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STAFF REPORT: REGULAR CALENDAR

Application No.:	9-18-1038
Applicant:	Southern California Edison Company and co-applicants (San Diego Gas & Electric Company, City of Anaheim, and City of Riverside)
Project Location:	San Onofre Nuclear Generating Station ("SONGS"), 5000 Pacific Coast Highway, San Clemente, San Diego County.
Project Description:	Replace and expand an area of deteriorated riprap at south end of existing retaining wall.
Staff Recommendation:	Approval with conditions.

SUMMARY OF STAFF RECOMMENDATION

Southern California Edison and its co-applicants, San Diego Gas & Electric Company, the City of Anaheim, and the City of Riverside (collectively referred to as "Applicant") propose to replace and expand an area of deteriorated riprap at the south end of the existing retaining wall that supports and protects the San Onofre Nuclear Generating Station ("SONGS").

The repair and extension are needed to ensure stability of this portion of the retaining wall during the approximately 20 years of facility decommissioning that just recently started. The extended riprap would cover up to about 1,750 square feet of area of the adjacent San Onofre State Beach that was not covered previously by the authorized shoreline protective structures at SONGS.

This new area of shoreline protection would also block about 30 linear feet of coastal bluff, and by doing so, would prevent the bluff from retreating and providing new beach area and a sand supply. Although these are relatively small areas of the nearby beaches and bluffs, the project would result in a loss of part of a popular recreational beach and of a portion of the local sand supply.

Commission staff recommends that the Commission approve the proposed project subject to several Special Conditions meant to protect coastal resources. **Special Condition 1** would require the Applicant to provide documentation of any approvals needed from other agencies, particularly the California Department of Parks and Recreation. **Special Condition 2** is meant to ensure the project is built in such a way so it does not further encroach on the shoreline. **Special Condition 3** limits the term of the Commission's approval to 20 years and requires the Applicant to apply for a coastal development permit near the end of that period to either remove the new protective structure or to modify the terms of this permit. **Special Condition 4** provides the Applicant's acknowledgement of the hazardous coastal conditions at the project location. It also ensures that the Applicant assumes all risks associated with the permitted development, waives any rights under the Coastal Act's Section 30235 other than what is recognized in this permit for protection of the development, and waives any claim of damage or liability against the Commission. **Special Condition 5** would require the Applicant to submit a plan detailing either of two mitigation approaches that it will implement to address the loss of beach area and sand supply. The first would result in projects at nearby beaches that would increase available beach area, sand supply, or beach access, and the second would be to provide an in-lieu fee towards such projects. **Special Condition 6** would ensure that public access is maintained during project activities, except during times where safety or security concerns would limit such access. **Special Condition 7** would require submittal of a Construction Plan that details Best Management Practices to be used during project activities that will prevent or reduce possible impacts to coastal resources, including water quality and public access. **Special Condition 8** would require the Applicant to submit a revised Spill Contingency Plan detailing worst-case spill possibilities from project equipment and vehicles, ensuring there are adequate materials to respond to those spills, and providing notification procedures information if a spill should occur.

With these conditions, Commission staff has determined the proposed work would conform to relevant provisions of Coastal Act Sections 30235 and 30253 (placement of shoreline protective devices and assurance of structural stability), Sections 30210, 30211, 30212, 30213, 30221, and 30240(b) (public access and recreation), and Section 30232 (spill prevention and response). Staff therefore recommends the Commission **approve** the proposed permit, as conditioned. The motion to act on this recommendation is found below on page 4.

TABLE OF CONTENTS

APPENDICES

EXHIBITS

I. MOTION AND RESOLUTION

Staff recommends the Commission **approve** coastal development permit application 9-18-1038.

Motion:

*I move that the Commission **approve** coastal development permit 9-18-1038 pursuant to conditions in the staff recommendation.*

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

Resolution:

The Commission hereby approves coastal development permit 9-18-1038 and adopts the findings set forth below on grounds that the development will be in conformity with the policies of Chapter 3 of the Coastal Act. 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

1. **Other Permits and Approvals**. PRIOR TO STARTING PROJECT-RELATED GROUND-DISTURBING ACTIVITIES, the Permittee shall provide to the Executive Director copies of all other local, state, and federal permits and approvals required to conduct project-related work. At minimum, the permits and approvals include a right-of-entry or other similar approval from the California Department of Parks and Recreation for work to be conducted within San Onofre State Beach, or documentation from the Department that no such approval is needed. Any changes to the approved project required through these approvals shall be reported to the Executive Director. No changes to the approved project shall occur without a Commission amendment to this CDP unless the Executive Director determines that no amendment is legally necessary.

2. **No Future Seaward Encroachment.** By acceptance of this CDP, the Permittee acknowledges and agrees, on behalf of itself and all successors and assigns, that no future enhancement, reinforcement, or any other activity affecting the shoreline armoring approved pursuant to this CDP, as described and depicted in its permit application, shall result in any encroachment seaward of the authorized footprint of the shoreline armoring. By acceptance of this CDP, the Permittee waives, on behalf of itself and all successors and assigns, any rights to such activity that may exist under Public Resources Code Section 30235 or other applicable laws.

3. **Limited Permit Term.** The authorization for the shoreline armoring approved pursuant to this CDP terminates twenty years after permit issuance or at completion of the SONGS decommissioning project, whichever occurs first. At least one year before the anticipated termination of the permit, the Permittee shall submit a complete CDP application to remove the approved shoreline protective structure or to amend this CDP to modify the terms of this approval.

4. **Assumption of Risk, Waiver of Liability, and Indemnity Agreement.** By acceptance of this CDP, the Permittee acknowledges and agrees (i) that the site may be subject to hazards, including but not limited to waves, storms, flooding, landslide, bluff retreat, erosion, earth movement, and the interaction of all of these, many of which will worsen with future sea level rise; (ii) to assume the risks to the Permittee and the property that is the subject of this CDP of injury and damage from such hazards in connection with this permitted development; (iii) to waive any rights that the Permittee may have under Coastal Act Section 30235, the Pacifica LCP, or other applicable laws, to shoreline armoring beyond what is recognized in this CDP to protect the development authorized by this CDP; (iv) to unconditionally waive any claim of damage or liability against the Commission, its officers, agents, and employees for injury or damage from such hazards; (v) to indemnify and hold harmless the Commission, its officers, agents, and employees with respect to the Commission's approval of the CDP 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; and (vi) that any adverse effects to property caused by the permitted project shall be fully the responsibility of the property owner.

5. **Mitigation for Loss of Beach Area and Sand Supply.** No later than sixty days after permit issuance, the Permittee shall submit, for Executive Director review and approval, a proposed Beach and Sand Supply Enhancement Plan that includes either of the following two mitigation options to provide, in the form of beach enhancement, sand supply, and/or public access, mitigation proportional to the approximately 2,750 square feet of beach area and 1,500 cubic yards of sand lost due to the project:

   a) The Permittee shall work in coordination with State Parks, Orange County, San Diego County, or other nearby landowners to develop one or more mitigation projects in the San Onofre State Beach area that will provide no less than the above-specified amounts of beach enhancement and sand supply. These projects may take the form of removal of shoreline armoring, increasing the area of usable beach, creation or improvement of access amenities to or along the shoreline, or other similar developments. The Plan shall include a description of the proposed project(s), their location, their expected recreation, sand supply, and public access benefits, the expected period of time the benefits will be provided (i.e., at least 20 years), and concurrence of the involved landowners. Upon the Executive Director's review and approval of the Plan, the Permittee will within 30 days submit any necessary application(s) for new or amended CDP(s) to implement the project(s).

   b) The Permittee shall submit to the Executive Director a detailed in-lieu fee analysis identifying the economic values of the above-referenced recreational beach area lost due to the project and of the sand lost due to the project. The recreational value loss analysis shall follow the method approved by the Commission for the City of Solana Beach Local Coastal Program Amendment LCP-6-SOL-16-0020-1 (adopted by the City on November 13, 2018). The sand loss analysis shall be based on the average of three bids provided by local vendors for delivery of 1,500 cubic yards of beach quality sand to SONGS. The total in-lieu fee calculated from these two analyses is to be no less than $419,300. This Plan is to also identify one or more entities implementing appropriate beach nourishment, sand replenishment, or shoreline public access programs that are available to use this in-lieu fee for nearby projects. Upon the Executive Director's approval of the Plan, the Permittee shall provide payment as specified in the approved Plan within 30 days of approval.

   The Executive Director may extend the time periods above for good cause upon the Permittee's request if accompanied by documentation of good faith efforts to identify appropriate in-kind or in-lieu mitigation measures.

6. **Maintaining Public Access.** The Permittee shall ensure that public access on the beach and along the SONGS public walkway is maintained, except during active project work periods or to ensure safety and security. All planned closures of the beach or walkway areas shall be posted at least 48 hours in advance at nearby public locations, including offices of the State Beach. Any unplanned closures shall be posted at the same locations with as much notice as feasible. The Permittee shall report any damage to the public walkway that results from project activities and shall submit, within 30 days of project completion, a complete CDP application to repair the damage, if the Executive Director determines that a permit is required.

7. **Construction Plan.** PRIOR TO THE START OF CONSTRUCTION ACTIVITIES, the Permittee shall submit two copies of a Construction Plan to the Executive Director for review and approval. The Construction Plan shall, at a minimum, include the following:

   (a) Construction Areas. The Construction Plan shall identify the specific location of all construction areas, all staging areas, and all construction access corridors in site plan view. All areas within which construction activities and/or staging are to take place shall be minimized to the extent feasible in order to have the least impact on public access and coastal resources, including use of inland areas for staging and storing construction equipment and materials, where feasible.

   (b) Construction Methods. The Construction Plan shall specify the construction methods to be used, including all methods to be used to keep the construction areas separate from public recreational use areas (including using unobtrusive fencing or equivalent measures to delineate construction areas), and including verification that equipment operation and equipment and material storage will not, to the maximum extent feasible, significantly degrade public views during construction.

   (c) Construction BMPs. The Construction Plan shall identify the type and location of all erosion control/water quality best management practices that will be implemented during construction to protect coastal water quality, including at a minimum the following: (1) silt fences, straw wattles, or equivalent equipment to be installed at the perimeter of the construction site to prevent construction-related runoff and sediment from discharging to the beach or ocean; (2) all construction equipment shall be inspected and maintained at an inland location to prevent leaks and spills of hazardous materials at the project site; (3) the construction site shall maintain good construction housekeeping controls and procedures (e.g., clean up all leaks, drips, and other spills immediately; keep materials covered and out of the rain, including covering exposed piles of soil and wastes; dispose of all wastes properly, place trash receptacles on site for that purpose, and cover open trash receptacles during wet weather; remove all construction debris from the site); and (4) all erosion and sediment controls shall be in place prior to the commencement of construction as well as at the end of each work day.

   (d) Construction Site Documents. The Construction Plan shall provide that copies of the signed CDP and the approved Construction Plan be maintained in a conspicuous location at the construction job site at all times, and that such copies are 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 Plan, and the public review requirements applicable to them, prior to commencement of construction.

   (e) Construction Coordinator. The Construction Plan shall provide that a construction coordinator be designated to be contacted during construction should questions arise regarding the construction (in case of both regular inquiries and emergencies), and that the construction coordinator's contact information (i.e., address, phone numbers, email, etc.), including, at a minimum, an email address and a telephone number that will be

made available 24 hours a day for the duration of construction, is conspicuously posted at the job site where such contact information is readily visible from public viewing areas, along with indication that the construction coordinator should be contacted in the case of questions regarding the construction (in case of both regular inquiries and emergencies). The construction coordinator shall record the name and contact information (i.e., address, email, phone number, etc.) 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.

All requirements above and all requirements of the approved Construction Plan shall be enforceable components of this CDP. The Permittee shall undertake development in accordance with this condition and the approved Construction Plan. Minor adjustments to the above requirements, as well as to the Executive Director-approved Plan, which do not require a CDP amendment or new CDP (as determined by the Executive Director) may be allowed by the Executive Director if such adjustments: (1) are deemed reasonable and necessary; and (2) do not adversely impact coastal resources.

8. **Revised Spill Prevention and Response Plan.** PRIOR TO STARTING CONSTRUCTION ACTIVITIES, the Permittee shall submit, for Executive Director review and approval, additional documentation to be implemented as part of the project's Spill Contingency Plan that identifies the worst-case spill scenarios from all equipment and vehicles to be used during the project and demonstrates that adequate spill response equipment will be immediately available to address those scenarios. The Permittee shall also submit a list of agencies and contacts that will be notified in the event of a spill, including the U.S. Coast Guard, local fire and/or emergency response agencies, and the Commission's spill response staff.

IV. FINDINGS AND DECLARATIONS

The Commission finds and declares as follows:

A. PROJECT DESCRIPTION

Southern California Edison and its co-owners (the San Diego Gas & Electric Company, the City of Anaheim, and the City of Riverside, hereafter "Applicant") of the San Onofre Nuclear Generating Station ("SONGS") have proposed repairing and extending an area of riprap at the south end of the retaining wall along the shoreline of the facility. The facility is located along the shoreline at the northern end of San Diego County on land leased from the U.S. Navy (see Exhibit 1 – Map of Project Location). The repair and extension are needed to ensure stability of the retaining wall that supports this part of the SONGS complex during the approximately 20 years of facility decommissioning that just recently started. The extended riprap would cover up to about 1,750 square feet of area that was not covered by the previously authorized shoreline protective structures at SONGS (see Exhibit 2 – Proposed Work Area). While this new area would represent a relatively small portion of the more than two thousand feet of the facility's existing retaining wall and shoreline protection, it would be within an area of public beach and near a public walkway used for public access and recreation.

Background
The Commission's initial 1974 approval of Units 2 and 3 of the SONGS facility (CDP #183-73) included construction of the existing retaining wall along about 2,200 linear feet of the shoreline. A subsequent amendment (CDP #6-81-330-A) required the Applicant to construct a public walkway along the retaining wall to connect the sections of San Onofre State Beach to the north and south of the facility. The Commission's approval required that the walkway be open to the public at all times except when public safety or plant security concerns required it to be closed. Since the time the wall and walkway were initially constructed, the riprap that protects them has been subject to occasional repairs or replacement, including work authorized by several CDP waivers (including E-04-001-W, 9-16-0836-W, and 9-17-1010-W). In those instances, the Applicant proposed no change in the materials used or in the extent of the riprap.

During work conducted under the most recent waiver, the Applicant noted that part of the riprap at the south end of the retaining wall had apparently sunk into the beach or moved seaward and was no longer protecting the wall (see Exhibit 3 – Photograph of Existing Site Conditions). Additionally, the beach at this location is now about seven to ten feet lower than it was during the original installation of the facility's retaining wall and riprap, leaving some of the remaining riprap in a precarious location above the adjacent ground surface and exposing part of the base of the retaining wall, which was originally sunk to about three of four feet below the then-existing beach elevation.

Proposed work activities
To protect the retaining wall and to reestablish stability of the riprap materials at this location, the Applicant proposes to replace the lost riprap and to also place additional riprap and materials needed to provide an extended foundation required due to the lower beach elevation. The new footprint would cover up to about 1,750 square feet of beach that was not previously covered by

riprap. The extension from the previous footprint would allow the riprap to be placed at a stable 3:1 (horizontal to vertical) slope (see Exhibit 4 – Section View of Proposed Project).

Before placing the new materials, the Applicant will excavate about three feet of loose beach sand to ensure the new materials are on a firm foundation. It will then place a bedding layer of quarry rock ranging up to about 50 pounds in weight, followed by two to three layers of secondary stone ranging in weight from about 200 to 300 pounds, followed by an armor stone layer of larger rock weighing between about 3,000 and 3,500 pounds (as shown in Exhibit 4). All materials will be placed above the high tide line.

The Applicant will deliver these materials in several stages (see Exhibit 5 – Project Transport Route). Materials will first be delivered and temporarily stored in SONGS Parking Lot 4 at the north end of the facility. From that location, the materials will be transported along a road within San Onofre State Beach and stored at a location just outside a State Beach parking lot near the north end of the public walkway along the SONGS facility. From there, the materials will initially be transported to the walkway and then transferred to smaller equipment for transport along the walkway to the installation site at the south end of the facility.

To reduce potential impacts on public access, the Applicant propose to conduct these transport and installation activities at night when the State Beach is closed. This will require the use of between eight and ten temporary portable light towers that the Applicants will position as needed along the transit route, but will direct the lighting inward towards the retaining wall and bluff to minimize spilling light onto nearby coastal waters. Additionally, before transporting any materials along the walkway, the Applicant will first drive a rubber-tired loader along the walkway to identify any areas where sinkholes or settlement may have occurred. The Applicant conducted a similar riprap repair project earlier this year, including a similar stability check of the walkway, and found no unstable areas; however, given the potential for sinkholes or settlement on the walkway, it will have available about 20 tons of sand and of cold mix asphalt to remediate any such areas. The Applicant will also temporarily remove the vehicle barriers located at each end of the walkway, but will place equipment at either end during non-transport and non-installation hours to prevent vehicle access. These activities will be coordinated with SONGS security personnel.

Project equipment will be fueled either at SONGS Parking Lot 4, at the end of the beach parking lot, or on the beach walkway using a fuel truck. The beach excavator will be fueled by a fuel hose extending from the SONGS Protected Area. All equipment will be parked when not in use over a drip pan to catch leaks or drips and all vehicles will be furnished with a spill kit that will be readily accessible during fueling. Site personnel will respond to any spills or leaks in accordance with the SONGS SDS Spill Contingency Plan (Procedure No. SDS-EV1-PLN-0004)

The work is expected to take four to eight weeks, based on a four-day work schedule of Monday through Thursday. To ensure this part of the existing retaining wall is not subjected to substantially greater erosion, the work will occur during December 2018 and January 2019 to protect against further winter storm and wave action. This timing will also allow avoidance of bird nesting season.

B. COASTAL COMMISSION JURISDICTION AND STANDARD OF REVIEW

The proposed project would occur on the Marine Corps Base Camp Pendleton, a federally-owned military facility located in an unincorporated area of the County of San Diego. The Applicant leases an approximately 84-acre site on Camp Pendleton for the SONGS facility. Because there is no certified LCP for this area, the standard of review for this development is Chapter 3 of the Coastal Act.

C. OTHER AGENCY APPROVALS:

Some proposed activities would take place at San Onofre State Beach, which is under the jurisdiction of the California Department of Parks and Recreation. **Special Condition 1** requires the Applicants to submit evidence of any necessary approvals from the Department or documentation that no approvals are needed. If the approvals result in changes to the project as approved by the Commission, **Special Condition 1** also requires the Applicants to submit an application to amend this CDP, unless the Executive Director determines that no amendment is legally necessary.

D. GEOLOGIC CONDITIONS AND HAZARDS

Coastal Act Section 30235 states, in relevant part:

> *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...*

Coastal Act Section 30253 states, in relevant part:

> *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. ...*

Section 30235 limits the approval of shoreline protective works that would alter natural shoreline processes to those required to serve coastal-dependent uses or those needed to protect existing permitted structures or public beaches in danger from erosion. This proposed development consists of a shoreline protective structure that would alter natural shoreline processes and is therefore subject to review under Section 30235. The proposed structure would protect another structure, the SONGS facility, that existing at the time the Coastal Act was enacted. It is therefore an "existing" structure for the purposes of analysis under Section 30235. When needed to protect existing structures, Section 30235 establishes three tests – first, that the existing structure is in danger from erosion; second, that a shoreline protective device is required to protect the existing structure; and third, that the shoreline protective structure be designed to

eliminate or mitigate the adverse impacts on shoreline sand supply. This proposed project is also subject to the requirements of Section 30253 that new development minimize risks to life and property in areas of high geologic and flood hazards, that it assure stability and structural integrity, and that it not require protective devices that would substantially alter natural landforms along bluffs or cliffs. These Coastal Act limitations help reduce the variety of negative coastal resource impacts that can result from placing protective devices along the shoreline – for example, their adverse effects on sand supply, public access, coastal views, natural landforms, and the resulting loss of sandy beach areas due to the structures changing local shoreline and beach dynamics.

Regarding the first test of Section 30235 – whether the existing structure is in danger from erosion – the SONGS facility has long relied on several forms of existing shoreline protection that were built as part of previous CDP authorizations by the Commission. The facility is supported by a more than 2000-foot-long retaining wall with extensive underlying foundations and a surrounding "blanket" of riprap and similar protective materials. Although the facility is no longer operating, it will continue to rely on these protective structures during its decommissioning process, which is expected to last about 20 years. During recent storm events, a small part of the existing protective structure – i.e., the riprap protecting the south end of the facility's retaining wall – was buried or transported offshore by wave action, leaving a section of the retaining wall exposed to wave action and increased erosion. Immediately above this part of the wall is one of the facility's support buildings, which could be undermined if adequate protection is not provided along this part of the wall.

The second test requires a determination of whether this proposed shoreline protection is required to protect the existing structure, which entails determining whether smaller or less environmentally damaging alternatives might provide the necessary level of protection. Shoreline armoring is permitted only if it is the only feasible alternative capable of serving the coastal-dependent use.[1] Alternatives to shoreline protective devices typically considered include non-armoring approaches, such as a "no project" alternative, managed retreat in the form of abandonment, demolition or relocation of structures, improvements to a structure's foundation or its site drainage, "soft protection" such as vegetation or beach or dune nourishment, and combinations of these approaches. If non-armoring approaches are determined to not be feasible, this test also requires that any armored design of the shoreline protective device be the least environmentally damaging option, including being the minimum size necessary to provide the needed level of protection.

The non-armoring alternatives available at this location would either be inadequate for protecting the facility or would result in greater environmental impacts. The "no project" approach would lead to continued erosion and eventual undermining of the retaining wall and the structures it supports; managed retreat is not yet possible with the SONGS facility just having recently started its 20-year decommissioning process; and changes to the foundation would involve significantly greater impacts to the beach due to the extensive excavation that would be required. Use of

[1] Coastal Act Section 30108 defines feasibility as follows: "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

vegetation on the bluff face would not resist the wave forces that are undermining the existing riprap, and there is insufficient area for installation of a beach or dune nourishment project that would be large enough to buffer the site from existing or projected future wave impacts. These alternatives may, however, be appropriate for future use once SONGS has completed its decommissioning process.

Of the available armoring alternatives, none would be less damaging than the proposed project. For example, constructing a vertical concrete seawall would result in greater visual impacts and similar losses of beach area and sand supply as the proposed project (see below). Installing a "shot-crete" treatment of the bluff face would also result in greater visual impacts than the proposed project and would likely not provide adequate protection for the expected wave action and erosional forces at this location. The proposed project is designed and sized to be the minimum needed, given the need to extend the riprap foundation to provide stability under conditions of the lowered beach elevation adjacent to the initially-installed SONGS riprap and retaining wall. These characteristics also allow the proposed riprap placement to conform to Section 30253's requirements to assure stability and structural integrity for the structure's expected 20-year life and to not substantially alter natural landforms along bluffs or cliffs. Overall, this additional proposed shoreline protective structure would represent a relatively minor extension of the existing SONGS shoreline protective devices, and is the best option among feasible alternatives at this point in SONGS' ongoing decommissioning process.

To ensure long-term conformity to Section 30253, the project must be subject to additional Special Conditions meant to acknowledge the future risks at this site of the increased storm and wave action and higher water levels associated with climate change and sea level rise. If the structure is damaged in the future as a result of these or other coastal hazards, it could lead to structural instability and potential harm to the public using the site or nearby coastal resources. To ensure the structure is maintained in its approved location, **Special Condition 2** requires the Applicant to ensure that the riprap is placed as described in its permit application. **Special Condition 3** provides acknowledgement that this CDP authorization is valid for 20 years or until the end of the SONGS decommissioning process, whichever occurs first, and that the Applicant is to apply before the end of that term for a permit to remove the structure or modify the terms of this approval. **Special Condition 4** additionally requires the Applicant to assume all risks for developing at this location and indemnify the Commission from any claims arising from construction or operation of the development.

Sand Supply Impacts

Regarding the third test of Section 30235, which requires that shoreline protection projects be designed to eliminate or mitigate adverse impacts to local sand supplies, there are several methods to evaluate a project's conformity. Some sand supply effects caused by placing structures on the beach can be difficult to differentiate from naturally-occurring shoreline processes, such as changes to the scour rate or the beach profile. Other effects are more qualitative, such as the changed visual characteristics of the beach. Some effects, though, can be quantified, including:

- The loss of the beach area on which the structure is placed;

- The long-term loss of beach area when the structure results in the back-beach location being "fixed" at a particular location on an eroding shoreline; and,
- The amount of material that would have been supplied to the beach absent the structure.

Calculations of these effects can illustrate how a shoreline protective device is expected to affect beach use and sand supply impacts, as described below:

- **Loss of beach area:** When a shoreline protective device is placed on a beach, the underlying area cannot be used by the public as a beach. Along with reducing public access and recreational opportunities, this results in a full or partial loss of sand supply from the underlying area as long as the area is occupied by the structure or is overtaken by the sea. This proposed project would cover an area of beach that would otherwise be occupied by unencumbered sand available to the nearby beach and littoral cell. The proposed extended area of riprap would occupy up to about 1,750 square feet of sandy area that would not be available to use as a beach.

- **"Fixing" the back beach:** The project would also "fix" this part of the beach and the coastal bluff at a particular location. On an unarmored shoreline, bluff erosion allows the beach to migrate inland with the bluff. This process stops or slows, however, when the backshore is fronted by a hardened, protective structure such as a seawall, berm, or riprap.[2] While the shoreline up and downcoast of the armoring continues to retreat and form beach areas, the shoreline in front of the armored area will eventually stop at the armoring. This effect, known as "coastal squeeze," will narrow the area between the moving shoreline and the fixed backshore. This coastal squeeze effect is further exacerbated by sea level rise. On the California coast the a rising sea level will result in landward migration of the shoreline, leading to a loss of beach area as it is compressed between the ocean migrating landward and the fixed backshore. This impact can be calculated for the time period the proposed armoring is expected to remain in place.

  The Commission has established a methodology for calculating this coastal squeeze effect – i.e., the long-term loss of beach due to fixing the back beach. The area of beach lost is equal to the long-term average annual erosion rate multiplied by the number of years that the back beach or bluff will be fixed, multiplied by the width of the property that will be protected. Consistent with past practice, and with the Commission's experience that shoreline armoring often needs to be reinforced, augmented, replaced, or substantially changed within twenty years of its original installation, the Commission generally evaluates this impact for an initial twenty-year period. This time-limited evaluation also provides for reconsideration near the end of that period to allow for consideration of possible changes in policy and law associated with armoring and with changed conditions at the project site.

[2] See, for example: Kraus, Nicholas (1988) "Effects of Seawalls on the Beach: An Extended Literature Review," Journal of Coastal Research, Special Issue No. 4: 1 – 28; Kraus, Nicholas (1996) "Effects of Seawalls on the Beach: Part I An Updated Literature Review," Journal of Coastal Research, Vol.12: 691 – 701., pg. 1 – 28; and Tait and Griggs (1990) "Beach Response to the Presence of a Seawall," Shore and Beach, 58, 11-28.

Past estimates of erosion rates along this stretch of coastline were about six inches per year,[3] though the Commission more recently used the high end of a 6- to 20-inch range for annual bluff retreat rates at San Onofre.[4] At 20 inches per year over a 20-year period, "fixing" the position of about thirty feet of the beach and bluff would represent a loss of about 1,000 square feet of future beach area. For this project, **Special Condition 3** authorizes the proposed shoreline protection for no more than 20 years, so this is an appropriate timeframe on which to base mitigation requirements.

- **Retention of Potential Beach Material:** Finally, the proposed project would result in a loss of sand that would otherwise be supplied by the eroding bluff. Beach sand material is carried by rivers and streams from inland areas to the shoreline, carried by waves from offshore deposits, and deposited on the beach by eroding bluffs. When the bluff is protected by a shoreline protective device, the natural exchange of sand material from the bluff and the shoreline to the beach can be interrupted. If the bluff and shoreline would otherwise be eroding, this represents a measurable loss of material that would normally become a part of the beach or would contribute to the littoral cell.

  The volume of material that would have gone into the sand supply system over the lifetime of the shoreline structure can be calculated as the volume of material between the likely future bluff face location with shoreline protection and the likely future bluff face location without shoreline protection. Using the above-calculated loss of about 1,000 square feet of future beach, and with a bluff height of about 40 feet, the erodible material that would otherwise be available to the beach if not trapped behind the extended riprap area would total about 1,500 cubic yards.

Collectively, the above calculations show that the proposed project would result in several quantifiable impacts, including an immediate loss of about 1,750 square feet of beach area, a future loss over twenty years of an additional 1,000 square feet of beach area, and a loss of about 1,500 cubic yards of potential sand material. This represents an adverse impact to public recreational access and sand supply for which the Coastal Act requires mitigation.

Mitigation

There are several ways to mitigate for these types of impacts. The most direct approach is through in-kind replacement, such as creating an equivalent beach and sand supply area elsewhere nearby or through beach enhancements that would improve nearby recreational opportunities. It is difficult to create a beach where no beach exists, particularly so with sea level rise already reducing areas along the coast where beaches can be sustained. However, if there are opportunities to remove armoring or encroachments from a nearby beach, this can effectively restore the use of that area of land for access and for more natural ecological beach functions. However, there are often difficulties with these direct or in-kind options for mitigation, and the Commission has therefore often relied on in-lieu mitigation whereby an applicant will provide funds to support part of a larger beach nourishment or beach enhancement effort.

[3] See, for example, California Department of Boating and Waterways and State Coastal Conservancy, *California Beach Restoration Study*, January 2002.

[4] See the Commission's Final Adopted Findings for CDP 9-15-0162, San Onofre Spent Fuel Pool Island.

When direct mitigation is proposed, the mitigation will be evaluated based on the level of beach expansion or enhancement or access improvements it provides as compared with the level of impacts, with the expectation that the benefits will be equal or greater than the impacts. If in-lieu mitigation, such as payment into a fund, is used, the payment needs to be proportional to the value of the lost coastal resources, specifically the lost beach area and sand supply. Historically, the Commission has considered several methods for establishing values of beach and shoreline areas that it has then used to determine appropriate amounts of in-lieu mitigation fees, to identify new or expanded public access amenities that help make up for the losses, or to calculate needed amounts of increased sand supplies. About 20 years ago, the Commission established a mitigation approach that was based on providing an equivalent amount of sand needed to replace the sand lost due to a project or to nourish an equivalent area of beach. Since that time, the Commission has also used a land assessment method to establish a value per square foot of beach, based on the value of nearby undeveloped upland, and has used a recreational value assessment to determine the diminished recreational value that results from a lost beach area. In recognition that the impacts of lost beach areas and lost sand supplies are separate, but related, in that they both can reduce public access to the shoreline, the Commission has required mitigation for both types of impacts in the form of improved public access amenities.

The Commission has also recognized that in addition to the more qualitative social benefits of beaches and shoreline areas (recreational, aesthetic, habitat values, etc.), these areas provide significant ecological benefits as well as direct and indirect revenues to local economies, the state, and the nation. The ocean and the coastline of California contribute substantially to the California economy through revenue-producing activities such as tourism, fishing, recreation, and other commercial activities.[5] There are also intrinsic values in passive recreation activities, such as relaxing or recreating at the beach, where there are clean sandy areas, clean water, and abundant wildlife. However, these recreational impacts are often difficult to quantify on a project-specific basis, particularly at this project site, which is part of a popular beach but is also immediately adjacent to a large industrial structure.

For this project, located on a popular beach that could benefit from improved amenities, requiring either in-kind mitigation or an in-lieu fee would provide benefits to mitigate the expected impacts of both beach loss and sand supply loss. The applicant has not yet identified possible in-kind or in-lieu mitigation options; nevertheless, either approach would be feasible for this area of the coast. For example, San Onofre State Beach has experienced significant erosion and threats to the main access road that visitors use to get to Surf Beach, at the north end of the SONGS facility. This accessway is now protected by an emergency revetment. Possible in-kind mitigation could involve providing alternative access that could route visitor traffic away from the area of erosion, providing a beach/dune enhancement at the eroding area, or other similar beneficial enhancements nearby.

[5] See *Sea Level Rise, Adopted Policy Guidance*, https://www.coastal.ca.gov/climate/slrguidance.html, "Just over 21 million people lived in California's coastal counties as of July 2014 (CDF 2014), and the state supports a $40 billion coastal and ocean economy (NOEP 2010)."

For recent projects that have used an in-lieu fee, the Commission has based the fee on a recreational valuation method.[6] This fee requires some project- and beach-specific inputs as well as more regional inputs. The project-specific inputs include dimensions of the armoring project, specifically the encroachment width, which for this project is approximately 35 feet. The beach-specific information includes the erosion rate, which, as noted above, was recently calculated to be 20 inches (or 1.67 feet) per year, and the average beach width, which at this location, varies seasonally but ranges from approximately 55 to 100 feet. Regional inputs include the value of visitor use at nearby beaches, with a recent and nearby example being in the City of Solana Beach where the average beach value per person per day is approximately $17.00 (based on an average summer value of $19.25 and winter value of $14.76). Using the number of annual visitors to a beach, this value is translated to an average value per square foot of beach. Due to the relatively remote nature of this particular beach location compared to most beaches in Southern California, Commission staff applied an average beach density value from Northern California of 1.26 people per beach area. Using this range of assumptions for beach width and estimated revetment width, the recreational losses resulting from the expanded revetment area, over 20 years, would range from approximately $404,000 to $500,000, as shown in Table 1 below.

The in-lieu fee for the loss of sand is in addition to the recreational losses. Normally, the value of sand is based upon the average of three separate bids for the delivery of beach quality sand to the project location; however, the applicant was not asked to provide this information as part of the filing. If the applicant chooses to pay an in-lieu fee, three such bids would be required. Sand replacement costs for other similar projects have ranged from $10.00 to $50.00 per cubic yard, and can be used to provide an upper and lower bound on the sand replacement fee. These values are included in Table 1, as well as the total range of the expected in-lieu fee that would be needed for this project if in-kind mitigation is not possible. The total in-lieu fee would range from $419,000 to $575,000. If the in-lieu fee is used for project mitigation, further information on the sand costs, project encroachment and recent beach width measurements will be used to narrow this range to a single value.

Table 1: Calculation of in-lieu fee (rounded to nearest $10 value)

In-lieu mitigation fees for 20-year impact:	**Low**	**High**
Fee for Recreational Beach Loss (for beach widths ranging from 55 feet to 100 feet)	$404,030	$500,120
Loss of 1,500 cubic yards of sand supply (at $10.00 to $50.00 per cubic yard):	$15,000	$75,000
Totals:	**$419,030**	**$575,120**

[6] See for example, the City of Solana Beach Major Amendment LCP-6-SOL-16-0022 (Public Recreation Fee); https://www.coastal.ca.gov/meetings/agenda/#/2017/5. The LCP, with Suggested Modifications, was adopted by the City Council, City of Solana Beach on Tuesday, November 13, 2018, at a Joint Special Meeting.

This is a fairly wide range, driven primarily by the difference in potential costs for replacing the sand supply. However, it provides guidance on what level of mitigation would be appropriate to address both of the project's main impacts – the loss of beach area and the loss of sand supply. The two main mitigation approaches suggested through these calculations are: first, to either identify an existing shoreline protective structure that is no longer needed, but if removed, could result in restoration of a similar-sized beach and sand supply area as that lost due to the proposed project; or, to provide an amount of funding within the above range that would be used to implement amenities to enhance public access and/or sand supply opportunities at nearby beaches roughly equivalent to those lost due to the proposed project. Whether mitigation provided at the low end or the high end of the cost range is deemed to be adequate would depend on the opportunities for beach enhancement nearby and the overall benefits derived from the proposed mitigation.

To implement the necessary mitigation, **Special Condition 5** requires the Applicant to submit, within sixty days of permit issuance, a Beach and Sand Supply Enhancement Plan that proposes either (a) one or more projects that will result in an increase in beach area, beach use, or sand supply proportional to that lost due to the project, or (b) calculations of an in-lieu mitigation fee for recreational loss based on the methods adopted by the Commission in the City of Solana Beach's Local Coastal Program amendment LCP-6-SOL-16-0200, and a sand replacement fee based on the average of three vendor bids. If the first option is selected, the Plan is to also include a description of the proposed projects, including their location, the expected benefits to be derived from them, the expected period of time the benefits will be provided (i.e., at least 20 years), and concurrence of the involved landowners. Based on the Executive Director's review and approval of the Plan, the Applicant will then submit any necessary application for a new or amended CDP to implement the Plan. If the second option is selected, the in-lieu fee is to be paid within 30 days of Executive Director approval of the Plan.

Conclusion

As described above, the project would result in a loss of beach area and sand supply; however, the Commission finds that the proposed project, as conditioned, conforms to Coastal Act Sections 30235 and 30253 because it is required to serve a coastal-dependent facility, is the least damaging feasible alternative viable to provide the necessary protection, and includes mitigation for its impacts on beach area and sand supply.

E. PUBLIC ACCESS AND RECREATION

Coastal Act Section 30210 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.*

Coastal Act Section 30211 states:

> *Development shall not interfere with the public's right of access to the sea where acquired through use or legislative authorization, including, but not limited to, the use of dry sand and rocky coastal beaches to the first line of terrestrial vegetation.*

Coastal Act Section 30212 states:

> *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, or, (3) agriculture would be adversely affected….*

Coastal Act Section 30213 states:

> *Lower cost visitor and recreational facilities shall be protected, encouraged, and, where feasible, provided. Developments providing public recreational opportunities are preferred. …*

Coastal Act Section 30221 states:

> *Oceanfront land suitable for recreational use shall be protected for recreational use and development unless present and foreseeable future demand for public or commercial recreational activities that could be accommodated on the property is already adequately provided for in the area.*

Coastal Act Section 30240(b) states:

> *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.*

As described in Section D above, the proposed shoreline protective device is expected to cause adverse impacts to public access and recreation. The proposed project would be between the first public road and the sea, and most of the activities would take place on or adjacent to public beaches. The Coastal Act requires that every coastal development permit issued for any development between the nearest public road and the sea is to include a specific finding that the development is in conformity with the public access and public recreation policies of the Act's Chapter 3. The Act also grants a high priority to public recreational access uses and low-cost activities to and along the coast. The Act also requires that oceanfront land and upland areas suitable for recreational use be protected for recreational uses. These overlapping Coastal Act policies clearly protect the sandy beach, and access to and along it, offshore waters, and park land for public access and recreation purposes, particularly free and low cost forms. This project, however, also involves activities that require some limits on access due to safety and security concerns.

San Onofre State Beach is an extremely popular public beach that provides many types of recreational opportunities, many of which are low-cost options. It provides surfing, hiking, many forms of passive and active recreation, and coastal camping opportunities. The immediate project area is next to a public walkway that the Commission required be built along the shoreline side of the SONGS facility to provide lateral access connecting the northern and southern parts of the beach.

As described previously, the project would result in two main types of adverse effects on public access and recreation – first, during the planned four to eight weeks of work needed to install the shoreline protective structure, and next, over the approximately twenty years the structure is authorized to remain in place. The Applicant has included several measures in its project description meant to reduce impacts that could occur during project construction. For example, the work will occur at night, when the nearby beach area is closed. The Applicant plans to conduct work from Mondays through Thursdays only, which will further reduce potential impacts during the more popular times for public use of the beach. During movement of equipment and materials used for the project, the Applicant will coordinate with State Parks staff, similar to what has been done in previous Commission-approved projects at SONGS, to ensure access and parking are not adversely affected. If storm events require closure of public access or recreational facilities, the Applicant will coordinate with State Parks to ensure people and vehicles are able to exit the area as needed to ensure safety. Similarly, the Applicant will monitor the public walkway during all nighttime activities to ensure there are no public safety or security issues that may arise during the project work. To further minimize effects on public access and recreation, **Special Condition 6** requires the Applicant to post notice of planned work activities at nearby State Park facilities at least 48 hours in advance and to post notice of any unplanned activities with as much notice as feasible.

For the longer-term adverse effects on public access and recreation, **Special Condition 5**, which is described above in Section D of these Findings, will provide public access and recreation mitigation for the loss of beach area and sand supply expected to result from construction of the shoreline protective structure.

Conclusion

The proposed project will adversely affect public access and recreation in two main ways – through its short-term construction activities and through long-term loss of beach and sand supply areas. However, these impacts will be mitigated through **Special Condition 5** and minimized by **Special Condition 6**. The Commission therefore finds that the project, as conditioned, is consistent with the public access and recreational protection policies of the Coastal Act.

F. SPILL PREVENTION AND RESPONSE

Coastal Act Section 30232 states:

> *Protection against the spillage of crude oil, gas, petroleum products, or hazardous substances shall be provided in relation to any development or transportation of such materials. Effective containment and cleanup facilities and procedures shall be provided for accidental spills that do occur.*

The proposed project involves the use of mechanized equipment on and adjacent to areas of heavily-used public beaches and coastal waters. This equipment could release fuel, hydraulic fluids, or other hazardous materials into the marine and shoreline environment. Depending on the size and contents of any leak, spill or discharge from one of these sources, impacts to both marine and terrestrial resources could be significant. **Special Condition 7** requires the Applicant to submit a Construction Plan that identifies measures and Best Management Practices that will be implemented to prevent potential spills onto the beach or into coastal waters. These are to include conducting staging and construction access away from the shoreline to the extent feasible, installing erosion and water quality control materials to prevent construction-related runoff from entering coastal waters, properly disposing of trash generated during the project, and other similar measures. **Special Condition 7** also requires the Applicant to designate a construction coordinator that will be available to respond to public inquiries and emergencies that may occur.

The Applicant will also be implementing a Spill Contingency Plan that is part of the SONGS facility's decommissioning project and is meant to ensure compliance with relevant state and federal water quality, hazardous waste, and health and safety requirements.[7] The Plan includes measures meant to protect against spills and to respond to spills should they occur, including notification requirements and emergency procedures. To further ensure that the project will provide protection against spills onto the beach or into coastal waters, **Special Condition 8** requires the Applicant to provide documentation of the maximum volumes of fuel and other hazardous liquids that may be present in vehicles used during the project and to provide proof that adequate response and cleanup materials (e.g., booms, absorbent pads, vactor vehicles, etc.) are immediately available to respond to any spill. **Special Condition 8** also requires the Applicant to provide a list of agencies that will be notified in the event of a spill, including the U.S. Coast Guard, local fire and/or emergency response agencies, and the Commission's spill response staff.

Conclusion

As proposed and conditioned, the Commission finds that the project will protect against the spillage of hazardous materials and is therefore consistent with Section 30232 of the Coastal Act.

[7] See Spill Contingency Plan – Procedure No. SDS-EV1-PLN-0004, and Plan SO123-XV-17.3.

G. CALIFORNIA ENVIRONMENTAL QUALITY ACT

Section 13096(a) of the Commission's administrative regulations requires Commission approval of coastal development permit applications to be supported by a finding showing the application, as conditioned by any conditions of approval, 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 will substantially lessen any significant adverse effect which the activity may have on the environment.

Because the proposed project has the potential to result in significant adverse environmental impacts, the Commission has identified and adopted eight special conditions necessary to avoid, minimize, or mitigate these impacts. With the inclusion of these special conditions, the Commission finds that, within the meaning of the California Environmental Quality Act of 1970, there are no further feasible alternatives or feasible mitigation measures available which will substantially lessen any significant adverse effect which the proposed project may have on the environment. Therefore, the proposed project, as conditioned, has been adequately mitigated and is determined to be consistent with CEQA.

APPENDIX A:
Substantive File Documents

File for Coastal Development Permit No. 9-18-1038
