetment shall be undertaken if such activity extends the seaward footprint of the subject shoreline protective device. No rock shall be placed seaward of the approved toe of the revetment and no increase in the approved height of the revetment shall occur. After construction completion, any debris, rock, or other materials that become dislodged through weathering, wave action or settlement shall be removed from the beach or deposited on the revetment on an as-needed basis, as soon as feasible after discovery. The rock revetment may be maintained in its approved size, location, and configuration. No expansion to the size, height, or footprint of the revetment shall be allowed. The addition of new rock for any individual repair project shall require an amendment to this Coastal Development Permit or a new Coastal Development Permit, and is not exempt pursuant to this Special Condition and notwithstanding the exemption allowed by Coastal Act regulation section 13252(c) (Title 14, California Code of Regulations).

- iii. Maintenance or repair work shall only occur from October 1 to the Friday before Memorial Day weekend. Any repair or maintenance of the shoreline protective device between the Friday before Memorial Day weekend and September 30 shall require an amendment to this Coastal Development Permit or a new Coastal Development Permit, and is not exempt pursuant to this Special Condition and notwithstanding the exemption allowed by Coastal Act regulation section 13252(c), with the exception of repairs needed to maintain public access associated with pedestrian path, beach accessways, and associated fencing and signage.
- iv. Removal of any debris, rock or other material from the sandy beach that becomes displaced from the revetment and will be deposited on the revetment or exported to an offsite disposal area shall occur on an as-needed basis, regardless of the time of the year, without requirement for an amendment, and without the requirement for submitting a written report 60 days in advance of the work or for prior written authorization from the Executive Director.
- v. Maintenance or repair work shall be completed incorporating all feasible Best Management Practices. The applicants shall, by accepting the written authorization from the Executive Director, agree and ensure that the project contractor shall comply with the following construction-related requirements:
 - A. No construction materials, debris, or waste shall be placed or stored where it may be subject to wave erosion and dispersion;
 - B. Any and all debris resulting from construction activities shall be removed from the beach prior to the end of each work day;
 - C. No machinery or mechanized equipment shall be allowed at any time within the active surf zone, except for that necessary to remove the errant rocks from the beach seaward of the revetment; and
 - D. All excavated beach sand shall be redeposited on the beach.
- (b) The applicants shall be responsible for maintenance of the dune habitat, as specified in Special Condition #9, and maintenance of the 5-ft. wide footpath parallel to the dune system and the 10-ft. wide access points that are oriented at 45 degree angles to the footpath. Such maintenance shall occur on as needed basis, in perpetuity for the life of the project, in order to ensure the public's ability to access the beach.

5. Assumption of Risk, Waiver of Liability, and Indemnity.

- (a) By acceptance of this permit, the applicants acknowledge and agree (i) that the site may be subject to hazards, including but not limited to waves, storms, and flooding, many of which will worsen with future sea level rise; (ii) to assume the risks to applicants and the property that is the subject of this permit of injury and damage from such hazards in connection with this permitted development; (iii) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; and (iv) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the project against any and all liability, claims, demands, damages, costs (including costs and fees incurred in defense of such claims), expenses, and amounts paid in settlement arising from any injury or damage due to such hazards.
- (b) **PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT**, the applicants shall submit a written agreement, in a form and content acceptable to the Executive Director, incorporating all of the above terms of subsection (a) of this Special Condition.

6. Biological Surveys and Monitoring During Inlet Dredging and Sand Placement.

The applicant shall retain the services of a qualified biologist or environmental resources specialist (hereinafter, "environmental resources specialist") with appropriate qualifications acceptable to the Executive Director, to conduct sensitive species pre-work surveys and to monitor the work areas during inlet dredging and beach and dune sand placement activities. Prior to the commencement of inlet maintenance and sand placement activities, the applicant shall submit a description of the environmental resources specialist's duties and the specialist's on-site schedule to the Executive Director for review and written approval. The applicant shall implement the following requirements:

- (a) The environmental resources specialist shall:
 - i. Survey the proposed work areas and a buffer of 100 feet beyond to determine the presence and behavior of any sensitive species one (1) day prior to commencement of any proposed work;
 - ii. If sensitive species are identified, the environmental resource specialists shall report the results of the survey within 24 hours to the applicant, Executive Director, California Department of Fish and Wildlife (CDFW), and the United States Fish and Wildlife Service (USFWS); and
 - iii. Monitor the work areas during all inlet dredging and sand placement activities.

Pre-Work Biological Surveys. In the event that the environmental resources specialist reports finding any federally or state-designated sensitive wildlife species (including but not limited to western snowy plover or California least

terns) exhibiting reproductive or nesting behavior during the pre-work surveys, the applicant shall delay work, and promptly notify the Executive Director, CDFW, and USFWS. Project activities may commence only upon written approval of the Executive Director, following consultation with CDFW and USFWS. The applicant shall submit documentation prepared by the environmental resources specialist that provides the results of each daily pre-work survey, including any sensitive wildlife species observed and their associated behaviors and activities.

- (b) **Biological Monitoring During Work.** Prior to the initiation of inlet dredging and sand placement activities each day, the environmental resources specialist shall inspect the work areas to preclude impacts to sensitive wildlife species. Inlet dredging and sand placement activities may not occur until all sensitive wildlife species (e.g., western snowy plovers, California least terns) have left the project area and its vicinity. In the event that the environmental resources specialist determines that any sensitive wildlife species exhibit reproductive or nesting behavior, the applicant shall cease work and promptly notify the Executive Director, CDFW, and USFWS, including the nature and location of the observations made. Sand placement activities may resume only upon written approval of the Executive Director, following consultation with CDFW and USFWS.
- (c) If significant impacts or injury occur to sensitive wildlife species, the applicant shall promptly notify the Executive Director, CDFW, and USFWS. The Executive Director, in consultation with CDFW and/or USFWS, will determine the appropriate action or mitigation to be taken.

7. Grunion Monitoring & Avoidance Plan.

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicant shall submit to the Executive Director, for review and written approval, a Grunion Monitoring and Avoidance Plan. The applicant shall retain the services of a qualified biologist or environmental resources specialist (hereinafter, “environmental resources specialist”) with appropriate qualifications acceptable to the Executive Director. The applicant shall adhere to the following provisions in order to avoid impacts to mature grunion and to grunion eggs during a spawning event. The annually published California Department of Fish and Wildlife (CDFW) expected grunion runs shall be used to determine possible grunion spawning periods. The plan shall, at a minimum, include the following:

- (a) During the grunion spawning period of March 1 through August 31, beginning at least two (2) weeks prior to commencement of inlet dredging and throughout any sand placement activities on Cardiff State Beach or within the 15 foot area of sacrificial dunes on Cardiff State Beach, Cardiff State Beach and the route for delivering sand to the dunes shall be monitored for grunion runs, excepting areas where there is no sand, such as 100% cobble.

- (b) Grunion monitoring shall be conducted by the environmental resources specialist for 30 minutes prior to, and two hours following, the predicted start of each spawning event. Sufficient personnel shall be utilized to ensure that the entire proposed placement site or truck route is monitored during the specified period. The magnitude and extent of a spawning event shall be defined in 300-foot segments of beach using the Walker Scale.
- (c) If a grunion run consisting of 0-100 individual fish per segment (Walker Scale of 0 or 1) is reported within two weeks prior to, or during, proposed work, the applicant does not need to take any avoidance action for grunion eggs.
- (d) Within two weeks prior to proposed work, if a grunion run consisting of more than 100 individual fish per segment (Walker Scale of 2, 3, 4, or 5) is reported, the applicant shall avoid work on the respective beach segment(s) and truck route and additionally, shall avoid a 100-foot buffer on either side of the segment(s) and route, to ensure that no grunion eggs are buried or disturbed. The applicant shall adapt the work schedule or re-route trucks to avoid operations on beach segments and truck routes with a Walker Scale of 2, 3, 4, or 5 and their associated buffers.
- (e) If work has already commenced, and a grunion run consisting of more than 100 individual fish per segment (Walker Scale of 2 or 3) is reported, the applicant shall avoid impacts to grunion eggs to the extent feasible, and then shall minimize impacts to grunion eggs through measures pursuant to subsection (g) below.
- (f) If beach construction has already commenced, and a grunion run consisting of more than 1000 individual fish per segment (Walker Scale of 4 or 5) is reported, no impacts to grunion eggs may occur. The applicant shall avoid impacts to grunion eggs in that portion of the work area through alteration of the truck route, discharge point, sand spreading, and/or shifting sand receiver site boundaries. Work at impacted locations shall cease if avoidance measures are not feasible.
- (g) The applicant shall develop a list of feasible measures, subject to written approval of the Executive Director in consultation with CDFW, NMFS and ACOE, taking into consideration the size of the sand receiver site, stage of mobilization, construction constraints, etc., that may be utilized to allow sand replenishment work to continue while avoiding and minimizing impacts to eggs within the two week spawning period. Under no circumstances shall any mature grunion be buried or harmed as a result of the proposed work.

8. Construction BMPs.

PRIOR TO CONSTRUCTION the applicant shall submit, for the review and written approval of the Executive Director, a Construction and Pollution Prevention Plan CPPP (or a Stormwater Pollution Prevention Plan (SWPPP) that is supplemented to include all of the following), prepared and certified by a qualified licensed professional. The CPPP or SWPPP (Plan) shall demonstrate that all construction, including, but not limited to,

clearing, grading, staging, storage of equipment and materials, complies with all of the following requirements:

- (a) Construction Site Map and Narrative Description. The Plan shall include a construction site map and a narrative description addressing, at a minimum, the following required components:
 - i. A detailed description of all the steps and phases of the construction project, including ingress and egress of all construction activities, excavation of existing cobble and riprap, import of additional rock, and deposition of dune sand.
 - ii. A map delineating the construction ingress and egress, construction site construction phasing boundaries, and the location of all temporary construction-phase BMPs (such as silt fences, inlet protection, and sediment basins).
 - iii. A description of the BMPs that will be implemented to minimize land disturbance activities, minimize the project footprint, minimize soil compaction, and minimize damage or removal of non-invasive vegetation. Include a construction phasing schedule, if applicable to the project, with a description and timeline of significant land disturbance activities.
 - iv. A description of the BMPs that will be implemented to minimize erosion and sedimentation, control runoff and minimize the discharge of other pollutants resulting from construction activities. Include calculations that demonstrate proper sizing of BMPs.
 - v. A description and schedule for the management of all construction-phase BMPs (including installation and removal, ongoing operation, inspection, maintenance, and training). Identify any temporary BMPs that will be converted to permanent post-development BMPs.
- (b) Protect Public Access. During construction, the following provisions shall be required to protect and maximize public access:
 - i. Construction shall not occur from Memorial Day weekend through Labor Day unless, due to extenuating circumstances (such as tidal issues, extensive delays due to severe weather, or other environmental concerns) the Executive Director provides written authorization for such work.
 - ii. Construction is prohibited outside of the defined construction, staging, and storage areas.
 - iii. All construction methods to be used, including all methods to keep the construction areas separate from public recreational use areas (e.g., using unobtrusive fencing or equivalent measures to delineate construction

areas), shall be clearly identified on the construction site map and described in the narrative description required by subsection (a) of this Special Condition.

- iv. All beaches, beach access points, and other recreational use areas impacted by construction activities shall be restored to their pre-construction condition or better within three days of completion of construction. Any beach sand impacted shall be filtered as necessary to remove all construction debris from the beach.
- (c) Property Owner Consent. The Plan shall be submitted with evidence indicating that the owners of any properties on which construction activities are to take place, including properties to be crossed in accessing the site, consent to use of their properties.
- (d) Minimize Erosion and Sediment Discharge. During construction, erosion and the discharge of sediment off-site or to coastal waters shall be minimized through the use of appropriate Best Management Practices (BMPs), including:
- i. Land disturbance during construction (e.g., clearing, grading, and cut-and-fill) shall be minimized, and grading activities shall be phased, to avoid increased erosion and sedimentation.
 - ii. Erosion control BMPs (such as mulch, soil binders, geotextile blankets or mats, or temporary seeding) shall be installed as needed to prevent soil from being transported by water or wind. Temporary BMPs shall be implemented to stabilize soil on graded or disturbed areas as soon as feasible during construction, where there is a potential for soil erosion to lead to discharge of sediment off-site or to coastal waters.
 - iii. Sediment control BMPs (such as silt fences, fiber rolls, sediment basins, inlet protection, sand bag barriers, or straw bale barriers) shall be installed as needed to trap and remove eroded sediment from runoff, to prevent sedimentation of coastal waters. The use of temporary erosion and sediment control products (such as fiber rolls, erosion control blankets, mulch control netting, and silt fences) that incorporate plastic netting (such as polypropylene, nylon, polyethylene, polyester, or other synthetic fibers) shall be avoided, to minimize wildlife entanglement and plastic debris pollution.
 - iv. Tracking control BMPs (such as a stabilized construction entrance/exit, and street sweeping) shall be installed or implemented as needed to prevent tracking sediment off-site by vehicles leaving the construction area.
 - v. Runoff control BMPs (such as a concrete washout facility, dewatering tank, or dedicated vehicle wash area) that will be implemented during

construction to retain, infiltrate, or treat stormwater and non-stormwater runoff.

(e) Minimize Discharge of Construction Pollutants. The discharge of other pollutants resulting from construction activities (such as chemicals, paints, vehicle fluids, petroleum products, asphalt and cement compounds, debris, and trash) into runoff or coastal waters shall be minimized through the use of appropriate BMPs, including:

- i. Materials management and waste management BMPs (such as stockpile management, spill prevention, and good housekeeping practices) shall be installed or implemented as needed to minimize pollutant discharge and polluted runoff resulting from staging, storage, and disposal of construction chemicals and materials. BMPs shall include, at a minimum:
 - A. Covering stockpiled construction materials to prevent contact with rain, and protecting all stockpiles from stormwater runoff using temporary perimeter barriers.
 - B. Cleaning up all leaks, drips, and spills immediately; having a written plan for the clean-up of spills and leaks; and maintaining an inventory of products and chemicals used on site.
 - C. Proper disposal of all wastes; providing trash receptacles on site; and covering open trash receptacles during wet weather.
 - D. Prompt removal of all construction debris from the beach.
 - E. Detaining, infiltrating, or treating runoff, if needed, prior to conveyance off-site during construction.
- ii. Fueling and maintenance of construction equipment and vehicles shall be conducted off site if feasible. Any fueling and maintenance of mobile equipment conducted on site shall not take place on the beach, and shall take place at a designated area located at least 50 feet from coastal waters, drainage courses, and storm drain inlets, if feasible (unless those inlets are blocked to protect against fuel spills). The fueling and maintenance area shall be designed to fully contain any spills of fuel, oil, or other contaminants. Equipment that cannot be feasibly relocated to a designated fueling and maintenance area (such as cranes) may be fueled and maintained in other areas of the site, provided that procedures are implemented to fully contain any potential spills.

(f) Minimize Other Impacts of Construction Activities. Other impacts of construction activities shall be minimized through the use of appropriate BMPs, including:

- i. The damage or removal of non-invasive vegetation (including trees, native vegetation, and root structures) during construction shall be minimized, to achieve water quality benefits such as transpiration, vegetative interception, pollutant uptake, shading of waterways, and erosion control.
 - ii. Soil compaction due to construction activities shall be minimized, to retain the natural stormwater infiltration capacity of the soil.
- (g) Construction In, Over, or Adjacent to Coastal Waters and Habitat. Construction taking place in, over, or adjacent to coastal waters and habitat shall protect the coastal waters and habitat by implementing additional BMPs, including:
 - i. All work shall take place during daylight hours, and lighting of the beach and ocean area is prohibited.
 - ii. All construction equipment and materials placed on the beach during daylight construction hours shall be stored beyond the reach of tidal waters. All construction equipment and materials shall be removed in their entirety from the beach area by sunset each day that work occurs. The only exceptions shall be for erosion and sediment controls or construction area boundary fencing, where such controls or fencing are placed as close to the base of the seawall/bluff as possible, and are minimized in their extent.
 - iii. Tarps or other devices shall be used to capture debris, dust, oil, grease, rust, dirt, fine particles, and spills to protect the quality of coastal waters.
 - iv. All erosion and sediment controls shall be in place prior to the commencement of construction, as well as at the end of each workday. At a minimum, if grading is taking place, sediment control BMPs shall be installed at the perimeter of the construction site to prevent construction-related sediment and debris from entering the ocean, waterways, natural drainage swales, and the storm drain system, or being deposited on the beach.
 - v. Only rubber-tired construction vehicles shall be allowed on the beach; the only exception shall be that tracked vehicles may be used if the Executive Director agrees that they are required to safely carry out construction. When transiting on the beach, all construction vehicles shall remain as high on the upper beach as possible, and shall avoid contact with ocean waters and intertidal areas.
 - vi. All debris resulting from construction activities shall be removed from the beach within 72 hours of completion of construction.
- (h) Manage Construction-Phase BMPs. Appropriate protocols shall be implemented to manage all construction-phase BMPs (including installation and removal,

ongoing operation, inspection, maintenance, and training), to protect coastal water quality.

- (i) Construction Site Documents. The Plan shall specify that copies of the signed CDP and the approved Plan be maintained in a conspicuous location at the construction job site at all times, and be available for public review on request. All persons involved with the construction shall be briefed on the content and meaning of the CDP and the approved Construction and Pollution Prevention Plan, and the public review requirements applicable to them, prior to commencement of construction.
- (j) Construction Coordinator. The Plan shall specify that a construction coordinator be designated who may be contacted during construction should questions or emergencies arise regarding the construction. The coordinator's contact information (including, at a minimum, a telephone number available 24 hours a day for the duration of construction) shall be conspicuously posted at the job site and readily visible from public viewing areas, indicating that the coordinator should be contacted in the case of questions or emergencies. The coordinator shall record the name, phone number, and nature of all complaints received regarding the construction, and shall investigate complaints and take remedial action, if necessary, within 24 hours of receipt of the complaint or inquiry.
- (k) Notification. The permittee shall notify planning staff of the Coastal Commission's San Diego District Office at least three working days in advance of (1) commencement of construction or maintenance activities, and immediately upon completion of construction or maintenance activities, and (2) of any anticipated changes in the schedule based on site conditions, weather or other unavoidable factors.
- (l) Progress Reports. The permittee shall submit biweekly reports reflecting progress and status of the project, including an identification of any outstanding issues that may have arisen since the last progress report, or are anticipated to arise in the foreseeable future.

The permittee shall undertake development in accordance with the approved construction Plan, unless the Commission amends this permit or the Executive Director provides written determination that no amendment is legally required for any proposed minor deviations.

9. Final Dune Creation and Monitoring Plan.

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicants shall submit, for the review and written approval of the Executive Director, a Final Dune Creation and Monitoring Plan that is in substantial conformance with the plans submitted to the Commission prepared by the San Elijo Lagoon Conservancy, California State Coastal Conservancy, City of Encinitas, and Moffatt & Nichol titled Draft Dune Habitat Restoration and Monitoring Plan for the Cardiff State Beach Living

Shoreline Project dated October 2017. The applicants shall undertake development in conformance with the approved final plans unless the Commission amends this permit or the Executive Director provides a written determination that no amendment is legally required for any proposed minor deviations. The plan, at a minimum, shall include the following:

(a) Dune Creation Plan

- i. *Dune Creation Area Footprint.* The southern foredune creation area (“dune creation”) shall generally include a 2,900-ft. long, approximately three acre footprint that extends from the edge of Coast Highway 101 seaward 60 feet between the Chart House (“Restaurant Row”) in the north and Seaside/South Cardiff State Beach parking lot in the south.
- ii. *Dune Specifications.* The dune creation area shall be designed and contoured based on natural dune morphology (using historical records of the area and the reference sites). The created dune ridge(s) shall be oriented perpendicular to the prevailing wind direction with dune faces that have a slope no steeper than 3:1. The plan shall include a grading plan that includes a detailed description of dune creation timing, daily schedule aspirations, methods and equipment to be used, staging area location(s), and the project’s relationship to the San Elijo Lagoon Restoration Program beach replenishment program.
- iii. *Project BMPs.* The dune creation plan shall include BMPs to maximize the success of the created dune system’s physical and biological processes and functions. For example, discontinuous sand fencing placed perpendicular to the prevailing wind direction or straw plugs may be temporarily employed to facilitate establishment of dune hummocks. A seed and mulch mixture sprayed over the dunes can also be an effective stabilization technique.
- iv. *Dune Planting.* The dune creation plan shall include a planting plan using native coastal strand and southern foredune plant species (plant palette) including the amount in weight of seeds for each respective species. The plan shall prioritize the planting of seeds in the fall, the preferred approach for establishing a successful native dune plant community. The plan shall identify the number and species of container plants, the source of plant material, provision for collection, storage, propagation and use of existing native plants, and plant installation methods. The plant palette shall be made up exclusively of native dune plant species appropriate to southern California, grown from seeds or vegetative materials obtained from the site or from an appropriate nearby beach location to maintain the genetic integrity of the area. No horticultural varieties shall be used. The plan shall also include an exhibit that shows the planned locations, numbers, and spacing of the individual container plant species, including their initial distribution and abundance across the creation area. The plan shall include a description of planned site preparation, method and location of exotic species removal, timing of planting, temporary irrigation plans if necessary, and maintenance timing and techniques. The planned abundance, distribution, and percent cover of native coastal strand

and southern foredune plant species shall be based on historical records, relevant literature, and the reference site(s).

- v. *Access Paths and Fencing.* To facilitate access from the 5-ft. wide footpath parallel to Coast Highway 101 across the dunes, six beach access points will be located within the northern portion of the project area, where parking exists and beach usage is highest. Symbolic post and rope or rail fencing shall border each pathway to keep traffic on the footpath.
- vi. *Signage.* Signs shall be installed and maintained in conspicuous locations adjacent to the dune creation area to notify the public that the area is a sensitive habitat restoration area and to keep out of the dune restoration areas. The signs shall indicate “Dune Creation In Progress: Please Keep Out of Dune Creation Area,” or alternative language that is substantially similar. Similar signage shall be installed at or near the seaward most limit of dune.
- vii. *Maintenance.* The plan shall include provisions for on-going maintenance and management of the dune habitat restoration and enhancement area for the term of this coastal development permit. At a minimum, semi-annual maintenance and management activities shall include, as necessary, debris removal, periodic weeding of invasive and non-native vegetation and replacement planting consistent with the approved plan.

(b) Monitoring Program

A five-year monitoring program shall be designed and implemented to provide data that will guide the dune creation and direct any adaptive management actions that will increase the likelihood that the Cardiff Living Shoreline Project will be successful. The monitoring program shall provide, at a minimum, for the following:

- i. *Performance Standards:* Determination of annual and final performance standards selected based on a reference site (s) and relevant literature. The performance standards shall relate logically to the goals of the dune creation plan and include standards for special status species, species diversity, and vegetative cover. Native plant cover shall not exceed that found in southern California coastal strand and southern foredune natural habitats. The rationale for the selection of each performance standard shall be explained.
- ii. *Procedure for Judging Success:* Detailed description of the qualitative and quantitative sampling methods and statistics intended to be used to monitor dune creation success shall be provided.
- iii. *Initial Monitoring Report:* Submission of a written report, prepared by a qualified environmental resource specialist, upon completion of the initial dune creation for the review and approval of the Executive Director. The report shall document completion of the initial work and include photographs taken from pre-designated sites, annotated to a copy of the site plans.

- iv. *Interim Monitoring Reports:* After initial dune creation work is completed, the applicant shall submit, by no later than December 31st each year, for the review and approval of the Executive Director, annual monitoring reports prepared by a qualified environmental resource specialist indicating the progress and relative success or failure of the dune creation. These reports shall also include recommendations for modifications or new approaches that would help the project meet the performance standards. These reports shall also include photographs taken from pre-designated sites annotated to a copy of the site plans, indicating the dune habitat creation progress at each of the sites. Each report shall be cumulative and shall summarize all previous results. Each report shall also include a “Performance Evaluation” section where information and results from the monitoring program are used to evaluate the status of the dune habitat restoration and enhancement project in relation to the interim and final performance standards.
- v. *Final Report:* At the end of five years, a final dune creation “Cardiff Living Shoreline” report shall be submitted for the review and approval of the Executive Director. If the report indicates that the project has, in part, or in whole, been unsuccessful, based on the specified performance standards, the applicant(s) shall submit within 90 days a revised or supplemental adaptive management program to compensate for those portions of the original program that did not meet the approved performance standard(s), and shall implement the measures program. The revised or supplemental program shall be processed as an amendment to this permit.

10. Final Storage and Staging Area Plan.

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicants shall submit, for review and written approval of the Executive Director, a Final Storage and Staging Area Plan that substantially conforms with the plans titled “Cardiff Beach Details (Sheet 1 of 2)” dated September 1, 2017. The plan shall include, at a minimum, the following components:

- (a) Storage/staging shall be the minimum area necessary to accommodate project activities in the Seaside/South Cardiff State Beach parking lot, and shall be limited to an approximately 6,000 sq. ft. area (no more than 11 parking spaces) and stockpile area on the beach shall be no greater than 2,500 sq. ft. (50-ft. wide x 50-ft. long). Allowed staging activities are equipment fueling, maintenance, and overnight storage, including for approximately 1,000 cy of 2-4 ton rock from the deconstruction of the Cabrillo Power Plant groin. The stockpile area shall be used during rock work activities to allow efficient and continuous construction by the contractor.
- (b) All storage and staging shall be located outside of sensitive habitat areas. Where public parking areas are used for staging or storage of equipment and materials, the number of public parking spaces utilized shall be the minimum necessary to implement the project.

- (c) No overnight storage of equipment or materials shall occur on the sandy beach or of outside the designated areas within the parking lot.
- (d) Construction access corridors shall be located in a manner that has the least impact on public access to and along the shoreline of the project site.
- (e) The applicant shall submit evidence that the approved final plan has been incorporated into construction bid documents.

The applicants shall undertake development in accordance with the approved final plans unless the Commission amends this permit or the Executive Director determines that no amendment is legally required for any proposed minor deviations.

11. Final Public Access Plan.

PRIOR TO ISSUANCE OF THE COASTAL DEVELOPMENT PERMIT, the applicants shall submit, for the review and written approval of the Executive Director, a Final Public Access Plan that provides for the following:

- (a) Continuous public access on Cardiff State Beach must be maintained at all times for the duration of construction. The plan shall include a description of the methods (including signs, fencing, etc.) by which safe public access to or around construction and/or staging areas shall be maintained during all project operations.
- (b) The plan shall identify the location and width of all footpath and beach accessways. The plan shall also describe the permanent and temporary fencing and allowable maintenance activities. The plan shall include all signage identifying the public paths and acknowledge the California Coastal Commission's role in providing public access at this location by including the agency name and logo.
- (c) Signage Plan: The plan shall include the provision for the installation of signage to be incorporated into the fence design described in the "95% Basis of Design" dated September 1, 2017, to inform the public of the dune system. The plan shall show the location, size, design, and content of all signs and describe the conditions for changing the signs, e.g., during or after vegetation establishment. The applicant acknowledges and agrees that no signs shall be posted on the sandy beach, vegetated dunes, or along the 5-ft. wide footpath unless specifically authorized by the approved plan, a separate Coastal Development Permit, or an amendment to this permit. Approved signage shall be installed concurrent with the installation of the fencing. The applicants, or successors in interest, shall maintain the approved fencing signs in good condition for the life of the project and replace when necessary.

- (d) The applicant shall submit evidence that the approved final plan has been incorporated into construction bid documents.

The applicants shall undertake development in accordance with the approved final plans unless the Commission amends this permit or the Executive Director determines that no amendment is legally required for any proposed minor deviations.

12. Evidence of CDP Amendment.

PRIOR TO COMMENCEMENT OF CONSTRUCTION, the applicants shall provide evidence that CDP#6-16-0248 (San Elijo Lagoon annual inlet dredging program) has been amended, in a form and content reviewed and approved by the Executive Director, to conform to the terms and conditions of this CDP.

IV. FINDINGS AND DECLARATIONS

A. PROJECT DESCRIPTION

The project proposes to construct a 60-ft. wide “living shoreline” dune system along the back beach of Cardiff State Beach adjacent to Coast Highway 101 in the City of Encinitas ([Exhibits #1 and 2](#)). The project spans 2,900 feet in length, from the Chart House (“Restaurant Row”) in the north to the Seaside/South Cardiff State Beach parking lot in the south ([Exhibit #3](#)). In addition, a 5-foot-wide, ADA-compliant, cement-treated decomposed granite public footpath is proposed parallel to the dune system along the western side of Coast Highway 101. To facilitate access from the footpath across the dunes, six beach access points will be located within the northern portion of the project area, where parking exists and beach usage is highest.

Cardiff State Beach currently consists of a cobble and sand barrier spit that separates the San Elijo Lagoon from the Pacific Ocean. Coast Highway 101 is a four-lane roadway with two traffic lanes and a Class II bikeway in each direction, and is currently fronted by Cardiff State Beach and an unengineered riprap revetment located adjacent to the highway. Cardiff State Beach is approximately 100 feet wide from the mean high water line to the back beach/existing riprap, and is used for a wide variety of beach and ocean activities. Parallel parking is available along the west side of the northern reach of the highway. Walking to the beach from Coast Highway 101 currently requires traversing across the existing riprap. There is no pedestrian access along the shoulder of the highway extending north/south through the subject site.

The dune system will be created through placement of up to 20,000 cy of sand over a buried cobble berm located along the seaward toe of the dunes, constructed with material onsite, with a buried rock revetment located along the landward side of the dunes ([Exhibit #4](#)). Project efforts will focus on reconfiguring the existing riprap into a smaller, buried revetment and will add additional imported rock only as needed to fill in any gaps in the new revetment template.

Because the existing beach is narrow much of the time, the cobble berm is intended to provide the “first line of defense” to protect the toe of the dunes. The rock revetment would then provide the “last line of defense” for Coast Highway 101, in case the sand dunes and cobble berm are completely eroded during storm events. Because this is a pilot project with a goal to better understand the engineering and effectiveness of soft, more natural, flood protection solutions, the revetment design is less robust than what would have been proposed should the project have consisted of a revetment only. Evaluation of the project will examine how the sand and rock system functions compare to a larger, rock-only system. The dunes will be seeded and planted with native vegetation to further enhance their durability and to provide natural habitat benefits as well.

The sand used to initially construct the dunes will come from the beneficial reuse of sand dredged from the San Elijo Lagoon annual inlet dredging program (CDP #6-16-0248), which is high quality marine sediment eroded from nearby beaches that matches the grain size of the existing sand on Cardiff State Beach. The applicant is also proposing to use this sand as part of the ongoing maintenance program to maintain the dunes in their approved configuration over the expected life of the project, until approximately 2050, at which point sea level rise may make maintenance of the dune system infeasible, or alternative measures to protect the roadway may be needed.

Project purpose

The purpose of the proposed project is to protect Coast Highway 101 using a ‘living shoreline’ or ‘soft’ approach in the form of a created dune system. While the dune system will be underlain by a cobble berm and rock revetment, it is designed to replicate the physical and biological attributes and functions of a natural foredune system. Sandy beach dune systems naturally accrete and erode with the seasons and provide a natural buffer for whatever exists behind them. The Cardiff Living Shoreline Project is one of the first projects to apply a soft solution to California’s serious coastal erosion problem. Rather than add additional rock or build a seawall to protect Coast Highway 101, the project implements a more natural solution by creating a dune system to reduce wave erosion and overtopping.

Based on aerial photos from 1972, riprap has been present along this section of the shoreline since before enactment of the Coastal Act. While the condition of the riprap varies along the project site, the stone is consistently undersized and not keyed in, and thus provides limited protection from extreme wave events and high tides. As such, Coast Highway 101 has been damaged and flooded on numerous occasions ([Exhibit #5](#)). Future sea level rise will likely result in an increased frequency and severity of damage and flooding to the highway, which is one of only two north to south arterials in this area of San Diego County and therefore critical to regional transportation, emergency evacuation, and homeland security, as well as providing significant public access benefits through the North San Diego County coastal region. In lieu of relocating the highway at this time, the proposed Cardiff Living Shoreline Project aims to provide a protective barrier for Coast Highway 101 until approximately 2050, while also creating approximately three acres of southern foredune habitat and improving public access to

and along the coast. The project is also intended to serve as an experimental project to better understand the engineering and effectiveness of soft, more natural, shoreline protection systems.

Permit history

In 1998, in response to heavy winter storms, which forced the closure of Coast Highway 101, the City added approximately 800 tons of additional riprap on the beach and approximately 75-100, 6 feet long, 2 feet high concrete blocks to the existing riprap, without benefit of a CDP. In 2003, the Commission authorized CDP #6-02-066, which approved after-the-fact placement of the 800 tons of additional riprap and repair and maintenance of riprap spanning approximately 2,500 feet, including removal of the 75-100 concrete blocks and replacement with existing riprap from other areas. A March 2010 storm also resulted in limited access along the highway due to flooding and undermining in one section that prompted emergency repairs (CDP #6-10-22-G), which authorized pumping concrete slurry beneath the existing roadway and pulling existing riprap toward the road. In response to El Nino-related storms during the 2015-2016 winter, CDP #G-6-16-0009 authorized temporary placement of approximately 18 cy of cobble blended with existing rock in the northern segment of the project footprint (area across from Las Olas Restaurant). That emergency permit specifically anticipated that the subject Cardiff Living Shorelines Project would serve as the follow-up permit for the placement of that cobble, and the subject project includes incorporation of the cobble into the proposed dune system.

Detailed Description of Project Components

The design of the dune was constrained by various considerations such as: 1) dune crest height being limited to reduce viewshed impacts from the highway; 2) landward limit set by existing Coast Highway 101; and 3) total dune width being limited to 60 feet to limit impacts to recreational beach space. Details regarding the design are described below for the three major components: 1. Construction, planting, and maintenance of the dune system; 2. Construction of the pedestrian path and beach access; and 3. Future ongoing maintenance.

1. Dune system

The buried cobble berm will consist of materials excavated onsite and will have a width of 0-20 feet (depending on the actual volume of cobble found onsite), a height of 3 feet or less, and a slope of 3:1 or less (H:V). The cobble berm will be buried by at least 6 inches of sand ([Exhibit #4](#)).

The buried rock revetment will consist of a combination of 5,000 cubic yards (cy) of 2-4 ton riprap that currently exists onsite, and the importation of 1,000 cy of 2-4 ton rock from the deconstruction of the Cabrillo Power Plant groin, and 8,000 cy of 2-4 ton rock from a local quarry. The revetment will be approximately 25 feet in width, like the existing riprap, and 14 feet in height. Because the eastern 45 feet of the dunes will be

vegetated, the rock revetment will be buried by at least 18 inches of sand to allow for vegetation establishment on the overlying dunes.

Approximately 300,000 cy of sand has been approved to be placed at the subject site as part of the San Elijo Lagoon Restoration Project (CDP # 6-16-0275) over the entire width of Cardiff State Beach from the revetment to the water line. Placement of this sand is scheduled to begin in January 2018. The subject project will take place entirely in the landward most 60 feet of the new beach created by this project.

In order to create the dunes on top of the existing beach, up to 20,000 cy of sand from the San Elijo Lagoon annual inlet dredging program (CDP #6-16-0248), will be used to form the initial dune hummocks at slopes ranging from 5:1 to 3:1. The inlet dredging occurs annually in the April – June timeframe and is currently funded by endowments held by the San Elijo Lagoon Conservancy (SELC). Annual lagoon inlet maintenance operations involve removal of approximately 25,000 cy of sand from the lagoon inlet, and placement of this sand downcoast: 1) in the inter-tidal zone fronting the Pacific Coast Grill adjacent to the inlet to the south; 2) San Elijo Lagoon Dunes located approximately 2,000 ft. south of the Chart House on the eastern side of Coast Highway 101; or 3) at Seaside Terrace at the southern end of the Cardiff Living Shorelines Project ([Exhibit #10](#)). While these sites are immediately adjacent to the subject site, because this sand is not specifically approved to be placed at the subject site the inlet dredging permit must be amended in order to allow for the placement of this sand to construct and maintain the proposed dune system. The amendment is currently being reviewed by Commission staff and will be scheduled for a Commission hearing prior to the 2018 inlet dredging cycle.

The back beach elevation of Cardiff State Beach (at the toe of the existing riprap) is an average of 12 feet (NAVD88), while the crown elevation of Coast Highway 101 increases from north to south (15.6-19.7 feet NAVD88). In the northern reach of Coast Highway 101, the elevation of the highway is not much higher than the beach level and therefore the highway is particularly susceptible to erosion and flooding by wave action during winter storms. The elevation of the maximum height of the existing riprap protecting Coast Highway 101 varies; in some places, the riprap has provided sufficient protection to the highway from undermining, while in others it has not. Through a collaborative stakeholder process that included Commission staff participation and considered the need for flood protection, sand thickness for vegetation establishment and the creation of dune habitat, and preservation of coastal views, the proposed heights for the sand dune and revetment are as follows:

Dune

- Northern project segment (along existing parking): Sand dune crest to be 36 inches above the crown Coast Highway 101.
- Central and southern segments: Sand dune crest to be 28 inches above the crown Coast Highway 101.

Revetment

- Northern project segment (along existing parking): Rock crest to be 10 inches above the crown of Coast Highway 101. Areas where rock is currently higher

than 10 inches above crown will be lowered to 10 inches above crown. (Sand thickness to be 26 inches (difference between the heights of the sand dune and revetment)).

- Central and southern segments: Rock crest to match existing rock crest. (Sand thickness depends on the height of the existing rock crest.)

The goal of the proposed project is to create three acres of dune habitat with native dune plant cover, comparable to reference sites ([Exhibit #6](#)). Until dune vegetation establishes, temporary sand fencing is proposed on the dunes to mitigate sand blowing onto Coast Highway 101 and the pedestrian trail. This temporary fencing is envisioned to be in place for a period of six months to a year, contingent on the rate of plant growth. Sand fences will be no greater than 4 feet in height and will consist of wooden slats connected with twisted wire ([Exhibit #7](#)).

2. Pedestrian path and beach access

A 5-ft. wide, ADA-compliant, cement-treated decomposed granite footpath is proposed to be constructed parallel to the dune system along the western side of Coast Highway 101. Currently there is no existing pedestrian facility along the Coast Highway in this location. The proposed footpath will provide beach access during periods of narrow beach widths or high surf, and improve pedestrian linkages between the cities of Encinitas and Solana Beach. The Commission's Public Recreational Beach Impact Mitigation Fund was used to partially fund construction of the proposed footpath. Post and rope fencing is proposed along the entire western edge of the pedestrian trail to separate pedestrians from the dune habitat areas. In addition, a concrete curb is proposed along the eastern edge of the trail in the northern portion of the project area to discourage cars from parking on the trail or dune. The curb will have 4-inch cuts for every 10-foot section to provide adequate drainage. In addition to organizing the existing parking with a curb, one designated handicap parking stall will be added to the parking area. No curb is proposed in the central and southern portion of the project area, where the trail will be at grade, because there is no street parking available.

To facilitate access from the footpath across the dunes, six beach access points will be located within the northern portion of the project, where parking currently exists and beach usage is highest. Beach access points are 10 feet in width and oriented at 45-degree angles to the footpath along Coast Highway 101. Post and rope fencing will delineate the six proposed beach access points, all of which will also be clearly identified by signage ([Exhibit #8](#)).

3. Future Ongoing Maintenance

Coastal dunes act as a reservoir of sand that can be eroded and made available to beaches during extreme wave and erosional events. As designed, the entire system would be covered by sand year round, but it is expected that the proposed dune system will erode and require maintenance in the form of additional sand placement over time, particularly as sea level rises. Thus, the project includes parameters allowing for the placement of additional sand in the future to restore the dunes to their approved configuration.

The dune design includes a sacrificial erosion zone located approximately 15 feet in width starting at the seaward edge of the dunes. Due to expected exposure to erosion in this location, dune planting and other treatments would be minimized in the seaward 15 ft. of the project footprint. The concept for this zone is to provide an erodible buffer for the dune habitat area. The sacrificial zone could be annually restored by lagoon mouth sand without impacts to the newly formed dune habitat located more landward. It is envisioned that the sacrificial zone would be the zone of most maintenance, but future sand placement could take place outside these limits if necessary. No more than 10,000 cy of sand would be used to maintain the dune in any given year, and if sand is not needed to maintain the dunes, sand would be placed in the swash zone at Cardiff Beach, as currently conducted during annual inlet monitoring events.

The need for dune maintenance would be triggered by a number of dune performance metrics, including:

- Loss of sacrificial erosion zone – The 15-ft. wide sacrificial erosion zone has been eroded in an area of 25-ft. or greater in length. The minimum length of the zone is to accommodate the spreading of approximately one truckload of sand (i.e., 25-30 cy) along the dune. The 15-ft. of erosion is to be measured by comparing as-built and subsequent monitoring data.
- Exposure of revetment – Exposure of the revetment means that approximately 30 feet of the dune has been eroded from the seaward end or that there was a loss of 18 inches or more of sand from the dune crest. Any length of revetment exposure would require prompt maintenance.

For maintenance of the dune system, it is expected that the work would be conducted from the beach, similar to existing inlet dredging operations. Maintenance locations will be provided to the SELC no later than March 15th of any year. Loaded trucks would travel along the beach above the high tide line/wrack line to the maximum extent possible in order to access the designated repair locations. Trucks would drive below this line only at times when the beach is narrowed to the point where this avoidance measure becomes impractical. Trucks would end dump sand at the dune maintenance zones into five- to six-ft. mounds. Once placed, the mounds will be spread by hand or with earthwork equipment, depending on the amount of repair needed. Rebuilding of the dunes will be completed in a manner that is sensitive to established dune habitat by demarcating, via posts and flagging, areas of avoidance for the contractor. Safety personnel, signage, and flaggers would also be present during maintenance activities to minimize impacts to recreational uses of the beach.

The duration of dune maintenance work is contingent on the amount of damage to be repaired in a given year. Currently inlet maintenance work takes about 7 days to complete. A year with significant dune erosion is predicted to require 10,000 cy of sand to repair. Under this scenario, it is estimated that an additional 7 days would be needed to repair the dunes (14 days of work total) and this maintenance work would require 400 truck trips along the project reach. In this case, the contractor would use 3-4 dump trucks

to conduct this work. Assuming these truck trips occur over a 14-day period, about 28 truck trips would occur per day. It is assumed that repair work would be conducted from north to south but this will depend on the condition of the beach, extent of needed repairs, and other external factors that may impact the efficiency of the work.

If ongoing maintenance is inadequate, or unforeseen impacts to coastal resources occur, adaptive measures informed by physical and biological monitoring results should be implemented. Potential adaptive measures are listed below. Coordination with the Coastal Commission would take place prior to any of these measures, to ensure the maintenance is consistent with the approved permit:

- Raising the dune crest – Should wave overtopping of the dune become problematic at a specific area or along the entire project reach, dune heightening could be considered.
- Widening the dune – Should the beach stabilize or widen locally and sufficient recreational area exist, widening of the dune could be considered at specific locations or along the whole project reach.
- Landward migration of the dune – Should a capital improvement project propose a lane reduction to Highway 101, landward migration of the dune and the pedestrian trail could be explored.

Potential abandonment of the dune system may be triggered by exorbitant maintenance costs or unforeseen impacts to coastal resources. These triggers are described below and discontinuation of maintenance of the dune and acceleration of a long-term strategy for protecting Coast Highway 101 would not occur prior to close coordination with the Coastal Commission:

- Exorbitant Maintenance Costs: Maintenance costs would be considered exorbitant should all sand from the restored dune be completely eroded multiple times within a 5-year monitoring period, resulting in large-scale rebuild and replanting events.
- Unforeseen impacts to coastal resources: Should the project result in significant negative impacts to Coastal Act resources, the Project could be abandoned.

Coordination with other projects

For successful implementation and maintenance of this project, there will need to be close coordination with three other projects described below:

- San Elijo Lagoon Joint Powers Authority (JPA) Ocean Outfall Pipe Replacement (CDP #6-16-0099): The San Elijo JPA is replacing the landside of their ocean outfall pipeline located on Cardiff State Beach. Construction consists of directional drilling a new pipeline from Cardiff State Beach to the JPA facility on Manchester Road. Project construction is scheduled to take place September 2017

to February 2018. A high point/blow off for the outfall pipe exists within the northern area of the subject project footprint. Thus, the subject project is planned to begin on or after March 1, 2018 in order to avoid the construction period of the JPA project. In this area where the two projects overlap, the revetment design was modified to allow adequate buffer between the rock and the pipe. Based on review of the final plans for the JPA project, the subject revetment was designed to have approximately six feet of vertical and 15 feet of horizontal clearance from the outfall pipe.

- San Elijo Lagoon Restoration Project (CDP # 6-16-0275): The San Elijo Lagoon Conservancy is restoring lagoon health and function through large-scale dredging and grading of the lagoon. The project will take place over three years, starting in January 2018. Dredging of the lagoon will entail the export of 850,000 cy of sediment. Of which, a total of 300,000 cy of dredge material is proposed to be placed at Cardiff State Beach A dredge pipeline will be strung along landward portions of Cardiff State Beach to deliver sand to Solana Beach. Nourishment in Solana Beach is proposed to occur from January to February 2018. After completion of the beach fill at Solana Beach, the pipeline will be in place at Cardiff State Beach (at the north end of the subject project area) to nourish the beach from February to March 2018. Beach nourishment of Cardiff State Beach would provide the benefit of a wider beach, which would provide more sand to the system and therefore more protection to the proposed dune system. A construction staging site for this project is located within the project footprint of the subject application.
- San Elijo Lagoon Inlet Dredging Program (CDP #6-16-0248): Each spring, approximately 25,000 cy is removed from the sand deposit in the vicinity of the Coast Highway 101 bridge overcrossing via conventional earthwork equipment (i.e., excavator and trucks) to maintain circulation and water quality in the lagoon. The Commission has a long history of issuing permits for the lagoon inlet openings and dredging of the main tidal channel (e.g., CDP #s6-88-463, 6-89-109, 6-89-241, 6-90-128, 6-90-250, 6-91-3, 6-91-3-A, 6-91-258, 6-93-12 and 6-93-194, 6-94-15, 6-95-32, 6-95-142, 6-96-120, 6-99-12, 6-05-07, 6-11-014). Sediment within the lagoon inlet is 96% sand or greater. Native beach sand ranges from 99.9% to 88% sand, where the coarsest gradation (99.9%) was located at the back beach where the dune is proposed to be constructed. Thus, the lagoon inlet sand and the back beach portion of Cardiff State Beach are physically compatible (98.6% and 99.9% sand, respectively). Excavated inlet materials are loaded into trucks and driven down the beach for deposition at the permitted placement site along intertidal portions of the beach fronting the Pacific Coast Grill Restaurant, as well as specified dune restoration locations (San Elijo Lagoon Dunes and Seaside Terrace). Construction of the Cardiff Beach Living Shorelines Project will utilize up to 20,000 cy from this program to construct the dunes and may utilize up to 10,000 cy per year thereafter for areas in need of rebuilding. Sand from the San Elijo Lagoon inlet is targeted for the dune construction due to its coarse gradation. As described above, in order to place this sand at the subject site, an amendment to #6-16-0248 has been submitted. The amendment will be

consistent with all existing special conditions, such as the timing of inlet maintenance work and sensitive species monitoring (further described in the Section C. Biological Resources and Water Quality).

Phasing and construction

The applicant proposes to construct the buried revetment, cobble berm, pedestrian path, and dune in the following phases:

- Phase 1: Construct buried revetment and cobble berm – The contractor would trench along the back beach, removing existing riprap and cobble. Cobble/sand mix would be piled up on the seaward end of the dune. Geotextile fabric would be laid in the formed trench. Riprap would then be sorted from trench export and reused to form the buried revetment template. Imported rock would be used, where needed, to form design template on top of geotextile fabric. It is anticipated that the contractor would conduct all work from the beach, though closing one lane of Highway 101 is an option that has also been evaluated as a part of the environmental review process. Parking along the north end would need to be closed while rock work is being conducted (see Section D. Public Access and Recreation for more details).
- Phase 2: Construct pedestrian path and minor roadside improvements –The contractor would first prepare the trail base by excavating where needed to provide a stable base with imported aggregate. Redwood headers and concrete curbs would then be formed and placed on sides of the trail. Once formed, the trail would then be filled with a Class III base. Work is thought to be completed from the shoulder of Highway 101, but a lane closure may be necessary. Work along the parking area will result in temporary impacts to parking within this area (see Section D. Public Access and Recreation for more details).
- Phase 3: Construct Dune – Once the revetment and cobble berm are completed, the dune can be constructed. Existing sand from the buried revetment trench excavation in addition to imported sand from the inlet maintenance will be used to form the dune. Sand will be delivered to the site via trucks travelling along the upper beach from the inlet excavation area, similar to what is currently done annually as a part of lagoon inlet maintenance efforts. Sand will be end dumped adjacent to the rip rap and cobble berm. A smaller piece of construction equipment (e.g. Bobcat® or similar) would then be used to shape the dunes as shown in the plans. The contractor would also install permanent and temporary fencing to delineate the dune area and access points. Signage would also be installed. All of Phase 3 work is assumed to be completed from the beach side.
- Phase 4: Dune Seeding/Planting – The sand dune will be seeded with a native plant palette ([Exhibit #9](#)). The dune will not be seeded until the soils have been adequately leached of salt. Irrigation is not proposed; instead natural precipitation will leach the sand that will eventually establish plantings. Seed will be

broadcasted at a rate of approximately 20 lbs/acre in the late fall or early winter of 2018 and manually tilled using hand rakes or comparable equipment to gently move seeds into the topsoil. To provide temporary sand stabilization, techniques such as mechanical straw crimping, straw- wattles, temporary irrigation, hydro-seeding, silt-fencing, and/or vegetative windbreaks composed of grown-out native perennial “nurse” species will be considered based on local site and weather conditions. Additionally, containers of locally-sourced plants will also be installed along the constructed dunes. No road or public access impacts would occur from this activity.

Based on these phases, the proposed construction schedule is shown below:

- March 2018 – Construction starts for the proposed project.
- March to early April 2018 – Contractor builds buried revetment, cobble berm, pedestrian path. Construction envisioned to work from south to north along the project reach.
- Early April – May 2018– Contractor to construct dune with imported inlet sand. Sand to be contoured into hummocks. Contractor to install temporary and permanent fencing, and signage.
- Late Summer to Fall 2018 – Dune to be seeded by San Elijo Lagoon Conservancy prior to winter season.

All construction activities shall take place above the high tide line based on a November 23, 2015 survey. Therefore, the project was found to be outside of the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and California State Lands Commission.

Standard of review

While the proposed development is located within the City of Encinitas, it is located within the Commission's area of original jurisdiction and as such, the standard of review is Chapter 3 policies of the Coastal Act, with the City's Local Coastal Program (LCP) used as guidance.

B. COASTAL HAZARDS AND SEA LEVEL RISE

Section 30235 of the Coastal Act states:

Revetments, breakwaters, groins, harbor channels, seawalls, cliff retaining walls, and other such construction that alters natural shoreline processes shall be permitted when required to serve coastal-dependent uses or to protect existing structures or public beaches in danger from erosion, and when designed to eliminate or mitigate adverse impacts on local shoreline sand supply ...

Section 30253 of the Coastal Act states:

New development shall do all of the following:

(a) Minimize risks to life and property in areas of high geologic, flood, and fire hazard.

(b) Assure stability and structural integrity, and neither create nor contribute significantly to erosion, geologic instability, or destruction of the site or surrounding area or in any way require the construction of protective devices that would substantially alter natural landforms along bluffs and cliffs.

[. . .]

In addition, Section 30.34.040(B)(2) of the City of Encinitas's Implementation Plan (IP) states that within the 100-year floodplain, public improvements will only be allowed if the applicant can demonstrate the following:

a. The development is capable of withstanding periodic flooding, and does not require the construction of flood protective works, including but not limited to, artificial flood channels, revetments, and levees.

The proposed project involves the construction of a dune system underlain by a cobble toe and rock revetment that will be maintained over time by sand from the San Elijo Lagoon inlet annual dredging program. Because the project will reconfigure the existing riprap on Cardiff State Beach on the west side of Coast Highway 101 and import approximately 9,000 cy of additional rock to construct the buried rock revetment, it must meet the following four criteria for shoreline protection devices pursuant to Section 30235: (1) there is an existing structure, public beach area, or coastal dependent use; (2) the existing structure, public beach area, or coastal dependent use is in danger from erosion; (3) shoreline-altering construction is required to protect the existing threatened structure or public beach area, or to serve the coastal dependent use; and (4) the required protection is designed to eliminate or mitigate its adverse impacts on shoreline sand supply. The provision minimizes the allowance of shoreline protection devices, which can have a variety of negative impacts on coastal resources including adverse effects on sand supply, public access, coastal views, natural landforms, and overall shoreline beach dynamics on and off site, ultimately resulting in the loss of beach.

(1) Existing development to be protected

Coast Highway 101 was originally constructed by Caltrans in 1912 and was later realigned in 1926 to its present day location. Thus, the segment of Coast Highway 101 to be protected by the project was constructed prior to the Coastal Act and is thus entitled to protection. This section of Coast Highway 101 is currently owned and maintained by the City and supports approximately 20,000 average daily trips.

(2) Erosion danger

This segment of Cardiff State Beach is widest in late summer when waves are small, and narrowest in winter when waves are large. Currently, the beach consists of sand underlain by cobble and is approximately 100 feet wide from the mean high water line to the back beach/existing riprap. The applicants' feasibility study conducted by Moffett & Nichol dated February 2016 reports that beach width has varied from approximately 50 to 250 feet from 1982 to 2015 in the northern portion of the project area and from approximately 0 to 250 feet from 2000 to 2015 in the southern portion of the project area. Minimum beach widths were associated with the El Niño events in 1998 and 2010. The applicants' feasibility study shows maximum beach widths were associated with two beach nourishment projects implemented at the project site, which placed 101,000 cy of sand in 2001 and 89,000 cy of sand in 2015 (CDPs #6-00-038 and 6-11-018).

Coast Highway 101 has historically been damaged and flooded when the beach is narrow and large wave events coincide with high tides. While no data was collected following the El Niño event in 1983, records indicate that, in late January and February of the 1983 El Niño, storm events resulted in extensive beach erosion, flooding, and undermining of the highway and ½ ton boulders were pushed onto the highway (Kuhn and Shephard 1985). Similarly, in January and February of the 1998 El Niño, storm events also resulted in major damage to this reach of shoreline. Coast Highway 101 was temporarily closed or resulted in limited access more than 20 times during the 97/98 El Niño season due to flooding or undermining (Moffatt & Nichol 1998). A March 2010 storm also resulted in limited access along the highway due to flooding and undermining in one section that prompted emergency repairs (CDP #6-10-22-G), which authorized pumping concrete slurry beneath the existing roadway and pulling existing riprap toward the road. In response to El Niño-related storms during the 2015-2016 winter, CDP #G-6-16-0009 authorized temporary placement of approximately 18 cy of cobble blended with existing rock in the northern segment of the project footprint (area across from Las Olas Restaurant). Thus, the problem of ongoing erosion and flooding of the highway has been well documented and previously acknowledged by the Commission. Moreover, with climate change and sea level rise, increased relative wave heights and wave energy are expected, and the highway is expected to be exposed to more frequent wave attack with higher wave forces. The Commission's engineer has reviewed the project and agrees that the existing highway is at risk from erosion.

(3) Alternatives to use of a shoreline protection device

A shoreline protection device may be permitted only if approval of such a device is the only feasible means of protecting the endangered existing development. In other words, there are no less environmentally damaging alternatives or alternatives that are more consistent with other Chapter 3 policies of the Coastal Act. Other alternatives typically considered include: the "no project" alternative; abandonment of threatened structures or use areas; relocation of the threatened structures or use areas; beach nourishment programs; and various combinations of the above.

The existing unengineered riprap does not provide adequate protection for Coast Highway 101 and also has impacts to public access, recreation, and visual quality. In addition to historical records of past storm damage, modeling results based on existing conditions show that Coast Highway 101 is vulnerable to wave overtopping and undermining with a 43-year or less frequent swell event. The proposed project would protect the highway during storm events, and improve public access, recreation, views, and biological quality, as discussed in greater detail below. The proposed project is intended to be an interim solution to provide and maintain protection for the highway until approximately 2050, at which time alternative solutions will be needed. Those alternatives must include consideration of relocating the highway, elevating the highway, or removing lanes of the highway to avoid the need for shoreline protection. The subject application provides time for the City to develop a long-term solution to the coastal hazard exposure problem along this shoreline.

As described above, the Commission has already approved the placement of sand on the subject site for beach nourishment. However, due to the limited width of Cardiff State Beach, beach nourishment alone was determined to be insufficient to protect the highway in this location over many years. Dune systems are most stable when the beach is wide enough to dissipate wave energy for much of the year. A minimum beach width of 150 to 200 feet was determined to be most appropriate for dunes in Los Angeles County (LA County Sea Level Rise Vulnerability Assessment 2016). The width of Cardiff State Beach has historically varied greatly over time (0-250 feet) in response to the wave climate and management actions (i.e. beach nourishment and inlet maintenance). Due to the dynamic nature of the beach, uncertainty of future management actions, and the pilot nature of the project, the project design includes a buried revetment as a “backstop” protection for Coast Highway 101. The revetment is intended to protect the roadway from undermining should the beach and dune system erode. This project also aims to develop the understanding of where construction of a dune system maintained with a beach nourishment program could be implemented and what it needs to succeed in terms of monitoring and adaptive management over time.

In the feasibility study, Moffatt & Nichol analyze a number of alternatives for the revetment and dune design. Alternatives consisted of a dune with an exposed cobble berm and buried revetment, a dune composed entirely of sand with a buried revetment, and a dune with a buried cobble berm and buried revetment. Alternatives analysis also involved various dune and revetment height configurations as well as considering a parapet wall along the seaward edge of the trail. Moffatt & Nichol used a site-specific numerical model to evaluate the performance of the various designs to different water levels and extreme wave conditions. The proposed project was selected through a collaborative stakeholder process, to establish a design that would provide short-term protection to the highway while minimizing impacts to coastal resources. Based on modeling results, the project would not only significantly reduce the vulnerability of Coast Highway 101 to current extreme events, but also future coastal hazards. Under the 2050 high sea level rise scenario (2 feet) in combination with an extreme wave event (43-year seas), a portion of the project erodes and forms a steeper seaward face; however, most of the proposed dune habitat is retained and the highway is protected from undermining. However, the model identified that the project would not withstand the

2100 high sea level rise scenario (5.5 feet) in combination with an extreme wave event. Therefore, while not eliminating all future coastal hazards, especially at the northern end of the subject site, the proposed project will reduce the damage associated to winter storm waves.

Since the level of protection provided by the dune decreases dramatically beyond 2 feet of sea level rise, the City acknowledges the need for a longer-term strategy for Coast Highway 101 along this reach. Best available science suggests that 2 feet of sea level rise could be realized by the year 2050 (1 in 200 chance per OPC-SAT 2017). Thus, the project could possibly have a lifetime of 32 or more years, after which time another strategy or expanded version of this approach will be needed. The City is currently pursuing grants to study and fund long-term strategies to resolve coastal vulnerabilities in the project area.

(4) Alternatives to minimize adverse impacts from rock revetment

The fourth, and final, test of Section 30235 of the Coastal Act is that a shoreline protective structure must be designed to eliminate or mitigate adverse impacts to local shoreline sand supply. In addition, because any shoreline protective device must comply with other Chapter 3 policies, impacts to public access and recreation must also be minimized. The project inherently involves utilizing the deposition of sand onto the beach to create a stable dune system, which should reduce the impacts the existing revetment has on sand supply. The project's design is consistent with past Commission actions where the Commission has generally required siting and designing shoreline protection devices to be located as far landward as feasible. The landward placement ensures the device occupies less sandy beach and is acted upon by wave action less frequently, which in turn minimizes adverse impacts to shoreline processes, sand supply, public access and recreation.

The alignment of the buried revetment is along the eastern edge of the project area, farthest from the mean high water and closest to Coast Highway 101. Therefore, the shoreline protection device is located as far landward as feasible. By burying the revetment, it was designed to be as visually unobtrusive as possible and to not compromise the biological function of the overlying dune. **Special Condition #1** requires the applicants to construct the project in conformance with the approved final plans.

In addition to being sited and designed so as to minimize impacts to sand supply, the project incorporates the future placement of sand to maintain the dune system. It is expected that the proposed dune system will erode and require maintenance over time. As such, the applicants are proposing to utilize sand from the previously authorized San Elijo Lagoon inlet annual dredging program (CDP #6-16-0248) for the express purpose of constructing and maintaining dunes over the revetment so that the revetment is not exposed. Specifically, the pending amendment to CDP #6-16-0248 will authorize up to 20,000 cy from this program the first year for dune construction, and up to 10,000 cy per year thereafter for areas in need of rebuilding. Therefore, the project will reduce any existing adverse impacts to sand supply that may be caused by the existing riprap encroaching onto the beach, and result in more beach area available for natural

distribution of sand along the shoreline, creation of dune habitat, and for enhanced use by the public.

Given the experimental nature of the project and variability of conditions in coastal areas, **Special Condition #2** limits the duration of the approval to a period of five years from the date of Commission action and requires the applicants to submit a complete coastal development permit amendment application for the re-authorization of the project for an additional five year term. **Special Condition #2** also requires that five years from the date of issuance for this coastal development permit, the applicants shall submit a report to the Executive Director, documenting the status of the project, including results and findings of the required annual physical and biological monitoring reports.

Special Condition #3 requires the applicants submit, for the review and approval of the Executive Director, a Final Adaptive Management and Monitoring Plan that includes:

1. Developing a long-term strategy for Highway 101,
2. Continuing to pursue beach nourishment projects,
3. Maintaining the proposed dune system based on defined maintenance triggers,
4. Adapting the proposed dune system based on performance, and
5. Abandoning the proposed dune system and accelerating a long-term strategy if necessary.

A robust monitoring program has been developed to study this system to both inform other coastal communities considering such adaptive measures and inform the maintenance and adaptation program for this project. Realizing the potential for the dune to erode during extreme events, particularly as sea levels rise, the dune design includes a sacrificial erosion zone, where dune planting and other treatments would be minimized. The concept for this area is to provide an erodible buffer for the dune habitat area. This zone would be approximately 15 feet in width starting at the seaward side of the dunes. Loss of this sacrificial zone, or more significant exposure of the buried revetment, would trigger the need for dune maintenance and/or adaptive measures. **Special Condition #3** is based on the Commission's coastal engineer's review and acceptance of the draft Adaptive Management and Monitoring Plan.

Moreover, failure to maintain the approved revetment in good condition may result in adverse impacts to the marine/beach environment and public access/recreation if the revetment is exposed and errant rocks migrate unintentionally onto the sand or into the surf zone. In order to ensure that the approved revetment is adequately maintained, **Special Condition #4** requires that such maintenance or repair occurs in a timely manner incorporating all Best Management practices. This condition provides that it is the property owner's responsibility to maintain the revetment in a structurally sound manner. Removing or re-depositing any debris, rock, or material that becomes dislodged shall occur on an as-needed basis after such displacement occurs.

Because the development will occur in a known hazard location, the applicant must assume all risks associated with the development. **Special Condition #5** requires the applicant to submit a written agreement assuming all risks associated with the

development and indemnifying the Commission from any liability.

In summary, the project will reduce shoreline erosion and minimize flood risk to Coast Highway 101. Monitoring will determine when the project is no longer effective, and adaptive management measures include development of a long-term strategy for this coastal roadway. Compared to the existing riprap, the proposed dune system will result in more beach area for sand supply, native habitat, and public access. Special conditions authorizing a 5-year permit, requiring an Adaptive Management and Monitoring Plan, and specifying that maintenance occur in a timely manner will ensure that the project will not result in adverse impacts to coastal resources and public access. Therefore, as a condition, the proposed development is consistent with the requirements of Section 30235 and 30253 of the Coastal Act as well as the applicable policies from the City of Encinitas's LCP.

C. BIOLOGICAL RESOURCES AND WATER QUALITY

Section 30230 of the Coastal Act states:

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

Section 30231 of the Coastal Act states:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Section 30233(b) of the Coastal Act states:

Dredging and spoils disposal shall be planned and carried out to avoid significant disruption to marine and wildlife habitats and water circulation. Dredge spoils suitable for beach replenishment should be transported for such purposes to appropriate beaches or into suitable long shore current systems.

Section 30240 of the Coastal Act states:

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

In addition, the following policies of the City's LUP provide guidance regarding biological resources and water quality:

Resource Management (RM) Policy 2.3 states:

To minimize harmful pollutants from entering the ocean environment from lagoons, streams, storm drains and other waterways containing potential contaminants, the City shall mandate the reduction or elimination of contaminants entering all such waterways...

RM Goal 10 states:

The City will preserve the integrity, function, productivity, and long term viability of environmentally sensitive habitats throughout the City, including kelp-beds, ocean recreational areas, coastal water, beaches, lagoons and their up-lands, riparian areas, coastal strand areas, coastal sage scrub and coastal mixed chaparral habitats. (Coastal Act/30230/30231/30240)

RM Policy 10.3 states:

The City shall explore the prevention of beach sand erosion. Beaches shall be artificially nourished with excavated sand whenever suitable material becomes available through excavation or dredging, in conjunction with the development of a consistent and approved project. The City shall obtain necessary permits to be able to utilize available beach replenishment sands (as necessary, permits from the Army Corps of Engineers, California Coastal Commission, Department of Fish and Game, EPA, etc.). (Coastal Act/30232)

The Coastal Act as well as the City's LUP require the protection of marine resources. Section 30230 requires that marine resources must be maintained, enhanced or restored. Section 30231 requires the biological productivity and the quality of coastal waters appropriate to maintain optimum populations of marine organisms and for the protection of human health must be maintained. Furthermore, Section 30240(a) protects designated habitat areas and Section 30240(b) requires that development in areas adjacent to sensitive habitats be sited and designed to prevent impacts that would significantly degrade those areas.

The proposed project occurs along the back beach of Cardiff State Beach, above the mean high tide line. Due to public activity, high salinity, and periodic storm surges, there is little to no native vegetation currently on the beach. Nesting by the federally endangered California least tern (*Sternula (Sterna) antillarum browni*) and the federally threatened western snowy plover (*Charadrius alexandrinus nivosus*) have not been documented in the project area, though they may use the project area for loafing. In 2015, one western snowy plover nest was observed on higher ground immediately at Seaside Terrace, an approximately one acre of poorly developed coastal dune and southern foredune habitat south of the project site, the first plover nest spotted in at least 15 years. Seaside Terrace does not receive wave action and is actively being enhanced pursuant to CDP #6-16-0248. Thus, the Commission's biologist has determined while the project area does not qualify as Environmentally Sensitive Habitat Area (ESHA), it is adjacent to sensitive habitat areas.

The project involves excavation of a trench to construct the buried revetment and cobble toe and recontouring of existing sand and sand placed through other Commission authorizations. As previously described, the Commission approved the placement of 300,000 cy of sand on the subject site from February to March 2018 as part of the San Elijo Lagoon Restoration Project (CDP # 6-16-0275). Placement of this volume of sand will essentially rebuild the beach. After this beach replenishment, approximately 25,000 cy will be removed from the San Elijo Lagoon inlet as part of the annual dredging program in the April – June timeframe (CDP #6-16-0248). While the majority of this sand is currently placed in the inter-tidal zone fronting the Pacific Coast Grill, up to 1,800 cy was authorized to be placed at the San Elijo Lagoon Dunes located approximately 2,000 ft. south of the Chart House on the eastern side of Coast Highway 101 and up to 200 cy was authorized to be placed at the Seaside Terrace at the southern end of the Cardiff Living Shorelines Project. An amendment to CDP #6-16-0248 currently being reviewed by Commission staff would allow up to 20,000 cy of sand from the San Elijo Lagoon inlet to be placed on Cardiff State Beach to construct the proposed dunes and up to 10,000 cy of this sand could be available to be used for future maintenance of the dunes ([Exhibit #10](#)).

In terms of grain size of these various sediment sources, sediment removed from the San Elijo Lagoon is, on average, 88.4% sand, sand removed from the San Elijo Lagoon inlet is 98.6% sand, and the back beach portion of Cardiff State Beach is 99.9% sand. Therefore, the San Elijo Lagoon inlet sediment closely matches the sand profile existing within the proposed project.

The amendment to CDP #6-16-0248 does not increase the volume of sand being dredged from the San Elijo Lagoon inlet nor increase the volume of sand being placed on the beach. Rather, it would add the Cardiff State Beach Living Shorelines Project footprint as another site for sand placement, and therefore simply redesign the way in which sand will be used along Cardiff State Beach as a part of annual inlet maintenance events. Adding another site for sand placement does not introduce new or different impacts for the reasons described below:

- Direct burial: The 60-ft. wide Cardiff State Beach Living Shorelines Project footprint consists of approximately 35 feet of sandy back beach with little to no native vegetation and 25 feet of existing riprap. Since there is little to no existing habitat, there will be minor, if any, potential impacts related to direct burial associated with construction of the dune system. Since future maintenance of the dune system is expected to mostly will occur within the unvegetated, 15-ft. wide sacrificial zone, potential impacts related to direct burial of future dune habitat will also be minimized and avoided.
- Indirect burial: The existing San Elijo Lagoon Inlet Dredging Program provides a source of sand to the littoral system and indirect burial of benthic communities can occur as a result of inlet sand being redistributed during periods of energetic waves. The volume of sand removed from the inlet compared to the volume of sand naturally in the littoral system is small. Furthermore, indirect burial of benthic communities during periods of energetic waves is consistent with ambient or natural conditions, and benthic communities are accustomed to living in dynamic environments.
- Turbidity: Placement of sand within the dune system will result in a reduced level of turbidity as compared to direct intertidal placement. That is because the sand within the dunes will only come into contact with ocean water during extreme waves or erosional events. Turbidity impacts from the project would be similar to that of previously authorized sand placement at Seaside Terrace and are expected to be minimal.

Therefore, the potential impacts of sand placement related to grain size, direct and indirect burial, and turbidity have been analyzed and determined to be insignificant. Furthermore, the sand authorized to be placed on Cardiff State Beach through separate Commission actions related to the restoration and inlet maintenance of the San Elijo Lagoon naturally belongs on downcoast Cardiff State Beach and would be there if not for development and infrastructure constraints to lagoon hydrology. As a result, the sand that will be placed on Cardiff State Beach matches the physical properties of the sand already onsite, such that the ecological integrity of the beach will be are maintained.

While implementation of the project would not result in any permanent impacts to beach habitat, there is the potential for temporary impacts to sensitive species and water quality during the construction phase of the project. Since construction and future maintenance activities could occur during the western snowy plover breeding season (March 1 to August 31) and California least tern breeding season (April 1 to September 15), **Special Condition #6** requires that the applicants survey the area prior to construction activities and, if sensitive species are found, coordinate with CDFW and USFWS to avoid any impacts. Although nesting by California least tern and western snowy plover have not consistently been documented in the project area, the project proposes to improve the beach dune habitat, such that the site could potentially support nesting of the aforementioned listed species in the future. This condition ensures that breeding will not be disturbed and complements the mitigation measures for California least tern and

western snowy plover in the project's Mitigated Negative Declaration (MND), which also must be adhered to.

In addition, because the California grunion spawning occurs between early March and late August, should any dune maintenance work need to occur below the wrack line during this period, **Special Condition #7** requires the applicants to prepare a Grunion Monitoring and Avoidance Plan that is implemented prior to and during construction activities to protect California grunion and their eggs. **Special Condition #7** defines the protective measures that should be taken to avoid adverse impacts to grunion and grunion eggs using the Walker Scale, which defines grunion runs based on the number of fish per 300 foot segment of beach. In addition, **Special Condition #7** requires the applicant to develop a list of feasible measures, taking into consideration the stage of mobilization and construction constraints that may be utilized to allow sand placement work to continue but also avoid and minimize impacts to eggs within the two week spawning period.

The only type of hazardous materials associated with the project would be the use of conventional types of fuels to power construction equipment and trucks. The potential for leaks during construction exists and will be mitigated through preparation of a Construction and Pollution Prevention Plan (CPPP) or a Stormwater Pollution Prevention Plan (SWPPP). **Special Condition #8** requires the applicant to submit and implement either a CPPP or SWPPP, which requires Best Management Practices (BMPs) be implemented to minimize erosion and the discharge of sediment off-site and to minimize discharge of construction pollutants to coastal waters, including the San Elijo Lagoon and the Pacific Ocean.

Special Condition #9 requires the applicants to create and monitor the dunes in conformance with the approved Final Dune Creation and Monitoring Plan. The applicants and project partners will monitor the dune system footprint before project construction and the created dunes for a period of five years after initial construction to measure and assess the success of the project and determine if and when maintenance and management needs to occur. Biological monitoring will occur within the project area at Cardiff State Beach as well as two reference dunes: 1. Ponto State Beach, a remnant natural foredune site; and 2. Seaside Terrace at South Cardiff State Beach, a created foredune system. Reference site monitoring will help determine if the created dune system is establishing as expected based on nearby similar habitat or if adaptive management measures need to be implemented. Regular maintenance will be performed related to non-native vegetation control, removal of trash, maintenance of fencing and signage, and possible rebuilding of the dunes using sand from the San Elijo Lagoon. **Special Condition #9** is based on the Commission's biologist's review and acceptance of the draft Dune Creation and Monitoring Plan.

In conclusion, the project has been designed to minimize potential impacts of sand placement related to grain size, direct and indirect burial, and turbidity, and is conditioned to monitor for potential impacts to sensitive wildlife species, and to avoid or mitigate such impacts if necessary, via compliance with, construction BMPs and monitoring and maintenance outlined in the Final Dune Creation and Monitoring Plan.

Therefore, the Commission finds the proposed development as conditioned avoids or mitigates potential adverse impacts to biological resources and water quality, and is consistent with Sections 30230, 30231, and 30240 of the Coastal Act, as well as the applicable policies from the City of Encinitas's LCP.

D. PUBLIC ACCESS AND RECREATION

Section 30210 of the Coastal Act states:

In carrying out the requirement of Section 4 of Article X of the California Constitution, maximum access, which shall be conspicuously posted, and recreational opportunities shall be provided for all the people consistent with public safety needs and the need to protect public rights, rights of private property owners, and natural resource areas from overuse.

Section 30212 of the Coastal Act states:

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

(1) it is inconsistent with public safety, military security needs, or the protection of fragile coastal resources,

(2) adequate access exists nearby...

In addition, the following policies of the City's LUP provide guidance regarding public access and recreation:

Circulation Goal 6 states:

The City will make every effort to provide public access and circulation to the shoreline ...

Recreation (REC) Policy 5.1 states:

The City recognizes Cardiff Beach State Park, San Elijo Beach State Park, South Carlsbad Beach State Park and Moonlight Beach (future City) State Park, as the major visitor destination beaches in the Encinitas area ...

REC Policy 5.5 states:

[...] the City shall assure that existing public parking lots for public beach access points are maintained and that no reduction in the number of existing public parking spaces shall be permitted.

The Coastal Act requires that public access and recreational opportunities be protected

and provided. The proposed development is located on Cardiff State Beach, which is used for a wide variety of beach and ocean activities. Parallel parking is available along the west side of the northern reach of the highway. Walking to the beach from Coast Highway 101 currently requires traversing across the existing riprap. There is no pedestrian access along the shoulder of the highway extending north/south through the subject site.

The project will alter the recreational experience at Cardiff State beach by converting a beach characterized by sand backed with riprap approximately 25 feet wide, to a beach backed by dunes approximately 60 feet in width. Thus, there is approximately 35 feet of currently open beach area that will be replaced with the proposed dune system. In the winter, when the beach is at its most narrow, this may result in a somewhat smaller area available for unobstructed lateral public access, particularly during the first year post-construction of the project while the dune vegetation is establishing, as signage will discourage pedestrians from walking through the dunes. However, once the vegetation is established, there will be no restrictions on pedestrian access on the dunes. In addition, access to the beach from alongside Coast Highway 101 currently requires climbing over or through riprap, whereas the project includes the construction of six new pedestrian paths through the dunes, in addition to the new gravel, public footpath that will parallel the highway.

Construction of the project will involve temporary impacts at Cardiff State Beach and to Coast Highway 101. While public access within the project footprint will be restricted during construction, public access along the beach will be maintained on the seaward side of the construction site. Given the existing beach condition (i.e., approximately 100 feet wide beach), a total of 40 feet in width of dry beach would still exist for recreation seaward of the project area during construction. Since the project is planned to be constructed following placement of 300,000 cy of beach sand at Cardiff State Beach as part of the San Elijo Lagoon Restoration Project, the beach adjacent to the project area would likely be significantly wider, which would improve recreation associated with construction of the dune system.

Along Coast Highway 101, there are approximately 50 informal parallel public parking spaces (assuming standard, 21-foot long stalls) in an approximately 1,000-foot reach in the northern project area. The first two construction phases of the project involving the rock work and construction of the pedestrian path will result in temporary closures to parking within this area. It is anticipated that the contractor could work within a 500-foot area, such that only half of the parking (25 spaces) would be inaccessible at a time. The improvements within each 500-foot area are expected to be completed in a month. Thus, parking in this area would be at half capacity for two months.

Rock work or pedestrian path improvements may also require temporary closure of the southbound number 2 lane of the highway during construction hours. Closures are anticipated to be no greater than 500 feet at any one time; however, if a lane is closed, a 750-foot taper would be provided to transition traffic safely around the construction area. Lane closure procedures would be addressed in a traffic control plan to be prepared by the applicants. Coast Highway 101 is a major coastal access route and any closures could

impact the public's ability to get to the beach or travel along the coast. In this case, however, the closure has been minimized to the extent necessary to complete this portion of the project, and the other southbound lane of Coast Highway 101 will remain open to maintain access. The closure will be temporary, limited to two months, and access to the lane will be restored following construction of the buried revetment, cobble toe, and pedestrian path.

Construction equipment would be staged within a small portion of South Cardiff State Beach parking lot. The staging area would be an approximately 6,000 sq. ft. area (120 feet wide by 50 feet long) occupying 11 parking spaces or less ([Exhibit #11](#)). Staging activities would include equipment fueling, maintenance and overnight storage, including 1,000 cy of 2-4 ton rock from the deconstruction of the Cabrillo Power Plant groin, which will get delivered 2-4 weeks prior to the start of construction of the Cardiff Living Shorelines Project. Staging at this site would take place for about three months.

In addition, a stockpile area is proposed at South Cardiff State Beach ([Exhibit #11](#)). The stockpile area would occupy an area no greater than 2,500 sq.ft. (50 feet wide x 50 feet long) and would be no greater than 10 feet in height. The stockpile would be needed during all rock work activities and would allow efficient and continuous construction by the contractor, such that rock would be replenished once it's low or depleted. Thus, rock may be stockpiled at this site for about two months. The Cabrillo rock would not fit in this stockpile area and it would not be appropriate to store the Cabrillo rock on the beach for 2-4 weeks prior to the start of construction, because of the risk of coastal hazards and loss of public access and recreation.

The short-term, temporary impacts to public parking and beach area have been minimized to the extent feasible. **Special Condition #8** prohibits construction operations from Memorial Day weekend to Labor Day to alleviate impacts to public access and recreation during the busy summer months. **Special Condition #9** requires the applicants to submit a Final Staging and Storage Plan for the Executive Director's review and approval. to ensure that the stockpile area on Cardiff State Beach is used as proposed and that the other staging activities occur off the beach.

Special Condition #10 requires that the applicants submit a Final Public Access Plan for the review and approval of the Executive Director that will detail provisions for public access during construction and post-construction, including fencing and signage. The plan shall also include a description of the location, size, design, and content of all signs incorporated into the fence design to inform the public about the dune system and how to access the area depending on conditions, e.g., during or after vegetation establishment. Furthermore, the Final Adaptive Management and Monitoring Plan required by **Special Condition #3** will indicate how to maintain beach widths and dune heights, and thus prevent exposure of the buried rock revetment, so that opportunities for public access and recreation are maintained over time.

Coast Highway 101 has fixed the back of the beach and ultimately reduced the beach area available for public access and recreational opportunities, particularly during high tides and high wave events when the beach area fronting the existing riprap is often

impassible. While construction of the proposed dune system and pedestrian path and beach access points will result in temporary public access impacts, including restriction of public access along a portion of the beach where the construction area is proposed to be located, temporary loss of on-street parking, and potential limited closure of one southbound lane of Coast Highway 101, implementation of the project will result in significant additional beach area that will be returned to its natural state and made available for public use, thereby improving public access and recreational opportunities. Therefore, the Commission finds the proposed development, as conditioned, is consistent with Sections 30210 and 30212 of the Coastal Act, as well as the applicable policies from the City of Encinitas's LCP.

E. VISUAL RESOURCES

Section 30251 of the Coastal Act states, in part:

The scenic and visual qualities of coastal areas shall be considered and protected as a resource of public importance. Permitted development shall be sited and designed to protect views to and along the ocean and scenic coastal areas, to minimize the alteration of natural land forms, to be visually compatible with the character of surrounding areas, and, where feasible, to restore and enhance visual quality in visually degraded areas...

In addition, the following policies of the City's LUP provide guidance regarding visual resources:

Resource Management (RM) Goal 4 states:

The City, with the assistance of the State, Federal and Regional Agencies, shall provide the maximum visual access to coastal and inland views through the acquisition and development of a system of coastal and inland vista points. (Coastal Act/30251)

RM Policy 4.6 states:

The City will maintain and enhance the scenic highway/visual corridor viewsheds. (Coastal Act/30251)

As the project is located within the Scenic/Visual Corridor Overlay, Section 30.34.080.B of the City's IP provides further guidance:

When development is proposed on any properties within the Scenic View Corridor Overlay Zone, consideration will be given to the overall visual impact of the proposed project and conditions or limitations on project bulk, mass, height, architectural design, grading, and other visual factors may be applied to design review approval and shall be applied to coastal development permit approval.

Section 30251 of the Coastal Act requires that development is sited to protect visual qualities of coastal areas. This section of the highway is also designated in the City's certified LCP as a scenic highway with expansive views of the ocean to the west and San Elijo Lagoon to the east. Because the proposed development will be sited on the public beach on the west side of Coast Highway 101, the project has the potential to adversely affect public views of coastal resources.

In order to minimize impacts to existing ocean views, dune crest heights will be no greater than 3 feet above the highway crown elevation in the northern segment of the project and no greater than 2 feet, 4 inches above the highway crown elevation in the central and southern segments of the project. The dunes are higher in the northern segment of the project because the highway is lower in elevation, and thus more vulnerable to erosion and flooding, and because on-street parking is available in this segment and parked cars typically obstruct existing views. Higher dunes throughout the project would have provided more shoreline protection, but as proposed, the project has been designed to preserve public ocean views for those traveling on foot, by bike, or in the car along the highway ([Exhibit #12](#)). Because the beach is currently lined with riprap, the proposed dunes are expected to improve the visual quality of the beach and provide a softer, more natural ocean view from the highway.

The proposed project, as conditioned, has been designed to protect public views of the ocean and visual resources of the area will be greatly enhanced over what currently exists consistent with Section 30251 of the Coastal Act, as well as the applicable policies from the City of Encinitas's LCP.

F. LOCAL COASTAL PLANNING

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

While the proposed development is located within the City of Encinitas, it is located within the Commission's area of original jurisdiction and as such, the standard of review is Chapter 3 policies of the Coastal Act, with the City's Local Coastal Program (LCP) used as guidance. As conditioned, the project can be found consistent with the Chapter 3 policies of the Coastal Act, as well as the goals and standards contained in the City's certified LCP. Therefore, approval of the proposed development, as conditioned, will not prejudice the ability of the City of Encinitas to continue to implement its LCP.

G. CALIFORNIA ENVIRONMENTAL QUALITY ACT

Section 13096 of the Commission's Code of Regulations requires Commission approval of Coastal Development Permits to be supported by a finding showing the permit, as conditioned, to be consistent with any applicable requirements of the California Environmental Quality Act (CEQA). Section 21080.5(d)(2)(A) of CEQA prohibits a

proposed development from being approved if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse effect which the activity may have on the environment. In May 2017, the California Department of Parks and Recreation adopted a Final Initial Study/Mitigated Negative Declaration for the proposed project. The Study concluded that potentially significant impacts would occur with respect to biological resources, cultural resources, hazards and hazardous materials, and transportation/traffic, but that impacts would be less than significant with mitigation, such as pre-construction surveys, monitoring during construction, and implementation of BMPs.

The proposed project has been conditioned in order to be found consistent with the Chapter 3 policies of the Coastal Act. Mitigation measures, including conditions addressing coastal hazards, biological resources, water quality, and public access will minimize all adverse environmental impacts. As conditioned, there are no feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment. Therefore, the Commission finds that the proposed project is the least environmentally-damaging feasible alternative and can be found consistent with the requirements of the Coastal Act to conform to CEQA.

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APPENDIX A – SUBSTANTIVE FILE DOCUMENTS

- Coastal Development Permit # 6-02-066 (City of Encinitas), approved September 2003
- Coastal Development Permit # 6-16-0248 (San Elijo Conservancy & County of San Diego, Parks and Rec. Dept.), approved May 2016
- Coastal Development Permit # 6-16-0275 (San Elijo Conservancy & California Department of Transportation), approved November 2016
- Coastal Development Permit # 6-16-0099 (San Elijo Joint Powers Authority), approved January 2017
- Cardiff Beach Living Shoreline Project, Final Feasibility Study, February 2016 prepared by Moffatt & Nichol and the San Elijo Lagoon Conservancy for the City of Encinitas and California State Coastal Conservancy
- Final Mitigated Negative Declaration, March 2016 prepared by California Department of Parks and Recreation and Addendum Final Mitigated Negative Declaration, May 2017 prepared by California Department of Parks and Recreation
- 95% Basis of Design Report: Cardiff Beach Living Shoreline Project dated September 2017 prepared by Moffatt & Nichol for the City of Encinitas