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**W-11**

Energy and Ocean Resources  
Staff: JLL, SMH—SF  
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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 staff technical oversight and independent monitoring of the mitigation projects, to be carried out by independent 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**

Following the Commission's November 1997 approval of SCE's preliminary wetland restoration plan, the wetland restoration mitigation project has been undergoing a planning and environmental review process which incorporates the mitigation project into the overall San Dieguito River Valley Regional Open Space Park project and includes additional wetland restoration required under the permittee's settlement agreement with the Earth Island Institute. The lead agencies for the CEQA/NEPA environmental review are the San Dieguito River Valley Regional Open Space Park Joint Powers Authority (JPA) and the U.S. Fish and Wildlife Service.

The permit conditions require SCE to submit a final restoration plan that substantially conforms to the preliminary restoration plan unless the CEQA/NEPA review concludes that an alternative plan that meets the conditions for minimum standards and objectives is the environmentally superior alternative. The permit conditions, as amended by the Commission in October 1998, contain specific due dates for SCE's submittal of the final restoration plan and coastal development permit application based on a completion of the CEQA/NEPA environmental review process around August 1999. The EIR/S team has worked diligently and cooperatively to resolve the many significant issues raised during this process; however, the additional detailed analyses that have been undertaken to address these issues significantly delayed completion of the EIR/S. Notwithstanding the specific due dates, the permit requires SCE to submit the final restoration plan within 60 days following the JPA's certification of the EIR and the U.S. Fish and Wildlife Service's record of decision adopting the EIS. SCE hopes to submit the final restoration plan to the Commission within a few weeks of final certification of the EIR/S.

The draft EIR/S was released on January 31, 2000. CEQA review notice was made at that time, and NEPA review notice appeared in the February 4, 2000 Federal Register. A public hearing was held on February 28, 2000, and the public review period continued through March 20, 2000. More than 500 comments were received by the lead agencies, distributed over 38 letters. Additional hydrologic modeling has been completed for each of the project alternatives and additional review of public access, coastal processes, engineering and other issues was undertaken to enable the EIR/S team to respond to comments. The Final EIR/S is expected to be released in July.

## **KELP REEF MITIGATION**

### **The Project**

Condition C of the permit requires construction of an artificial reef that will consist 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 what combination of substrate type and substrate coverage will best 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**

Construction of the 56-module experimental reef was completed in September 1999. Construction monitoring for the experimental reef modules also was completed; the

staff found that the footprints and percentage covers of the modules conformed very closely to the design specifications.

SCE's construction plan requires SCE to transplant kelp on 14 of the 56 modules. SCE's March 2000 work plan calls for kelp to be transplanted outside of the staff's permanent sampling area. While this placement reduces the risk that the transplants will be damaged by divers, it increases the area sampled during the staff's kelp counts by 33% and will require additional effort. Such additional effort will probably require supplemental funding not anticipated in the staff's work plan, which was prepared and approved by the Commission before SCE's plan for transplanting kelp was developed.

SCE is transplanting kelp in two stages to evaluate the effects of plant size on survival and the logistical ease of transplanting. Small plants cultured in the laboratory by SCE consultants were moved into field nurseries and it is anticipated that these will be outplanted to the reef modules near the end of July. In the meantime, new laboratory cultures of small plants were outplanted during June 2000.

**Reef Monitoring.** The staff completed installing permanent transect lines on each module in mid-November 1999. Staff's monitoring of the abundance of giant kelp and sediment depth on the artificial reef modules began in mid-February 2000 and was completed during the first week in May 2000. The staff also conducted field and analytical work to determine the locations of reference sites in nearby natural kelp forests. The staff obtained consensus from SCE's consulting biologists on the appropriateness of using San Mateo and Barn kelp beds as reference areas for the artificial reef experiment. Spatial data on the long-term abundance of giant kelp collected using down-looking sonar together with diver surveys was used to identify the precise location of twelve potential reference sites in each of the two kelp beds.

Based on site surveys made by the staff scientists and reef monitoring staff, nine sites in both the San Mateo and Barn kelp beds were chosen as suitable for monitoring during the five year experiment. Each site consists of a single 40 m x 3 m area and has been marked with permanent transects. As on the artificial reef modules, the number, sizes, and reproductive condition of adult kelp were measured at each site, as was the depth of the sediment at a number of locations in each 40 m x 3 m area. These measurements have been completed in both the Barn and San Mateo kelp beds. Sampling for invertebrates, algae, and the juvenile stages of giant kelp and other brown algae began in June.

Because of the timing of the reef installation, the staff anticipated little recruitment of young-of-year giant kelp and none of larger plants. Contrary to expectations, however, the staff found that the artificial reef modules were sparsely colonized by small adult kelp plants. These plants were attached to small cobbles, and their buoyancy allowed them to be moved about by surge and current until they became lodged in the artificial reef modules. Each plant was individually tagged, allowing staff to meas-

ure its subsequent survival and to compare the survival of these "drifters" to plants that recruit as small juveniles to the reef.

In the previous status report, staff presented initial data on patterns of density of these plants on each of the eight reef designs for each of the seven blocks of modules. Results show that (1) there were no differences in the densities of drifter kelp plants among reef designs, and (2) drifters were more abundant on modules nearest the San Mateo kelp bed than on those farther away.

Naturally recruited small young-of-year kelp were noted but not counted on the artificial reef during the surveys of larger kelp plants. Beginning in late May, staff scientists began surveys of kelp forest invertebrates and understory algae and began collecting quantitative information on young of year kelp. In addition, staff scientists provided diving and boat support to the SCE consultants implementing the transplanting of small kelp plants. Data collected and observations made during these tasks in early June indicate that heavy recruitment of giant kelp occurred sometime after the artificial reef was constructed. For example, about 100 large juvenile kelp plants per 100 m<sup>2</sup> were counted on one of the reef designs in the block of modules nearest the southern end of the reef (67% concrete). Quantitative estimates of natural kelp recruitment on the reef reference sites will be available in the fall of 2000.

## **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**

The permittee initially installed mercury vapor lights in Units 2 and 3 in September 1992 and tested them for approximately one year. No clear conclusions could be reached concerning the effectiveness of the lights. In 1994, the staff instructed SCE to conduct a series of laboratory and in-plant experiments testing the behavioral response of fish to lights and sound.

Following the permittee's experiments on light and sound devices from 1995 to 1997, the permittee considered fish guidance lights to be more effective in preventing fish from being trapped and killed. In October 1998, the Executive Director approved the permittee's installation plan for the lights and the lights were installed in December 1998.

A three-phased experiment to evaluate the effectiveness of the fish guidance lights was conducted between February and December 1999. Initial data from the early phases seemed to indicate that rather than attracting fish to the fish return system the lights repelled the fish. A new experiment was initiated in the final phase to evaluate whether eliminating light could be used as an effective means of reducing impinge-

ment losses of fish. Results from these experiments showed no evidence that installing lights in the cooling water systems of Units 2 and 3 would reduce fish impingement losses.

Staff expects to present a full report to the Commission at the August 2000 meeting.

## **MARINE MAMMALS AND SEA TURTLES**

In December 1999, the staff updated information on the mortality of marine mammals (harbor seals and sea lions) at SONGS first presented to the Commission in May 1997 and presented new information on the entrainment of sea turtles at SONGS. The staff also reported on the next steps to be taken to minimize these deaths and entrainments.

The staff is working closely with SCE biologists to reduce mortality by recovering and returning marine mammals in a more timely fashion. The SCE biologists and Commission staff scientists are also working closely with the National Marine Fisheries Service to review the current status of marine mammal takes by coastal power plants (including SONGS Units 2 and 3) and to implement a policy consistent with that now in effect on the east coast.

The yearly long term average mortality for harbor seals and California sea lions for SONGS Units 2 and 3 combined is three and seven, respectively. The most current data show that sea lion mortality in 1999 was four (about one-half the long term average), whereas harbor seal mortality was six, twice the long term average. Through May 2000, three sea lions and four harbor seals have died in Units 2 and 3. This is close to the long term average for sea lions and between 2 to 3 times the long term average for harbor seals. There has been no mortality of sea turtles in 1999 or 2000.

The staff will continue to update the Commission on a quarterly basis, or more frequently if there are unforeseen catastrophic mortalities. In cooperation with SCE and other involved agencies and interested parties, the staff also will assemble a working group of scientific experts to more fully explore possible ways of minimizing the entrainment and deaths of harbor seals, sea lions and sea turtles. The staff hopes to report back to the Commission on the results of this working group later this year.

