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Energy and Ocean Resources

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STATUS REPORT ON SONGS MITIGATION PROGRAM

Following is a brief status report for the mitigation projects required in Southern California Edison Company's (SCE) coastal development permit for the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 (permit no. 6-81-330, formerly 183-73). The conditions originally were adopted by the Commission in 1991 to mitigate the adverse impacts of the power plant on the marine environment. The 1991 conditions also require SCE to provide the funds necessary for Commission technical oversight and independent monitoring of the mitigation projects, to be carried out by independent contract scientists under the direction of the Executive Director. In 1993, the Commission added a requirement for the permittee to partially fund construction of an experimental fish hatchery. The Commission has since approved amendments to the conditions in April 1997 and October 1998.

WETLAND RESTORATION MITIGATION

The Project

Condition A of the permit requires the permittee to create or substantially restore a minimum of 150 acres of wetlands to mitigate for impacts to fishes caused by the operation of SONGS. In April 1997, the Commission reaffirmed its 1992 approval of the permittee's choice of the San Dieguito River Valley as the site for the wetland restoration project and allowed for up to 35 acres credit for enhancement at San Dieguito Lagoon on the condition of perpetual inlet maintenance.

Progress Report

Wetland Restoration Planning. The Commission approved SCE's preliminary wetland restoration plan for the San Dieguito Lagoon in November 1997. The CEQA/NEPA environmental review incorporated the mitigation project into the overall San Dieguito River Valley Regional Open Space Park project. The lead agencies for the CEQA/NEPA review were the San Dieguito River Valley Regional Open Space Park Joint Powers Authority (JPA) and the U.S. Fish and Wildlife Service.

Following the review period on the January 2000 draft EIR/EIS, the final EIR/EIS was released in September 2000. At a public hearing on September 15, 2000, the JPA certified the EIR and

voted to support the EIR's designation of Mixed Habitat plan as the environmentally preferred alternative. The Commission's contract scientists attended the meeting and concurred with this decision. As required by NEPA, the availability of the final EIR/EIS was published in the Federal Register in September 2000, and the USFWS will prepare and issue a final Record of Decision.

Litigation on Final EIR. Lawsuits challenging the adequacy of the final EIR (FEIR) were filed by the Del Mar Sandy Lane Association and Citizens United to Save the Beach. Although in a July 2001 decision the Court rejected certain of the plaintiff's claims, it determined that the FEIR is inadequate with regard to several issues, most significantly that there is insufficient evidence supporting the FEIR's conclusion that the project will not increase scour and loss of sand at the river mouth. The Court set aside the JPA's certification of the FEIR and remanded the matter back to the JPA. The parties have not reached agreement on the language of the final ruling and have submitted opposing proposals to the Court. The judge expects to rule on the proposed judgment in November or December 2001, at which time the JPA plans to file an appeal.

Outstanding Issues. The permit requires SCE to submit the final restoration plan to the Commission within 60 days following the final action on the EIR/EIS. SCE is proceeding diligently to complete the planning process and is in compliance with the Commission's permit conditions on the wetland restoration project.

Although the JPA plans to appeal the Court's ruling on the FEIR, the JPA, SCE and USFWS have agreed to move forward during the appeals process to address the points other than the coastal process issue deemed inadequate by the Court in order to be ready to re-certify the FEIR if necessary. Regardless of the outcome of the appeals process, these additional analyses will be needed at the time of the Commission's review of the coastal development permit application for the restoration project.

At the same time, the staff and SCE are continuing to work with the parties to resolve the remaining issues involving the least tern nesting sites. Although the least tern nesting sites are included in the overall plan, they are a previous requirement from a coastal development permit (CDP No. 6-84-525) granted to the 22nd Agricultural District (District), and not a requirement of SCE's SONGS permit. SCE has agreed to construct the nesting sites for the District in exchange for access to and use of District property near the rivermouth. At issue is who is to take on the financial responsibility for implementing the maintenance, monitoring, and mitigation requirements.

Staff is working with SCE, USFWS, Department of Fish and Game, the JPA, and the District to bring these issues to closure as soon as possible. At a meeting in April 2001, staff discussed the annual nesting site maintenance and maintenance monitoring (i.e., site maintenance, including vegetation control and fence inspection and repair, predator monitoring and control, and bird monitoring) needed to maintain a viable least tern habitat as required under the District's coastal development permit. Staff also discussed the need for mitigating impacts to existing wetlands caused by the construction of the nesting sites. As a follow-up to the meeting, staff presented a draft annual maintenance plan and estimated annual costs. In July 2001, staff presented a formal interpretation of the District's obligations under its permit. Staff will continue to work with the parties to try to reach consensus.

SCE has moved ahead to develop its Final Plan while recognizing that project revisions may be necessary pending resolution of these issues. The staff will continue to work with SCE to ensure that the plan meets the objectives and standards specified in the permit and to ensure that Coastal Act issues will be addressed appropriately at the coastal development permit stage of the project. The staff is exploring options such as a Commission workshop to get public input and as much Commission guidance as possible before the plan is finalized.

Pre-restoration Monitoring. The Commission contract scientists continued pre-restoration monitoring in San Dieguito Lagoon and in other southern California wetlands that may be used as reference sites in post-restoration monitoring. In recent months, this monitoring has focused on determining the appropriate number and spacing of samples for use in the post-restoration monitoring of intertidal epibenthic and infaunal invertebrates. Fieldwork for this study, carried out in Tijuana Estuary, Mugu Lagoon, and Carpinteria Salt Marsh, was completed in early December 2000. Laboratory analysis of the samples is continuing. The contract scientists are continuing to monitor water quality in San Dieguito Lagoon, Carpinteria Salt Marsh, and Mugu Lagoon.

KELP REEF MITIGATION

The Project

Condition C of the permit requires construction of an artificial reef that consists of an experimental reef and a larger mitigation reef. The experimental reef must be a minimum of 16.8 acres and the mitigation reef must be of sufficient size to sustain 150 acres of medium to high density kelp bed community. The purpose of the experimental reef is to determine which combinations of substrate type and substrate coverage will most likely achieve the performance standards specified in the permit. The design of the mitigation reef will be contingent on the results of the experimental reef.

In April 1997, the Commission added the requirement for a payment of \$3.6 million to the State's Ocean Resource Enhancement and Hatchery Program (OREHP) to fund a mariculture/marine fish hatchery to provide compensation for resources not replaced by the artificial mitigation reef. SCE has fully satisfied this requirement.

Progress Report

Following completion of the environmental review and permitting process, construction of the experimental reef located off San Clemente was completed in September 1999. The experimental reef tests eight different reef designs that vary in substrate composition (quarry rock or recycled concrete), substrate coverage (17%, 34% and 67%), and presence of transplanted kelp. All eight reef designs are represented as individual 40 m x 40 m modules that are replicated in seven areas (i.e., blocks) for a total of 56 artificial reef modules totaling 22.4 acres.

Monitoring of Experimental Reef. The monitoring plan approved by the Commission specifies that the abundance of giant kelp, macro invertebrates, understory algae, and kelp bed fish, and the area and coverage of hard substrate on the artificial reef modules be surveyed each year.

Some of the major results seen in the analyses of the first year of field surveys are:

- (1) The amount of artificial reef material placed on the reef as determined from dive surveys by Commission contract scientists is considerably higher than the intended nominal coverages of 17%, 34% and 67% (54%, 65%, and 84%, respectively).
- (2) There has been substantial colonization of giant kelp on all reef designs with a trend for declining density of new kelp with increasing distance from the nearest natural kelp bed (San Mateo Kelp bed).
- (3) There has been relatively poor survivorship of giant kelp transplanted to the artificial reef. It appears that most transplanted kelp was out-competed by faster growing kelp that naturally colonized the reef.
- (4) The abundance of invertebrates and understory algae on the artificial reef in the first summer of the experiment tended to increase with the coverage of reef substrate. The total abundance and number of species of invertebrates and understory algae on the artificial reef was generally within the range observed on nearby natural reefs. However, the species composition of invertebrates and algae differed substantially between artificial and natural reefs.
- (5) The species composition and abundance of benthic reef fish on the artificial reef modules in the first summer of the experiment was generally similar to that found on nearby natural reefs. In contrast, water column fish were substantially less abundant and less diverse on the artificial reef compared to the reference reefs. This latter observation was most likely related to a paucity of mature kelp in the water column on the artificial reef compared to the reference reef.

The second year of surveys has been concluded. The contract scientists have completed the winter/spring survey of giant kelp, and the summer survey of benthic invertebrates, and macroalgae and fish for 2001. Additional sampling was incorporated in the summer benthic surveys to obtain more complete information on the degree to which reef biota differs between horizontal and vertical surfaces. Data from these surveys are being entered into the database. Both the summer/fall kelp survey and the fall fish survey have been completed.

The amount of effort required to conduct the 2001 monitoring surveys has been substantially greater than that of 2000 because the assemblages of plants and animals on the artificial reef have become more developed. In particular, dense colonization by giant kelp on the artificial reef modules more than doubled the amount of time required to complete the 2001 winter/spring kelp survey. Contract scientists have been analyzing data from the 2000 surveys to evaluate whether the sampling effort can be reduced without substantially compromising the data. These analyses examined the effects of reducing the number of transects sampled per reef module on statistical power (i.e., the probability of detecting differences among reef designs and locations or between artificial reef modules and the reference reefs). The results showed only small losses in statistical power for surveys of giant kelp, and invertebrates and understory algae when the number of transects sampled per module was reduced from four to two. Additional analyses showed a considerable loss of statistical power when the number of transects sampled per module was further reduced to one. Consequently, the number of transects sampled on each artificial reef module during the summer benthic surveys was reduced from four to two. The summer/fall kelp survey also has been reduced to counting marked individuals and replacing tags in a further attempt to reduce sampling effort. Contract scientists are continuing to examine the data in

search of ways to streamline the monitoring without compromising the integrity of the experiment and its ability to provide accurate information on suitable designs for the mitigation reef.

By and large, many of the patterns observed for invertebrates and kelp after the first year have persisted through the second year. Some of the major findings of the second year of field surveys are:

- (1) The abundance of invertebrates and understory algae on the artificial reef increased with the coverage of reef substrate, but did not differ with the type of substrate (i.e., quarry rock vs. recycled concrete). As was observed after the first year, the total abundance and number of species of invertebrates and understory algae on the artificial reef were generally within the range observed on nearby natural reefs. However, the species composition of invertebrates and algae differed substantially between artificial and natural reefs.
- (2) Abundances of many species of invertebrates and algae were assessed by a standard method which estimates the percent cover of planar projections in standardized areas (1 m² quadrats in our studies). Observations made during the first year of monitoring suggested that this method might underestimate the abundances of species occurring on substrates at high angles to the sea floor, which could lead to faulty conclusions regarding differences among reef designs. To investigate this possibility, studies were initiated that compared estimates of species abundance using the planar projection method to those made with a method that follows the contours of the substrate. These studies confirmed that the planar projection method does indeed underestimate abundances of species on high angle substrates. They also revealed that the planar projection method overestimates abundances of species that are found primarily on low angle substrates (i.e., near horizontal). Ongoing analyses are incorporating these results into comparisons of the benthic assemblages of the different reef designs.

FISH BEHAVIORAL MITIGATION

The Project

Condition B requires the permittee to install and maintain behavioral barrier devices at SONGS to reduce fish impingement losses.

Progress Report

SCE conducted a number of laboratory and in-plant experiments testing the behavioral response of fish to lights and sound devices from 1992 through 1999. None of the experiments showed evidence that these devices would reduce fish impingement losses as required by Condition B. At the same time, SCE continued its modified heat cleaning treatments at the plant, which result in a considerable reduction in fish impingement losses.

In October 2000, the Commission reviewed the results and concluded that no further testing of alternative behavioral barriers should be required at this time, provided that (1) SCE continues to adhere to the operating and monitoring procedures for the modified heat cleaning treatments and (2) SCE makes every effort to test and install, if feasible, future technologies or techniques for fish protection if such techniques become accepted industry standards or are required by the

Commission in other power plant regulatory actions. Thus, SCE is currently in compliance with Condition B of the SONGS permit.

The staff received SCE's *2000 Annual Marine Environmental Analysis* report in August 2001. The staff has reviewed the report's data and analysis on the fish chase procedure at SONGS and is preparing comments to SCE.