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Energy and Ocean Resources

Staff:	SMH, JJL, JD, JE, GB & SONGS Mitigation Program Scientific Team—SF
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Commission Action:	

SAN ONOFRE NUCLEAR GENERATING STATION (SONGS) MITIGATION PROGRAM

Staff Recommendation: 2012 and 2013 Two-Year Work Program and Budget

EXECUTIVE SUMMARY

The staff is recommending Commission approval of a two-year work program and $4,738,886 budget for the Commission's independent monitoring and technical oversight of the San Onofre Nuclear Generating Station (SONGS) mitigation projects. The projects are required under Southern California Edison Company's coastal development permit (No. 6-81-330-A, formerly 183-73). The staff is also recommending Commission approval of a $276,841 contingency fund to be used, in consultation with SCE, if needed for the specified purposes (additional time for the Scientific Advisory Panel, additional hydrology analyses and recommendations for remediation, if needed, early office lease termination, and unexpected repair and/or replacement of field vehicles and outboard engines).

The permit conditions originally were adopted by the Commission in 1991 to mitigate the adverse impacts of the operation of SONGS Units 2 and 3 on the marine environment. The conditions require SCE and its partners to: (1) create or substantially restore a minimum of 150 acres of southern California wetlands (Condition A), (2) install fish barrier devices to reduce the biomass of fish killed inside the power plant (Condition B), and (3) construct an artificial reef large enough to sustain 150 acres of medium to high density kelp bed community together with funding for a mariculture/marine fish hatchery (Condition C). The 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 (Condition D). Implementation of the mitigation projects is the responsibility of SCE whereas the Commission is responsible for implementing its independent

monitoring and technical oversight function. The Commission's monitoring and oversight also includes periodic public review of the performance of the mitigation projects.

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, October 1998, and October 2005.

Permittee's Funding Requirement

Condition D of the permit requires SCE to fund the Commission's oversight of the mitigation and independent monitoring functions identified in and required by Conditions A through C. The permittee is required to provide "reasonable and necessary costs" for the Commission to retain personnel with appropriate scientific or technical training and skills, as well as reasonable funding for necessary support personnel, equipment, overhead, consultants, the retention of contractors needed to conduct identified studies, and to defray the costs of members of a scientific advisory panel convened by the Executive Director to provide advice on the design, implementation, monitoring and remediation of the mitigation projects. The Commission has operated under approved work programs and budgets since 1993. The funds for the oversight and monitoring program are managed by an independent accounting firm.

Consultation with Permittee

Pursuant to the permit conditions, the staff has consulted with SCE on the proposed work program and budget for 2012 and 2013. Two main topics were covered: what constitutes completion of wetland construction and the wetland monitoring plan. Reaching agreement with SCE on the determination of what constitutes completion of wetland construction was critical because the SONGS permit prescribes that wetland completion triggers initiation of the wetland restoration performance monitoring program. It was determined that completion of the inlet opening defined completion of wetland construction. SCE's contractor, Marathon Construction, opened the inlet on September 29, 2011, and therefore SCE is in agreement that full scale wetland performance monitoring will commence January 2012. SCE also had several questions regarding the wetland monitoring plan that staff was able to address, and the work plan was updated accordingly.

Following consultation on the work tasks, SCE indicated its satisfaction with the proposed Commission oversight and independent monitoring work plan and budget for the wetland, reef and fish behavioral mitigation for 2012-2013. SCE's letter of support is attached.

Implementation of Commission Oversight and Independent Monitoring

The Commission retains a science advisory panel and a small technical oversight team (two scientist positions and administrative support) under contract to provide the necessary scientific expertise to the Commission and serve as project managers for the monitoring program. Contract staff biologists also are retained under contract to conduct the monitoring, and independent consultants and contractors are called upon when specific expertise or assistance is needed for specific tasks.

The staff implements the field monitoring program through a contract with the University of California, Santa Barbara that uses the existing contract Principal Scientists as project managers at no additional cost, with data collection done by university contract biologists under their direction (collectively known as "contract scientists"). Based on a comparison of estimated costs from UCSB, other universities, and private consultants, the Commission previously found that implementing the monitoring program through a contract with UCSB was the most efficient, cost-effective, scientifically rigorous, and timely method of achieving the goals of the independent monitoring required by the SONGS permit.

Work Program for 2012 and 2013

The status of each mitigation project guides the Commission's work program for the next two calendar years.

On October 12, 2005, the Commission approved the coastal development permit for the San Dieguito wetland restoration project (CDP #6-04-88). Construction began in August 2006 and was completed in fall 2011 with inlet dredging; the planting of cordgrass (*Spartina*) is scheduled for early spring 2012. During the 2012-2013 work period, the contract scientists will implement independent performance monitoring to ensure the wetland restoration meets the standards set forth in the SONGS permit.

Also on October 12, 2005, following completion of the five years of post-construction monitoring on the experimental reef, the Commission concurred with the Executive Director's determination for the type of hard substrate and the percent cover of hard substrate that is required for the artificial reef to mitigate for the loss of kelp forest habitat caused by SONGS operations. On August 8, 2006, the Commission concurred with the Executive Director's determination that SCE's preliminary mitigation reef plan met the requirements of the SONGS permit. On February 6, 2008, the Commission approved the coastal development permit and final reef mitigation plan (CDP #E-07-010). Construction of the artificial reef was completed in September 2008, and SCE submitted its final construction report and survey to determine compliance with the as-built Phase 2 Mitigation Reef to the design specifications in the reef permit in December 2008. On January 27, 2009, the Executive Director accepted the completed Phase 2 as identified in the Case 4 scenario of SCE's final report as meeting the SONGS permit and CDP E-07-010/*Final Design Plan* specifications. During the 2009-2011 work periods, contract scientists conducted performance monitoring on the mitigation reef. Reef tasks for the 2012 and 2013 work period will continue with the fourth and fifth year of post-construction performance monitoring.

In October 2000, the Commission reviewed the conclusions on the effectiveness of the fish behavioral barrier at SONGS, and has monitored the reduction of fish losses inside the power plant. Contract scientists will continue to review SCE's annual reports and investigate any unusual fish mortality events, and to work with SCE on monitoring fish impingement levels and the possible need to develop and implement new technologies that could significantly reduce fish losses.

Budget for 2012 and 2013

The proposed budget for calendar years 2012 and 2013 covers the independent monitoring and technical oversight program costs for the Commission's contract scientists, science advisory panel, consultants, administrative support, and operating expense. The proposed staff is the minimum needed to meet the goals specified by the permit under Condition D and to complete the tasks identified in the 2012-2013 work program. The proposed funding totals $4,738,886 for the two years.

Staff also is proposing pre-approved contingency funds in the amount of $276,841 specifically for potential additional costs for: (1) the Scientific Advisory Panel[1], (2) additional hydrology analyses and recommendations for remediation, if needed, in the event the restored wetland hydrology is not performing as expected, (3) early office lease termination, and (4) unexpected repair and/or replacement of field vehicles and outboard engines. Staff proposes these pre-approved contingency funds as a way of reducing the overall budget, but still providing the necessary Commission authorization for certain specified activities that may become necessary. Staff has used this approach since the 2002-2003 work program. To date, staff has not had to use the contingency funds.

Any expenditure from the pre-approved contingency fund would be made in consultation with SCE. If a dispute arises, the staff would bring the issue to the Commission for resolution.

I. STAFF RECOMMENDATION

The staff recommends that the Commission approve a two-year work program and budget for calendar years 2012 and 2013 for a total amount of $4,738,886 for both years in support of the Commission's independent monitoring and technical oversight of the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 marine resource mitigation projects required by Conditions A through C of permit 6-81-330-A (formerly 183-73). The Commission's independent monitoring and technical oversight program is to be funded by the permittee, Southern California Edison and the other SONGS owners, in accordance with the provisions of Condition D of the permit. In addition, staff recommends that the Commission approve a contingency fund in the amount of $276,841 for the Commission's program, to be funded by the permittee and to be expended in consultation with SCE for the purposes of increasing the time required from the Scientific Advisory Panel, undertaking additional hydrology analyses, covering the cost of early termination of the office space lease, and repairing and/or replacing field vehicles or outboard engines, as specified in the staff report.

[1] A contingency amount is proposed for the Scientific Advisory Panel as that effort may increase over past years' expenditures for advice to the Commission on the wetland restoration and mitigation reef projects. Although the SONGS permit authorizes the Scientific Advisory Panel to be funded up to $100,000 per year, plus annual adjustments due to increases in the consumer price index applicable to California, staff proposes a lower amount of funding for the Scientific Advisory Panel, based on current rates of expenditure. However, the overall budget does not provide any cushion for any increased effort; thus, the proposed pre-approved contingency fund amount up to the authorized annual amount for the two years, as adjusted, will allow timely response to changing circumstances.

II. MOTION AND RESOLUTION

Commission approval of the 2012 and 2013 two-year Work Program and Budget requires the following motion:

> I hereby move that the Commission approve the 2012 and 2013 two-year SONGS Work Program and Budget and contingency fund as recommended by the staff.

The staff recommends a **"yes"** vote on the foregoing motion, which will result in the adoption by the Commission of the following resolution:

> The Commission hereby determines that the 2012 and 2013 two-year SONGS Work Program and Budget and contingency fund that is set forth in the staff recommendation, dated October 13, 2011, carries out the intent of Condition D of Permit 6-81-330-A (formerly 183-73) by requiring the permittee to provide reasonable and necessary funding for the Commission contract scientists' technical oversight and independent monitoring responsibilities pursuant to the mitigation and lost resource compensation conditions (A through C).

III. FINDINGS AND DECLARATIONS IN SUPPORT OF 2012 AND 2013 TWO-YEAR WORK PROGRAM AND BUDGET

A. SONGS PERMIT BACKGROUND

In 1974, the California Coastal Zone Conservation Commission issued a permit (No. 6-81-330-A, formerly 183-73) to Southern California Edison Company for Units 2 and 3 of the San Onofre Nuclear Generating Station (SONGS). A condition of the permit required study of the impacts of the operation of Units 2 and 3 on the marine environment offshore from San Onofre, and mitigation of any adverse impacts. As a result of the impact studies, in 1991 the Coastal Commission added new conditions to mitigate the adverse impacts of the power plant on the marine environment which require the permittee to: (1) create or substantially restore at least 150 acres of southern California wetlands (Condition A), (2) install fish barrier devices to reduce the biomass of fish killed inside the power plant (Condition B), and (3) construct a 300-acre kelp reef (Condition C). The conditions specify both physical and biological performance standards for the wetland restoration and kelp reef, and require continuing monitoring of the effectiveness of the fish barriers. The 1991 conditions also require SCE to provide the funds necessary for Commission contract scientific staff technical oversight and independent monitoring of the mitigation projects (Condition D). Monitoring, management and remediation, if needed, are required to be conducted over the "full operating life" of SONGS, defined as past and future years of operation of SONGS Units 2 and 3, including the decommissioning period to the extent that there are continuing discharges. In 1993, the Commission added a requirement for the permittee to partially fund construction of an experimental white sea bass hatchery. Due to its experimental nature, the Commission did not assign mitigation credit to the hatchery requirement.

After extensive review of new kelp impact studies, in April 1997 the Commission approved amended conditions which: (1) reaffirm the Commission's prior decision that San Dieguito is the site that best meets the permit's standards and objectives for wetland restoration, (2) allow up to

35 acres credit for enhancement of wetland habitat at San Dieguito Lagoon by keeping the river mouth permanently open, and (3) revise the kelp mitigation requirements in Condition C. Specifically, the revised Condition C requires construction of an artificial reef large enough to sustain 150 acres of medium to high density kelp bed community (which could result in a reef larger than 150 acres) together with funding for a mariculture/marine fish hatchery as compensation for the loss of 179 acres of medium to high density kelp bed community resulting from the operation of SONGS Units 2 and 3. The artificial reef is to consist of an experimental reef of at least 16.8 acres and a larger mitigation reef to meet the 150-acre requirement. 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.

The Commission also found in April 1997 that there is continuing importance for the independent monitoring and technical oversight required in Condition D to ensure full mitigation under the permit.

B. COMMISSION OVERSIGHT AND INDEPENDENT MONITORING

Condition D of the permit establishes the administrative structure to fund the independent monitoring and technical oversight of the mitigation projects. It specifically: (1) enables the Commission to retain contract scientists and technical staff to assist the Commission in carrying out its oversight and monitoring functions, (2) provides for a scientific advisory panel to advise the Commission on the design, implementation, monitoring, and remediation of the mitigation projects, (3) assigns financial responsibility for the Commission's oversight and monitoring functions to the permittee and sets forth associated administrative guidelines, and (4) provides for periodic public review of the performance of the mitigation projects.

Condition D requires SCE to fund the Commission's oversight of the mitigation and independent monitoring functions identified in and required by Conditions A through C. The permittee is required to provide "reasonable and necessary costs" for the Commission to retain personnel with appropriate scientific or technical training and skills, as well as reasonable funding for necessary support personnel, equipment, overhead, consultants, the retention of contractors needed to conduct identified studies, and to defray the costs of members of any scientific advisory panel convened by the Executive Director to provide advice on the design, implementation, monitoring and remediation of the mitigation projects.

Pursuant to this condition, the Commission has operated under approved work programs and budgets since 1993. The funds for the oversight and monitoring program are managed by an independent accounting firm. The Commission retains a science advisory panel and a small technical oversight team (two scientist positions and administrative support) under contract to provide the necessary scientific expertise to the Commission and to serve as project managers for the monitoring program. Contract staff biologists also are retained to conduct the monitoring. In addition, independent consultants and contractors are called upon when specific expertise or assistance is needed for specific tasks. The Commission's permanent staff also spends a portion of their time on this program, but except for direct travel reimbursements, their costs are paid by the Commission and are not included in the monitoring program budget.

In approving the work programs and budgets for the monitoring and oversight program, the Commission has authorized an implementation structure through a contract with the University

of California, Santa Barbara that utilizes the existing contract scientists as project managers at no additional cost, with data collection done by university contract staff biologists under their direction. The Commission found, based on a comparison of estimated costs from UCSB, other universities, and private consultants, that this implementation structure is the most efficient, cost-effective, scientifically rigorous, and timely method of achieving the goals of the independent monitoring required by the permit. This implementation structure will continue during the two-year period of the 2012 and 2013 work program.

C. STATUS OF MITIGATION PROGRAM

C.1. Status of Wetland Restoration Mitigation

Mitigation Requirement

Condition A of the permit requires the permittee to create or substantially restore a minimum of 150 acres of wetlands to mitigate for the reduction in the standing stocks of nearshore fishes caused by the operation of SONGS Units 2 and 3. In April 1997, the Commission revised Condition A to allow the permittee to meet its 150-acre requirement by receiving up to 35 acres enhancement credit for the permittee's permanent, continuous tidal maintenance at San Dieguito Lagoon.

Wetland Restoration Planning and Environmental Review

In June 1992, following an evaluation of eight sites, the Commission approved SCE's selected restoration site, the San Dieguito River Valley. In April 1997, the Commission reaffirmed its prior decision that San Dieguito River Valley is the restoration site that meets the minimum standards and best meets the objectives set forth in Condition A.

In November 1997, the Commission approved SCE's preliminary wetland restoration plan as largely conforming with the minimum standards and objectives stated in the permit. 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 environmental review were the San Dieguito River Valley Regional Open Space Park Joint Powers Authority (JPA) and the U.S. Fish and Wildlife Service, respectively.

Following the review period on the January 2000 Draft EIR/EIS, the JPA certified the Final EIR/EIS on September 15, 2000, after public hearing. The EIR/EIS designated the Mixed Habitat plan as the environmentally preferred alternative.

Lawsuits challenging the adequacy of the Final EIR/EIS were filed by the Del Mar Sandy Lane Association and Citizens United to Save the Beach. On July 27, 2001, the San Diego Superior Court ruled that the EIR/EIS did not comply with CEQA and remanded the EIR/EIS back to the JPA for revisions. However, on August 4, 2003, the California Court of Appeals overturned the Superior Court's ruling and upheld the adequacy of the EIR/EIS.

Following the conclusion of the litigation, the USFWS issued its final Record of Decision on the Final EIR/EIS on November 28, 2003.

Steps in Implementing Wetland Restoration

Upon completion of the wetland restoration project design and engineering plans, SCE and JPA submitted their Coastal Development Permit Application (#6-04-88) in August 2004 to receive authority to carry out the restoration project. The Commission's contract scientists and staff reviewed the application and associated documents, requesting additional information where necessary. On October 12, 2005, the Commission approved the Final Restoration Plan and CDP #6-04-88, as conditioned, for the San Dieguito Wetland Restoration Project. (See Exhibits 1 and 2.)

In approving the preliminary restoration plan in 1997, the Commission acknowledged and accepted that a small amount of existing wetland could be lost in implementing the overall wetland restoration project at San Dieguito. The Commission had determined that if the Final Plan involves any loss of wetlands, then such loss would be mitigated and an amendment to the SONGS permit would be considered to allow the restoration project to go forward in compliance with the SONGS permit conditions. Thus, on October 12, 2005, the Commission also approved an amendment to SONGS CDP #6-81-330-A4 to revise Standard 1.3.h of Condition A to allow the minimal loss of existing wetlands as "specifically authorized by the Coastal Commission in Coastal Development Permit No. 6-04-88 for the San Dieguito Wetland Restoration Project Final Restoration Plan."

At the same time, the long-standing obligation of the 22nd Agricultural District to provide for Least Tern nesting habitat as a requirement of its Coastal Development Permit No. 6-84-525 was resolved with the inclusion of four new nesting sites in the Final Restoration Plan. On October 12, 2005, the Commission approved an amendment to CDP #6-84-525 to require the provision, maintenance and monitoring of the new Least Tern nesting habitat to be constructed as part of the San Dieguito Wetland Restoration Project.

Wetland Restoration Condition Compliance

Following the Commission's approval of CDP #6-04-88, SCE and JPA began preparing the final plans in compliance with the special conditions in CDP #6-04-88 that must be met prior to issuance of the permit, prior to commencement of construction, during construction, at the completion of construction, and on an on-going basis. Materials submitted in compliance with the special conditions were reviewed by the Executive Director and found to fulfill certain requirements of those conditions, as follows:

- On August 22, 2006, Commission staff issued the Notice of Acceptance for condition compliance required prior to issuance of the permit and issued CDP #6-04-88.
- On September 13, 2006, Commission staff issued the Notice of Acceptance for condition compliance required prior to commencement of construction; however, the Notice of Acceptance excluded authority to construct certain plan elements that require compliance with additional site-specific conditions (i.e., least tern nesting habitat, public trails, freshwater runoff treatment ponds, inlet dredging, use of North Beach staging area and beach restoration activities, river bend revetment, a disposal site, and a mitigation site).
- On October 2, 2006, Commission staff issued the Notice of Acceptance for condition compliance required prior to commencement of construction of segments 1 through 3 of

the Coast-to-Crest public trail (from Jimmy Durante Boulevard along the northern edge of the river to I-5).

- On November 20, 2006, Commission staff issued the Notice of Acceptance for condition compliance required prior to commencement of construction on disposal site DS32.
- On November 29, 2006, Commission staff issued the Notice of Acceptance for condition compliance on a revised design and alignment for the temporary construction haul road under Interstate Highway 5.
- On January 29, 2007, Commission staff issued the Notice of Acceptance for condition compliance required prior to commencement of construction of the Least Tern nesting sites.
- On February 20, 2007, Commission staff issued the Notice of Acceptance for condition compliance on a revised construction haul road route to Disposal Site 36.
- On November 21, 2007, Commission staff issued the Notice of Acceptance for condition compliance required prior to commencement of construction of the Freshwater Runoff Treatment Ponds and Segments 4 though 8 of the Coast to Crest Trail.
- On June 3, 2010, Commission staff issued the Notice of Acceptance for condition compliance required prior to commencement of construction of the North Beach access improvements.
- On September 15, 2010, Commission staff issued the Notice of Acceptance for condition compliance required prior to commencement of construction of the riverbank revetment.
- On November 30, 2010, Commission staff issued the Notice of Acceptance for condition compliance required for the 29th Street South Beach access improvements.
- On January 27, 2011, Commission staff issued the Notice of Acceptance for condition compliance required for the inlet channel excavation and dredging.
- On April 6, 2011, Commission staff issued the Notice of Acceptance for condition compliance required for dredge disposal.
- On August 10, 2011, Commission staff issued the Notice of Acceptance for condition compliance required for Least Tern nesting sites and beach nourishment/dredge disposal.

In April 2011 the Executive Director convened the initial meeting and site visit of the Coastal Processes Technical Panel to assist with the Beach Monitoring Program required under Special Condition #25. SCE submitted a summary report of beach surveys to the panel prior to the meeting, including historical and recent data for the beach monitoring sites designated in the SONGS permit.

The potential to restore additional acreage within the San Dieguito restoration site as proposed by other parties has delayed a portion of the JPA's mitigation program for impacts resulting from construction of the trails and treatment ponds. Staff has been working with the JPA on a revised mitigation plan to address possible additional alternative mitigation sites as well as propose changes in the re-vegetation plan for the Treatment Ponds and revisions to the coastal sage scrub mitigation site location. The JPA also submitted a material amendment request for revisions to

the timing of the mitigation program currently required in Special Condition #8, which was approved on September 7, 2011.

Wetland CDP Amendments

The following permit amendments have been submitted:

1. On August 24, 2006, the Commission issued an immaterial amendment to modify the language of special condition #4 with regard to the timing of submittal of final plans for berm and slope protection. Originally, the condition required such plans be submitted "prior to issuance of the coastal development permit." This immaterial amendment changed the timing of the submittal to "prior to commencement of construction of the revetment located on the south side of the river east of Jimmy Durante Boulevard."
2. On July 10, 2007, the Commission approved an amendment to include in the wetland restoration project the removal of the berm north/northeast of the Grand Avenue Bridge.
3. On August 20, 2007, SCE withdrew an amendment request to build a temporary river crossing.
4. On August 14, 2007, SCE submitted an amendment request to address several changes in the Final Restoration Plan, including changes to restoration module W45, exclusion of the riverbank revetment, and an alternative South Beach access plan. This amendment was revised in September 2009, and on June 9, 2010, the Commission approved an amendment to replace restoration module W45 with module W16, modify the timing of construction of public beach accessways, and modify the riverbend revetment requirements in Special Condition #4.
5. On October 25, 2007, the Commission issued an immaterial amendment to modify special condition #8 regarding the mitigation plan for impacts from construction of the trail and wetland treatment ponds.
6. On February 28, 2008, the Commission issued an immaterial amendment to modify the trail crossing under Interstate 5 from open bottom box culverts to bridges.
7. On October 13, 2009, the Commission issued an immaterial amendment to modify segment 8 of the Coast to Crest trail to designate a pedestrian-only path along an existing erosion-control stability bench on the slope of disposal site 32. The pedestrian-only segment would be in addition to and would connect with segment 8 to form a loop trail.
8. On November 19, 2010, the Commission issued an immaterial amendment to modify designated mitigation sites for creation of coastal sage scrub as required by Special Condition #8 regarding trail and treatment ponds.
9. On July 20, 2011, the Commission issued an immaterial amendment to modify the timing restriction on the staging area at North Beach to allow staging of construction equipment associated with dredging activities to begin immediately after Labor Day.
10. On September 21, 2011, the Commission issued a material amendment to: (1) add the Mesa Loop Trail to the project, and (2) modify Special Condition #8 to allow integration of 2.736 acres tidal or seasonal salt marsh mitigation into the SANDAG proposed restoration, with a back-up plan for restoration of 2.736 acres of seasonal high marsh adjacent to El Camino Real on JPA property.

Wetland Restoration Construction and Remaining Construction Issues

Construction of the wetland restoration project at San Dieguito (Exhibit 2) commenced in August 2006 and was completed on September 29, 2011, with the completion of the inlet opening. Construction activities began with the construction of the haul roads and berms, the installation of fencing to delineate project boundaries and sensitive habitat, and BMP (best management practice) fencing to contain soils within the project area during rainfall events. Construction proceeded with the clearing and grubbing of vegetation and debris from project areas to the south of the San Dieguito River and west and east of Interstate 5. Construction of the large subtidal and intertidal basin (44 acres) in Area 2A (Module W1) west of Interstate 5 commenced in December 2006 and was completed with opening to tidal exchange on January 23, 2008. Excavation and grading to create middle and high marsh in Area 2A (Modules W2, W2A, and W3) adjacent to the San Dieguito River was begun in April 2007 and completed in January 2008.

In April 2007, construction of wetland habitat commenced in other areas within the restoration site. This included modules on the east side of Interstate 5, both north (Area 3) and south (Area 2B) of the San Dieguito River that are primarily high and middle salt marsh and exposed mud flat habitat. Tidal flushing to the restoration site was enhanced through a partial dredging of the inlet on May 7, 2008. Excavation and grading, including the construction of tidal creek networks, was completed in Area 3 (Modules W4, W16) and these areas were opened to tidal exchange on December 3, 2008. Excavation and grading of Area 2B (Modules W5, W10) was also completed in December 2008. Material excavated from the construction site was deposited in upland disposal sites within the project area. Berms that will constrain storm runoff were completed along the boundary of the effective flow area of the San Dieguito River.

Disposal Sites and Berms. The disposal sites and berms were covered with topsoil and hydroseeded in December 2007 and October 2008 to control erosion. The results of the hydroseeding were mixed. Initially, the hydroseed applications were not successful in producing native vegetation and the berm slopes and disposal sites became covered with weeds. However, a program of intensive hand weeding of the berm slopes during summer 2010 proved beneficial and much of Berm 8, bordering the south side of modules W4/W16 and portions of Berm 9 bordering the south side of W2/W3 are now covered with native plants (goldenbush, saltbush, buckwheat, and sand aster). SCE has committed to weeding and the application of hydroseed to bare areas as necessary in order to achieve the City of San Diego requirement for native plant cover on berms and disposal sites.

Vegetation. Following excavation and grading, portions of the restoration project were planted with salt marsh vegetation. Planting of selected species (largely pickleweed) in high marsh habitat occurred in January/February 2009. The performance of these plantings varied among modules with the best survival and growth occurring in W4/W16, whereas plantings failed to survive in W2/W3. Some natural recruitment of pickleweed has occurred in all modules. Discussions between Commission staff, contract scientists, and SCE regarding the failure of the plantings and the patchiness of natural plant establishment lead to the construction of tidal networks and re-grading of some areas of W2/W3 in November 2010 to lower the elevation of the marsh plain to better convey tidal waters throughout these modules. A second round of planting, to be accomplished following full inlet dredging, will involve planting cordgrass in low marsh habitat.

Least Tern Habitat. Four least tern nesting sites were constructed within the wetlands restoration area to fulfill mitigation requirements of the 22nd District Agricultural Association (DAA) under a previous Coastal Development Permit. The nesting sites are not a requirement of the SONGS Permit; however, in land use agreements among SCE, the 22nd DAA, and the JPA for the wetland restoration project, SCE agreed to construct the nesting sites for the 22nd DAA. (The 22nd DAA will be responsible for the maintenance and monitoring of the nesting sites.) An issue pertaining to the suitability of the material initially used to cap the sites, which contained too much silt-clay, was recently resolved. Following discussions with US Fish and Wildlife, SCE agreed to re-cap the nesting sites using sand more suitable as nesting habitat obtained during excavation of the channels. The nesting sites have been re-graded and have received sand approved by US Fish and Wildlife. Following the addition of a thin shell layer on all sites, scheduled to be completed by the end of November 2011, on-going maintenance and monitoring will be transferred to the 22nd DAA.

Public Access. JPA components of the project include a portion of the Coast to Crest Trail adjacent to the restoration site and the construction of Treatment Ponds (TP41) designed to remove pollutants from surface runoff entering the restoration site. These components are not a requirement of the SONGS Permit. Construction of the trail is nearly complete. The potential to restore additional acreage within the San Dieguito restoration site as proposed by other parties required the JPA to identify an alternative mitigation site for impacts resulting from construction of the trails and treatment ponds. In August 2009, the JPA submitted a revised mitigation plan to address impacts of trail construction to seasonal marsh and to coastal sage scrub. This plan includes an alternative mitigation site as well as proposed changes in the re-vegetation plan for the Treatment Ponds and revisions to the coastal sage scrub mitigation site location. JPA submitted further revisions in August 2010 (Mitigation Plan dated April 23, 2010). Staff reviewed the submittal and requested additional information for the plan. Staff also attended a field meeting with JPA in late October 2010 to discuss revisions to the plan and the maintenance and performance of the treatment ponds to date. The JPA submitted further revisions to the mitigation plan in April 2011 and a permit amendment application on June 23, 2011 that includes a change in location of the mitigation site as described in this revised mitigation plan as well as the addition of the Mesa Loop Trail. This amendment was approved in September 2011.

Special Condition 12 requires the provision of improved access ways from Camino Del Mar to the beach south of the river mouth. These access points (north of the inlet, and 26th, 27th and 29th Streets) are completed and were approved by the City of Del Mar on June 8, 2011.

Inlet Dredging. SCE completed the inlet dredging for full tidal exchange on September 29, 2011. An agreement has been reached between SCE and the North County Transit District (NCTD) that will allow dredging at the railroad bridge near the inlet. Agreement has also been reached with NCTD for the installation of a new revetment designed to protect the southern rail bridge abutment. SCE has provided funds to NCTD for this component, which will be constructed as soon as the permitting process is complete.

Riverbed Revetment. Construction of the riverbed revetment on the south side of the river east of Jimmy Durante Boulevard (Special Condition 4) is scheduled to begin in April 2012.

Wetland Construction Monitoring

The SONGS permit requires independent monitoring by Commission contract scientists to ensure that the restoration work is conducted according to approved plans. To accomplish this task, CCC contract scientists established good communication with SCE and its partners involved with implementation of the Final Plan and a frequent on-site presence at the restoration site. CCC contract scientists monitored construction activities through attendance at briefings, discussions with SCE and its consultants, and field inspections of work in progress to ensure the wetland was constructed according to the approved Final Plan. These inspections included verifying module boundaries and elevations, habitat areas, and the appropriate tidal regime. CCC contract scientists have also monitored the impacts of unplanned construction activities. Unplanned construction changes have caused impacts to existing habitat through changes in the alignment of a haul road, and unforeseen impacts of a disposal site and berm on wetland habitat. Staff administered these changes through condition compliance, where appropriate, and through permit amendments as needed. CCC contract scientists have worked cooperatively with SCE consultants in assessing the suitability of seasonal wetland habitat for mitigating the project's permanent impacts to seasonal wetland, and in resolving issues that will affect the ability of the wetland to meet the performance standards outlined in the SONGS permit. These issues included the unplanned continuous inundation of proposed intertidal habitat and the poor performance of vegetation in some portions of the wetland. SCE and its construction team have been very responsive to the requirements of the permit.

Monitoring Plan and Adaptive Management

Condition A of the SONGS permit requires that monitoring of the wetland restoration be done over the full operating life of SONGS Units 2 and 3. This monitoring will be done to measure compliance of the mitigation project with the performance standards specified in the SONGS permit. In accordance with Condition D (Administrative Structure) of the permit, contract scientists retained by the Executive Director developed the Monitoring Plan to guide the monitoring work and will oversee the monitoring studies outlined in the Plan. The SONGS permit provides a description of the performance standards and monitoring required for the wetland mitigation project.

A Draft Monitoring Plan for the SONGS Wetland Mitigation Program was reviewed by State and Federal agencies and SCE in May 2005. A revised Monitoring Plan was part of the coastal development permit (No. 6-04-88) for the wetland restoration project considered and approved by the Commission on October 12, 2005. The Monitoring Plan has subsequently been updated in June and October 2011.

The Monitoring Plan for the SONGS Wetland Mitigation Program closely adheres to the monitoring requirements of the SONGS permit. The performance standards that will be used to measure the success of the wetland restoration project fall into two categories. The first category includes long-term physical standards relating to topography (erosion, sedimentation), water quality (e.g., oxygen concentration), tidal prism, and habitat areas. The second category includes biological performance standards relating to biological communities (e.g., fish, invertebrates, and birds), marsh vegetation, *Spartina* canopy architecture, reproductive success of marsh plants, food chain support functions, and exotic species. The Monitoring Plan includes a description of each performance standard and the methods that will be used to determine whether the various

performance standards have been met. The successful achievement of the performance standards will in some cases be measured relative to three reference wetlands, which are specified in the permit to be: (1) relatively undisturbed, (2) natural tidal wetlands, and (3) within the Southern Bight. The wetlands that best met these three criteria and that were selected as reference sites are Tijuana River Estuary, Mugu Lagoon, and Carpinteria Salt Marsh.

Management issues relevant to the SONGS wetland mitigation requirement are also discussed in the Monitoring Plan. These issues include inlet maintenance, excessive changes in topography, and exotic species. Although the Commission's contract scientists are not responsible for managing the wetland restoration, their monitoring will measure several parameters that can be used in adaptive management to ensure the success of the restoration project.

The SONGS permit requires SCE to develop and implement a plan for managing the inlet in perpetuity to ensure uninterrupted tidal flushing of the restored wetland. This plan provides conditions that would indicate the need for additional maintenance dredging at the inlet. Commission contract scientists will measure water elevation, tidal exchange, salinity, and dissolved oxygen concentration during water quality monitoring in the wetland. These variables change dramatically with a reduction in tidal flushing and provide a useful trigger for inlet maintenance.

C.2. Status of Kelp Reef Mitigation

Mitigation Requirement

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. The Commission had earlier required, in 1993, SCE to contribute $1.2 million toward construction of an experimental white sea bass fish hatchery. SCE has fully satisfied these requirements; thus, there are no fish hatchery tasks conducted by Commission contract scientists or funded through the Commission's monitoring and oversight program. Permanent Commission staff provides oversight of the Department of Fish and Games' continuing fish hatchery program.

Planning and Construction of Experimental Reef

Following the Commission's approval of the SONGS permit amendments in April 1997, the permittee submitted a preliminary conceptual plan for the experimental reef in June 1997, which was approved by the Executive Director and forwarded to state and federal agencies for review. As lead agency, the State Lands Commission (SLC) determined that under the requirements of

CEQA a Programmatic Environmental Impact Report (PEIR) should be prepared to evaluate both the experimental reef and the subsequent full mitigation reef. SLC began the environmental review process in March 1998, and certified the final PEIR and issued the offshore lease for the experimental reef on June 14, 1999.

The Coastal Commission approved the coastal development permit for the experimental reef on July 15, 1999. The final plan approved by the Coastal Commission was for an experimental artificial reef located off San Clemente, California that tested eight different reef designs that varied in substrate composition (quarry rock or recycled concrete), substrate coverage (low, medium, and high), and presence of transplanted kelp. All eight reef designs were represented as individual 40 m x 40 m modules that were replicated in seven areas (i.e., blocks) for a total of 56 artificial reef modules totaling 22.4 acres. The Army Corps of Engineers issued its permit on August 13, 1999, and SCE completed construction of the experimental reef on September 30, 1999.

Monitoring of Experimental Reef

The Commission contract scientists produced a proposed monitoring plan for the experimental reef that was reviewed by SCE, various resource agencies and other technical specialists, and also was included in the draft PEIR for general public review. The Commission approved the proposed monitoring plan for the experimental reef on July 15, 1999.

Five years of post-construction monitoring were completed in December 2004. Results from the five-year experimental phase of the artificial reef mitigation project were quite promising in that all six artificial reef designs and all seven locations (i.e., blocks) tested showed a near equally high tendency to meet the performance standards established for the mitigation reef. It was concluded from these findings that a low relief concrete rubble or quarry rock reef constructed off the coast of San Clemente, California has a good chance of providing adequate in-kind compensation for the loss of kelp forest biota caused by the operation of SONGS Units 2 and 3.

A final report on all the findings and recommendations gleaned from the experimental phase of the artificial reef project was prepared by contract scientists and submitted to the Executive Director of the Commission on August 1, 2005. These findings and recommendations formed the basis of the Executive Director's determination that: (1) the mitigation reef shall be built of quarry rock or rubble concrete having dimensions and specific gravities that are within the range of the rock and concrete boulders used to construct the SONGS experimental artificial reef, and (2) the percent of the bottom covered by quarry rock or rubble concrete on the mitigation reef should average at least 42%, but no more than 86% (the range of low to high coverage on the experimental reef modules as surveyed by the contract scientists). The Commission concurred with the Executive Director's determination for the type and percent cover of hard substrate on October 12, 2005.

Mitigation Reef Planning and Permitting

On August 8, 2006, the Commission concurred with the Executive Director's determination that SCE's preliminary Phase 2 mitigation reef plan met the requirements of the SONGS permit. The plan called for the addition of 127.6 acres of reef construction to the existing 22.4 acres built in September 1999 for the Phase 1 experimental reef. The project area is located offshore of San Clemente, California, on a parcel leased from the California State Lands Commission. (SCE has

modified its original 862-acre lease to 174.4 acres of mitigation reef.) The preliminary design created a low-profile, single-layer reef constructed of quarried boulders and distributed in quantities similar to those of the lowest substrate coverage used for the experimental reef project. The design consisted of 11 polygons that varied in area from 2.4 to 37.5 acres. The reef design achieved the following: (1) locates the final construction site in close proximity to the San Mateo Kelp Bed, (2) avoids hard substrate areas, (3) maintains the integrity of the experimental reef modules, (4) provides for navigation channels, and (5) avoids areas of historical kelp growth as well as areas of special interest to local fisheries.

On October 3, 2007, SCE submitted its Final Plan and a preliminary CDP application for the mitigation reef. The Commission approved CDP #E-07-010 on February 12, 2008. (See Exhibits 3 and 4.)

Reef Condition Compliance

Following the Commission's approval of the mitigation reef construction permit (CDP #E-07-010), SCE began preparing the final design plan in compliance with the special conditions in CDP #E-07-010. Materials submitted in compliance with the special conditions were reviewed by the Executive Director and found to fulfill the requirements of certain of those conditions, as follows:

- On March 25, 2008, Commission staff accepted the additional GIS data and files requested for the experimental reef modules and the phase 2 mitigation reef polygons.
- On April 14, 2008, Commission staff issued the Notice of Acceptance for condition compliance required prior to issuance of the permit and issued CDP #E-07-010.
- On May 16, 2008, Commission staff issued the Notice of Acceptance for condition compliance required prior to commencement of construction.
- On August 22, 2008, Commission staff issued the Notice of Acceptance for condition compliance requiring an initial construction audit.
- On January 27, 2009, Commission staff issued the Notice of Acceptance for condition compliance requiring a final construction report. Acreage from the experimental reef modules (22.4 acres) and "as-built" primary reef polygons (130.3 acres) shown on Exhibit 4 meet the SONGS permit and SCE *Final Design Plan* specifications required by CDP #E-07-010.

To date, SCE has submitted semi-annual Kelp Wrack and Rock Hazard Monitoring reports required under Special Condition #12 for the periods October 2008-March 2011. No rock that could be attributed to the artificial reef has been seen on the beaches, and the amount of kelp wrack found remains within the normal range expected for this area.

Reef Construction and Construction Monitoring

Construction of the Phase 2 mitigation reef began on June 9, 2008 and was completed on September 11, 2008. The Phase 2 reef was designed as 18 polygons ranging in area from 1.35 to 38.88 acres for a total reef area of 153 acres. Approximately 126,000 tons of boulder-size quarry material was used to construct the reef. Quarry boulders obtained from the Pebbly Beach and Empire quarries on Catalina Island and the La Piedra quarry in Ensenada, Mexico were the

exclusive construction material. Boulder dimensions averaged 2.3 ft in length, 1.8 ft in width, and 1.4 feet in height. The boulders were hauled to the construction site by barge and precisely cast upon the seafloor within the described boundaries of each polygon in roughly a single-layer. The variation of boulder deposition per polygon ranged from 743 to 987 tons per acre with an average of 829 tons per acre.

The siting of each polygon within the lease site was based on avoiding the historical distributions of giant kelp as determined from aerial surveys and the existing distribution of hard substrate (which included natural rock and the Phase 1 modules) as determined from multibeam and sub-bottom profiling sonar surveys. The distribution of hard substrate detected by the acoustical surveys was verified by dive surveys. Additionally, the dive surveys evaluated the biological diversity of the lease area. The design also considered the historical, physical, and biological data collected during previous studies in the area and the results of experimental reef monitoring between 1999 and 2004.

The Phase 2 reef construction achieved the following desired objectives: (1) all polygons were built in close proximity to the San Mateo Kelp Bed; (2) all polygons avoided existing hard substrate areas that had historical presence of kelp; (3) the integrity of the Phase 1 Experimental Reef modules was maintained; (4) navigation channels were provided in response to concerns raised by fisherman; and (5) all constructed reef polygons avoided areas of historical kelp growth, existing areas of hard substrate, and areas of special interest to local fisheries.

Assessment of Substrate Coverage. The SONGS permit (CDP No. 6-81-330) requires that the coverage of quarry rock in the Phase 2 reef be between 42% and 86%. Commission contract scientists were charged with measuring the percentage of the seafloor covered by quarry rock in each polygon. They accomplished this by noting the type of bottom substrate beneath 20 points uniformly distributed in replicate 1m x 1m quadrats. Divers placed quadrats along ninety-two 50-meter long transects oriented east to west at locations that are being repeatedly monitored to determine consistency with all physical and biological performance standards. Five quadrats spaced 10 meters apart were sampled on each transect, beginning at 5 meters and alternating from the north to the south sides of the transect. Additional higher resolution sampling conducted by Commission contract scientists in two of the 18 polygons demonstrated that the estimates of boulder coverage obtained from divers sampling the permanent transects were both accurate and precise.

The 92 permanent transects were distributed among the Phase 2 polygons and Phase 1 modules in proportion to their fractional area of the total acreage of the Phase 1 and 2 reefs combined. Fractional areas of the polygons were calculated using the polygon areas obtained from SCE's multibeam sonar surveys. In this way, the sampling effort of boulder percent coverage was scaled to the areas of the different sized polygons. Survey results showed that percent cover of the sea floor covered by quarry boulders ranged from 33.7% to 65.5% on the 18 polygons with an overall average of 40.8% for the entire 153 acre Phase 2 reef, which was below the required range of 42% to 86%. However, the combined area of the Phase 1 and Phase 2 reefs totaled 174.4 acres, which exceeds the minimum 150-acre requirement in the SONGS CDP. Therefore, when the portions of the Phase 2 reef that did not meet the hard substrate coverage requirement (polygon 5 and the north-western section of polygon 7) were excluded from being counted toward the overall acreage requirement, the Phase 2 reef totaled 130.3 acres with a mean rock coverage of 42.3%. The combined total of the 130.3 acres of the Phase 2 reef and the 22.4 acre

Phase 1 experimental reef (which collectively is officially known as the Wheeler North Reef) met the minimum requirements for area (150 acres) and coverage (42%).

Reef Performance Monitoring

Concurrent monitoring of physical and biological attributes of the Wheeler North Reef and two reference reefs (San Mateo and Barn) is being done annually to evaluate whether the Wheeler North Reef meets the performance criteria identified in Condition C. To date Commission contract scientists have completed quantitative underwater surveys of all three reefs for 2009, 2010 and 2011. Results from the 2009 and 2010 surveys were reported at the annual public review workshops held in Dana Point, CA in April 2010 and 2011. Monitoring results to date are encouraging in that the Wheeler North Reef has shown great promise in its ability to support kelp forest biota. Giant kelp, understory algae, sessile invertebrates and reef fish all colonized the Wheeler North Reef during the first year following its construction and 9 of the 14 performance standards established in the SONGS permit by the Commission for the Wheeler North Reef were met after just one year. The five performance standards that were not met pertained to the area occupied by adult giant kelp, the abundance and diversity of the benthic community of algae and invertebrates, and the standing stock of kelp bed fish. Among the most notable findings revealed by the 2009 monitoring data were: (1) hard substrate on the Wheeler North Reef, which is essential for supporting reef biota, was quite stable and there were no signs of it sinking or being exported to the beach, (2) an abundant and diverse fish assemblage on the Wheeler North Reef, which exhibited reproduction and growth that was similar to or greater than that found on natural reefs, and (3) while some colonization of the invasive sea fan *Muricea* spp. was observed on the Wheeler North Reef, there was no evidence that it or other undesirable species were adversely affecting the important functions of the reef.

The 2010 monitoring data showed that the kelp forest community on Wheeler North Reef is continuing to develop. Many of the juvenile giant kelp observed throughout the artificial reef in 2009 grew to adulthood by 2010 causing the area of adult kelp on Wheeler North Reef to increase dramatically from 19 acres in 2009 to 174 acres in 2010. This increase in the area of adult giant kelp allowed the Wheeler North Reef to meet the 150 acre performance standard for adult giant kelp in 2010, which it failed to do in 2009. The three performance standards that pertain to the abundance and diversity of the benthic community of algae and invertebrates on the Wheeler North Reef that were not met in 2009 were also not met in 2010. However, algal and invertebrate abundance on the artificial reef showed an increasing trend in 2010 suggesting that the Wheeler North Reef is getting closer to meeting its goals with respect to the abundance of the benthic community. In contrast, the number of species of algae and invertebrates on the Wheeler North Reef remained relatively unchanged between 2009 and 2010 and below that observed at the two reference reefs. Analyses are ongoing to determine the causes for the observed lower diversity of the benthic community at the Wheeler North Reef and the likelihood that it will increase to levels observed on the natural reference reefs. The permit requires the Wheeler North Reef to support 28 tons of reef fish, which was the estimated reduction in the standing stock of reef fish attributed to SONGS operations. The density, diversity, reproduction and growth of reef fish on the Wheeler North Reef have consistently been equal to or greater than that of the two reference reefs. However, the Wheeler North Reef fell short of the 28 ton target in both 2009 and 2010. Analyses are ongoing to better understand why this performance standard has not been met and to assess the likelihood that it will be met in the future. Data collected during 2011 are in the

process of being entered into the project's database where they will undergo formal procedures for quality assurance and control before being analyzed and compared to the performance standards. Results from the 2011 monitoring will be presented at the annual public review workshop scheduled for spring 2012.

C.3. Status of Fish Behavioral Mitigation

Mitigation Requirement

Condition B of the SONGS permit requires SCE to install and maintain behavioral barrier devices at SONGS Units 2 and 3 to reduce fish impingement losses.

Fish Behavioral Mitigation Compliance

The impact studies for the operation of SONGS Units 2 and 3 conducted between 1983 and 1991 found that annual losses of juvenile and adult fish in the cooling water systems under normal operations averaged about 20 metric tons. Although the SONGS permit does not specify any criteria for evaluating the effectiveness of these devices, the Commission accepted the studies' recommendation that "the techniques" (behavioral barrier devices) "be tested on an experimental basis, and implemented if they reduce impingement by at least 2 metric tons (MT) per year", which is equivalent to at least 10% of the average loss due to impingement (Section IV– Proposed Findings and Declarations in the SONGS 1991 permit). 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 of the cooling water intake systems of Units 2 and 3 (called the Fish Chase procedure), which result in a considerable reduction in fish impingement.

In October 2000, the Commission reviewed the results of the experiments and concluded that no further testing of alternative behavioral barriers should be required at that time, provided that: (1) SCE continues to adhere to the operating, monitoring, and reporting 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.

The contract scientists and staff review the annual data and analyses on the fish chase procedure at SONGS. The reports indicate that the fish chase procedure generally has been consistent with the Commission's requirements. Since 2000, the Fish Chase Procedure effectiveness relative to impingement has been 10% or greater in 7 of ten years (2000-2009). However, it is of concern that since 2004, the effectiveness has been below 10% in 3 of 6 years.

The effectiveness of the fish chase procedure was below 10% in 2004 and 2005 and only returned to levels greater than 10% during 2006 and 2007 when the frequency of sampling was increased from quarterly to twice per month as part of a special Clean Water Act Section 316(b) study. SCE concluded the increased sampling during 2006 and 2007 led to a more accurate estimate of impingement. Staff was concerned that a return to quarterly sampling would lead to inaccuracies in future assessments of the effectiveness of the Fish Chase Procedure, which could prompt the need to consider new approaches to behavioral barriers. The staff's review of results from 2009 (4.13% effectiveness) suggest that that current level of quarterly sampling is either

inadequate, or the effectiveness of the Fish Chase Procedure will often be below the target of 10%. Staff notes that SCE's application for renewal of its permit from the regional water quality control board is currently under consideration and includes a provision for weekly sampling.

Based on these results the Executive Director requested an update from SCE concerning: (1) any changes that are either envisioned or required to reduce entrainment and impingement based on changes to federal and state law regulating once-through cooling, and (2) new assessment of the adequacy of the current sampling program.

In a letter dated June 14, 2011, SCE informed the Commission staff that beginning in May 2011, it had implemented a design that increased the frequency of sampling during the period of highest impingement. SCE also indicated that it will analyze data from past sampling—focusing on sampling frequency, fish populations and species dynamics—to better inform the continued impingement sampling. In addition, SCE provided an update on the EPA Section 316(b) process.

Analysis by both SCE and Commission contract scientists has suggested that a recent change in composition of impinged species may result in a decreased efficiency of the Fish Chase Procedure. Therefore, there is the potential for the Fish Chase Procedure to regularly not attain the desired 10% level of return. Given this and the continuing requirement of the Executive Director's determination for Condition B compliance that SCE make every effort to test and install technologies or techniques for fish protection that become accepted industry standards, staff would like SCE to take a proactive role in developing new technologies at SONGS that will meet the stricter standards currently proposed by the federal government. SCE is examining feasible options to achieve the proposed standards; however, the proposed federal rule is not scheduled to be finalized until July 2012, so the federal compliance target will not be known with certainty until the proposed rule is adopted.

Although the contract scientists' oversight pertains to fish losses, the staff notes that the State's 316(b) Policy under the regional water quality board went into effect October 1, 2010. Under this policy, SCE is required to install a large-organism barrier on its intake structures to minimize entrainment of marine mammals. SCE is studying potential marine mammal exclusion devices, and expects to have a plan for compliance by the end of 2012 and 2013 for Units 3 and 2, respectively.

C.4. Status of Hatchery Program

Permit Requirement

In two separate permit actions in 1993 and 1997, the Coastal Commission required the permittee to contribute to the California Department of Fish and Game's Ocean Resources Enhancement and Hatchery Program (OREHP) for a total required mitigation fee of $4.8 million to be used toward the construction of an experimental white sea bass fish hatchery and an evaluation program to determine if the hatchery is effective at increasing the stock of white sea bass. SCE has fulfilled all of its obligations for funding the fish hatchery requirements of the SONGS permit. Permanent Commission staff provides oversight of the Department of Fish and Game's continuing fish hatchery program.

Department of Fish and Game Hatchery Program

The marine fish hatchery program is operated by Hubbs Sea World Research Institute and the State of California through the Ocean Resources Enhancement and Hatchery Program (OREHP), which is administered by the Department of Fish and Game (DFG). Although the SONGS' mitigation funds were exhausted at the end of the 2004-2005 fiscal year, the OREHP program is ongoing and funded primarily through the sale of recreational fishing licenses in southern California. White sea bass are spawned at a hatchery in Carlsbad operated by the Hubbs-Sea World Research Institute and then tagged and transferred to grow-out facilities operated jointly by the California Department of Fish and Game and volunteer fishermen. After the fish attain a minimum length, they are released. The OREHP is currently authorized to release up to 350,000 fish annually, based on the active broodstock population at the hatchery. The OREHP operates under the terms and conditions of numerous state, local, and federal permits and authorizations. These include a Memorandum of Agreement among the California Department of Fish and Game, Coastal Commission, and OREHP's Scientific Advisory Panel.

Review of the hatchery program is conducted by permanent Coastal Commission staff thus, there are no tasks funded through the SONGS work program.

D. WORK PROGRAM: 2012 AND 2013

Condition D requires the permittee to fund scientific and support staff retained by the Commission to oversee the site assessments, project design and implementation, and monitoring activities for the mitigation projects.

Implementation Structure

Scientific expertise is provided to the Commission by a small technical oversight team hired under contract. The technical oversight team members include three Research Biologists from UC Santa Barbara (Principal Scientists): Stephen Schroeter, Ph.D., marine ecologist, Mark Page, Ph.D., wetlands ecologist (half time), and Daniel Reed, Ph.D., kelp forest ecologist (half-time). A part-time senior administrator (Jody Loeffler) completes the core contract program staff. In addition, a science advisory panel advises the Commission on the design, implementation, monitoring, and remediation of the mitigation projects. Current science advisory panel members include Richard Ambrose, Ph.D., Professor, UCLA, Peter Raimondi, Ph.D., Professor, UC Santa Cruz, and Russell Schmitt, Ph.D., Professor, UC Santa Barbara.

To meet the goals specified in the permit under Condition D and to complete the tasks identified in the 2012-2013 work program, the contract program staff is aided by contract staff biologists who are responsible for collecting and assembling the monitoring data. The contract program staff is also assisted on occasion by independent consultants and subcontractors when expertise for specific tasks is needed or when additional field assistance is needed for short-term monitoring tasks. The Commission's permanent staff also spends a portion of their time on this program, but except for direct travel reimbursements, their costs are paid by the Commission and are not included in the SONGS budget.

The staff implements the Commission's technical oversight and independent monitoring program through a contract with the University of California, Santa Barbara. UCSB has an international reputation for excellence in ecology and marine biology and is well equipped to support

extramural contracts and grants in these areas. The UCSB contract uses the existing Principal Scientists as project managers for both the wetland restoration and reef mitigation oversight and independent monitoring, with data collection done by the university contract staff biologists under their direction. The Principal Scientists are responsible for supervising the contract staff biologists, subcontractors and consultants, authorizing purchases, and interacting with UC administrative staff on issues pertaining to personnel, budget, and UC policies (e.g., boating and diving safety regulations) relevant to the project. Monitoring of these projects is being adaptively managed in order to streamline effort and minimize costs without compromising the integrity of the data and their value in decision making with regards to the performance of the mitigation projects. Continuous interaction between the Principal Scientists and contract staff biologists is crucial to fulfilling the monitoring tasks for both the wetland restoration and mitigation reef.

Before starting the five-year experimental reef monitoring program in 1999, staff conducted a cost comparison among UCSB, other universities, and private consultants and concluded that use of a qualified university would save SCE a substantial sum over use of private consultants. Based on 1995 real cost data from private consultants for work that included the same physical and biological variables used in the SONGS reef monitoring program, costs for private consultants were nearly three times higher than the cost of implementing the monitoring program through UCSB.

The Commission concurred with staff at the start of the monitoring program and continues to find that implementing the field monitoring programs through a contract with UCSB is the most efficient, cost-effective, scientifically rigorous, and timely method of achieving the goals of the independent monitoring required by the SONGS permit.

Staffing Levels for Wetland Construction and Performance Monitoring

Staff has determined the staffing levels for the wetland monitoring tasks based on a consideration of the effort (time) involved to complete each task, location of the task (field sites, laboratory), the number of contract staff biologists required to complete each task in a timely and efficient manner, the frequency with which each task will be performed, and the expertise required to complete the task. Much of the information used to determine staffing level was developed during pre-restoration monitoring at San Dieguito Lagoon and the reference wetlands (Tijuana Estuary, Mugu Lagoon, Carpinteria Salt Marsh) and during pre-construction and construction monitoring.

A full time university contract wetland biologist and one database programmer/systems analyst working 10% time on the wetland project continued to assist the Principal Scientists with construction monitoring through the completion of construction in 2011. In May 2011, this full time wetland biologist assumed primary responsibility for the development of the web based wetland database, which involves the preparation of data entry schemes, quality assurance and quality control procedures, and the training of other project personnel in the use of the database. In addition to assuming primary responsibility for the wetland database, this biologist will also assist the Principal Scientists with the supervision of project staff, and with monitoring activities. Two full time wetland biologists/database assistants were retained in June 2011 at the SONGS Mitigation Program office in Carlsbad to help prepare for the performance monitoring that will commence in January 2012. These contract staff have primary responsibilities to: (1) work with the wetland project database programmer/systems analyst to prepare data entry schemes, quality

assurance and quality control procedures for the wetland data, (2) enter data, (3) assemble field sampling protocols, metadata, and create database user guides, and (4) conduct monitoring activities at the San Dieguito Lagoon restoration and at Tijuana Estuary, one of the reference wetlands.

The Principal Scientists will also be assisted in performance monitoring in 2012-13 by two full time wetland biologists based at UCSB with primary responsibility for the monitoring tasks at the northernmost reference wetlands (Mugu Lagoon, Carpinteria Salt Marsh), including organizing the field sampling team and leading the field and laboratory work (assessing water quality, cover of vegetation and algal mats, sampling of fish and invertebrates, processing of invertebrate samples). These contract staff biologists will also be responsible for organizing and entering data into the project's wetland database, quality control and quality assurance of the data, and consulting with the project's database programmer/systems analyst based in Carlsbad, as well as other tasks as needed.

Temporary employees will be used to provide cost-effective assistance with the labor intensive sampling surveys of fish and macroinvertebrates in the restored and reference wetlands during the summer. These are lower level field assistants, some may be university students, who will provide logistical support with transporting gear in the wetlands, deploying and retrieving nets during sampling, collecting invertebrate samples, and recording data. The Principal Scientists have determined during pre-restoration and construction monitoring that a total of six people are the optimal number needed to sample fish and invertebrates in each wetland. Since it is anticipated that the San Dieguito restored wetland and the Tijuana Estuary, the southernmost reference wetland, will be sampled concurrently with Mugu Lagoon and Carpinteria Salt Marsh in the north during the summer, the three permanent wetland contract biologists based at Carlsbad will be assisted by three temporary field assistants during the intensive summer sampling. The two permanent wetland contract biologists at UCSB will be assisted by four temporary field assistants at the northern reference wetlands.

In addition to being skilled in invertebrate, fish and plant taxonomy, the use of environmental data loggers, global positioning systems, and data collection methods, wetland contract staff biologists have other skills, similar to those of biologists employed on the reef project, that are required to complete the monitoring requirements of the mitigation project. These skills include data entry, database development, quality control and quality assurance as well as expertise in the use of statistical software, equipment maintenance, fabrication of sampling devices, and expertise in information technology.

The Principal Scientists under contract to the Commission seek to minimize the time between sample collection, sample processing, and the analysis of collected data, so that the monitoring results can be completed and reported in a timely manner. Full time wetland contract staff are highly qualified scientists capable of performing all the technical and scientific aspects of the monitoring program.

In conclusion, the staffing levels identified in the work plan for the wetland project in 2012 and 2013 have been carefully thought out, based on experience during pre-restoration and construction monitoring, and vetted through the Science Advisory Panel (SAP), as the minimum level needed to meet the monitoring requirements for the wetland mitigation as specified in the SONGS permit.

Staffing Levels for Reef Performance Monitoring

Staff has determined the staffing levels for university-certified scientific divers for the reef monitoring tasks based on a number of considerations. First, university and industry accepted standards require that diving be done in pairs. Because most kelp forest organisms show substantial seasonal variation in recruitment, growth and overall abundance, data need to be collected at the same time each year. This, coupled with the often-marginal diving conditions typical of the project site prevent, for example, two divers from doing the work of four divers in twice the amount of time. Second, full time university-trained research divers can deal much more cost-effectively with the inevitable unforeseen contingencies caused by weather or logistical constraints that arise during the course of the monitoring work than can part time employees. Third, completion of the field work requires a substantial level of expertise and training. UCSB's project contract staff biologists are trained in identifying over 200 species of benthic algae and invertebrates and some 45 species of kelp forest fishes, which is needed to properly evaluate the performance standards for the artificial reef.

Extensive use of part-time biologists would require either highly paid experts or would entail significant (and costly) training of less qualified individuals. Moreover, the logistics of deploying part-time scientific divers in an environment where field conditions for diving are often marginal and vary unpredictably is inefficient and can result in a less than satisfactory completion of assigned tasks (as was borne out during the 1999-2001 work programs in which consultants were used for one of the tasks).

Lastly, in addition to being experts in scientific diving and data collection, UCSB's research divers are trained in a number of other tasks necessary for completing the monitoring requirements of the mitigation projects. These tasks include: data management (data entry, quality control and quality assurance) and processing using statistical and database software, equipment maintenance, fabrication of sampling devices, small marine boat operations and maintenance, and expertise in information technology. If ocean conditions are not conducive for diving, then the project contract staff are assigned other project-related tasks.

The Principal Scientists use temporary field assistants during the summer, the period of the most intense sampling surveys. These are lower level research and laboratory assistants who are qualified to dive and drive the boats, which is especially critical during the fish surveys as the diving teams complete multiple short dives without having to anchor the boat at each location.

Based on the above considerations, the Principal Scientists have determined that eight diver biologists working full time during the six month field seasons of each year are needed to complete the reef monitoring activities. During the non-field season, five biologists working full time will be responsible for data management, analysis and reporting, network administration, equipment repair and maintenance, planning and preparation for the annual workshop required by the SONGS permit, and other assorted tasks needed to maintain a functional working environment.

In sum, the staffing identified in the 2012-2013 work plan is predicated on meeting the monitoring requirements specified in the SONGS permit and is based on the considerable experience from the 5-year experimental reef monitoring and completion of the first three years of performance monitoring of the mitigation reef. The currently proposed work program represents a carefully thought out minimum staffing model to accomplish the performance monitoring tasks for the next two years.

Consultation with Permittee

Pursuant to the permit conditions, the staff has consulted with SCE on the proposed work program and budget for 2012 and 2013. Two main topics were covered: what constitutes completion of wetland construction and the wetland monitoring plan. Reaching agreement with SCE on the determination of what constitutes completion of wetland construction was critical because the SONGS permit prescribes that wetland completion triggers initiation of the wetland restoration performance monitoring program. It was determined that completion of the inlet opening defined completion of wetland construction. SCE's contractor, Marathon Construction, opened the inlet on September 29, 2011 and therefore SCE is in agreement that full scale wetland performance monitoring will commence January 2012. SCE also had several questions regarding the wetland monitoring plan that staff was able to address, and the work plan was updated accordingly.

Following consultation on the work tasks, SCE indicated its satisfaction with the proposed Commission oversight and independent monitoring work plan and budget for the wetland, reef and fish behavioral mitigation for 2012-2013. SCE's letter of support is attached.

D.1. Wetlands Tasks

The SONGS permit requires independent monitoring by Commission contract scientists to determine whether the physical and biological performance standards of Condition A are met. To accomplish this task, the Principal Scientists will continue to interact closely with SCE and others involved with implementation of the Final Plan.

The following wetland tasks will be completed during the 2012-2013 work period.

1.1 Performance Monitoring of the Restored Wetland

The SONGS permit requires the Commission's independent contract scientists to design and conduct monitoring of the restored wetland to: (1) evaluate compliance of the wetland with the physical and biological performance standards set forth in Condition A, (2) determine, if necessary, the reasons why any performance standard has not been met, and (3) develop recommendations for appropriate remedial measures. The primary monitoring activities planned for 2012-13 entail collecting data that will be used to evaluate the performance of the restored wetland. The particular monitoring activities needed to accomplish this task are specified in the Monitoring Plan for the SONGS Wetland Mitigation Program (updated October 2011). Wetland construction was completed upon the opening of the inlet on September 29, 2011. Performance monitoring of the wetland will begin in January 2012.

The following tasks will be undertaken by the Principal Scientists and contract wetland biologists:

a. Conduct field surveys and use aerial photographs to assess the performance standards pertaining to topography and habitat areas.

Observations by the Principal Scientists during construction monitoring indicate that noticeable sediment erosion and deposition can occur within a period of a few months. Therefore, field observational surveys will be done monthly throughout the restored San Dieguito wetland to monitor for any sign of substantial erosion or sediment

deposition that could impede tidal flow within the wetland. Additional surveys will be done following extreme climatic events. Annual ground surveys using RTK GPS and low level aerial photographs taken in the spring will be used to determine whether the areas of planned wetland habitats (subtidal, intertidal mudflat, vegetated marsh) have changed from areas specified in the Final Plan. Commission staff has defined 4.5' NGVD as the upper limit of tidally influenced habitat for the calculation of acreage credit for this restoration project. Because of this, the upper edge of the 4.5' contour is of special interest and will be checked annually to evaluate compliance with the acreage requirement and performance standard on habitat areas. Professional surveyors will be engaged as needed to assist in this evaluation.

b. Conduct field sampling and use environmental data loggers to assess the performance standards pertaining to water quality and tidal prism.

Because of its documented importance to wetland health, the concentration of dissolved oxygen will be used to evaluate water quality within the restored wetland. Measurements of dissolved oxygen will be made using continuously recording environmental data loggers deployed in the restored and reference wetlands at sites that encompass average conditions. A reduction in the tidal prism of the restored wetland can have detrimental effects on water quality and alter the area of inundated habitat. Tidal prism will be calculated by integrating measurements of tidal discharge taken near the inlet using a portable acoustic Doppler profiler/discharge measurement system over predicted tides of 4.5' NGVD. The twice yearly tidal prism measurements will be supplemented with surveys of flow further within the restored wetland at channels leading to the large basin (W1) and the large intertidal area of W4 and W16 to proactively identify impeded tidal flow into or out of these areas and inform maintenance action.

c. Survey fish, macroinvertebrates, and birds to assess the performance standards pertaining to biological communities and food chain support.

During pre-restoration monitoring, the Principal Scientists developed and refined methods to sample fish and macroinvertebrates. These methods were published in the scientific literature and will be used to evaluate the performance standards pertaining to biological communities. Sampling fish in the restored and reference wetlands, in particular, is a labor intensive task that will require the employment of temporary field assistants to help with enclosure trap and seine sampling during the summer. The methods developed for fish sampling employ the minimum number of personnel for completing the task and a sampling design that balances the conflicting goals of adequate spatial and temporal sample replication to evaluate wetland performance with the time, cost and impacts of sampling in the restored and reference wetlands. The performance standard pertaining to food chain support will be evaluated by measuring bird feeding activity during the same period that bird densities are measured, and using bird species that are present in both restored and reference wetlands. Bird specialists will be retained to assist the Principal Scientists to determine the abundance and number of species of birds and assess bird feeding activity. Taxonomic specialists will

be retained to assist with invertebrate identification and establishment of a reference collection.

d. Use aerial photographs and ground surveys to assess the performance standards pertaining to the cover of wetland vegetation and open space and the coverage of algal mats.

The use of low-level multi-spectral aerial photography provides a means of obtaining a whole wetland estimate of the cover of vegetation, bare space and macroalgae in the restored and reference wetlands. Multi-spectral photographs also allow the identification of plant species assemblages throughout the wetlands, which is useful in locating the presence of exotic species. The photographs are ground-truthed by limited field sampling of vegetation cover during each aerial survey. Aerial photographs will be taken in the restored and reference wetlands in late spring to early summer, which is the period of maximum growth of marsh plants and algae. Ground surveys for the presence of unusually thick algal mats, which typically indicates poor tidal flushing or excessive nutrient enrichment, will also be made during routine water quality monitoring.

e. Assess the performance standard pertaining to Spartina *canopy architecture.*

This task will be accomplished through the measurement of the height of cordgrass (*Spartina foliosa*) stems in sampling quadrats located in stands of cordgrass. Sampling of cordgrass will be done in late spring to early summer concurrently with the monitoring of wetland vegetation.

f. Sample seeds of salt marsh plants to evaluate the performance standard pertaining to the reproductive success of these plants.

The reproductive success of salt marsh plants will be evaluated by measuring the set of viable seed in at least three plant species in the restored wetland. Sampling will be done annually in late summer-fall when seed set is expected to be greatest. The viability of seed from each species will be confirmed by the germination of seeds in culture.

g. Evaluate sampling data and conduct a survey to assess the performance standard pertaining to exotic species.

Monitoring data collected for fish, invertebrates, birds, and plants will be used to evaluate this standard. In addition, a special survey of exotic species that covers as much of the restored wetland as possible will be conducted once a year during the summer to adaptively manage for exotic species. This special survey will focus on plants and visible invertebrates and incorporate a diver survey of the subtidal portion of the main basin (W1).

1.2 Wetland Data Management, Analyses and Reporting

a. Enter, organize, and manage data collected during construction and performance monitoring and consult with database consultants as needed.

All monitoring data for the wetland and reef mitigation projects are entered and stored in electronic databases that use a highly redundant, multi-server system to ensure maximum data integrity, preservation, and uptime. A structure of wetland databases and web forms for data entry will be developed to facilitate data management.

b. *Prepare annual reports for the Commission (with a copy to SCE) on the performance compliance of the wetland restoration project.*

c. *Respond to requests from SCE and other parties for data and analyses.*

d. *Maintain public website with current information on the monitoring of the wetland restoration project.*

The Principal Scientists have developed a public website that provides information on the history, current status, and other relevant information pertaining to the monitoring of the SONGS reef and wetland mitigation projects (http://marinemitigation.msi.ucsb.edu/). The website serves as a repository for progress reports, workshop proceedings and other project related documents and thus helps facilitate the transfer of information between the contract scientists and the Commission, SCE, other agencies and the general public.

e. *Present monitoring results at annual public workshops and at scientific meetings deemed appropriate by the Coastal Commission and post results on the project's public website.*

1.3 Wetland Management, Oversight, and Administration

a. *Direct the monitoring studies described in the work plan. This involves planning these activities, managing personnel, and engaging consultants as needed to carry them out.*

The Principal Scientists manage a team of university contract research assistants (i.e., wetland biologists trained in data management and analyses) who are responsible for conducting the rigorous field work and extensive data management. They will also participate in field work in the restored and reference wetlands as needed to assist in data collection, resolve issues that arise in the monitoring, and conduct site visits to inspect routine and unexpected changes in the physical and biological properties of the restored and reference wetlands.

b. *Resolve any issues pertaining to logistics and data analyses that arise.*

c. *Work with University of California administrative staff on project issues pertaining to contracts, payroll, purchasing and personnel.*

d. *Maintain database software, hardware, and network services. Troubleshoot and remedy any problems that arise. Consult with computer consultants as needed to maintain reliability and security of network and desktop operations.*

e. Attend Science Advisory Panel (SAP) meetings to consult on the status of the monitoring studies. Consult with members of other resource agencies, and the permittee and its contractors on the status of the monitoring studies.

f. Prepare 2014-2015 Work Plan.

D.2. Reef Tasks

The permit requires the Commission's contract scientists to monitor the mitigation reef to determine whether: (1) the 14 performance standards of Condition C are met, (2) if necessary, determine the reasons why any performance standard has not been met, and (3) develop recommendations for appropriate remedial measures. Thus the primary monitoring activities planned for 2012 and 2013 entail collecting data that will be used to evaluate the performance of the mitigation reef. The particular monitoring activities needed to accomplish this task are specified in the Monitoring Plan for the Wheeler North Reef. Data management, analysis and reporting, network administration, equipment repair and maintenance, planning and preparation for the annual workshop required by the SONGS permit, and other assorted tasks needed to maintain a functional working environment are the primary staff activities during the non-field season.

The following tasks pertaining to the mitigation reef will be completed during the 2012-2013 work period.

2.1 Performance Monitoring of the Wheeler North Reef

a. Conduct diver surveys of the Wheeler North Reef and the two reference reefs in late spring and summer of 2012 and 2013 to assess the performance standards pertaining to substrate coverage, kelp density and the benthic community of algae and invertebrates.

Extensive analyses of data collected during the experimental phase of the reef mitigation project showed that a minimum of 82 sampling stations at the two reference reefs was needed to adequately assess whether the Wheeler North Reef was performing similarly to them with respect to the performance standards identified in Condition C. A slightly higher number of sampling stations (92) are needed to sufficiently characterize the physical and biological characteristics of the 176 acre Wheeler North Reef in order to compare it to the reference reefs. Each sampling station requires a team of 2 to 3 divers who can sample at most 2 stations per day.

b. Conduct diver surveys of the Wheeler North Reef and the two reference reefs in autumn 2012 and 2013 to assess the performance standards pertaining to the standing stock, density, species richness, and recruitment of kelp bed fishes.

Unlike kelp and benthic invertebrates, fish are highly mobile visual predators and their abundances as estimated by divers typically vary dramatically in space and time. Diver

sampling of mobile fishes is also complicated by the fact that it requires greater underwater visibility than does the sampling of sessile bottom-dwelling algae and invertebrates. Consequently, it is not always possible to collect data on fish during the diver surveys of the kelp forest community (described in 2.1.a above). Past experience has shown that the combination of these factors requires additional fish surveys be done in autumn following the completion of the kelp forest community surveys to obtain sufficient data to properly evaluate the performance standards for fish standing stock, density, species richness, and recruitment.

c. *Collect fish specimens during the spawning seasons (May-October) of 2012 and 2013 for use in evaluating the performance standards for fish production, fish reproductive rates, and benthic food chain support.*

Unlike the standards pertaining to the abundance and number of species of algae, invertebrates and fish, which can be assessed visually by divers, those pertaining to fish production, reproductive rates and food chain support require fish to be collected for processing and analyses in the laboratory. Five key indicator species were selected to evaluate these standards to minimize impacts to the fish assemblages. Studies done in the 2008-2009 and 2010-2011 work plans determined that 100-200 individuals of each species collected from each reef are needed to properly evaluate these standards. These collections will have little impact on fish populations as they represent < 0.2% of the standing stock of these species on each of the reference reefs and ~ 1% of standing stock requirement for the Wheeler North Reef. The contract scientists will be assisted by subcontractors from California State University, Northridge (CSUN) with expertise in fish production and reproduction.

d. *Process samples used to evaluate the performance standards for fish production, fish reproductive rates, and benthic food chain support.*

Collected specimens must be carefully processed in the laboratory shortly after collection to obtain viable samples for evaluating the performance standards pertaining to fish production, reproductive rates and benthic food chain support. The Principal Scientists will be assisted by subcontractors from CSUN with expertise in fish production and reproduction.

e. *Analyze prepared samples for fish growth, fecundity, and gut fullness.*

Estimates of fish growth will be used to evaluate the fish production standard. These estimates will be obtained using standard methods of analyzing annular rings in fish ear bones (otoliths). Histological analyses of female gonads will be used to evaluate the performance standard pertaining to reproductive rates, and data on gut fullness in two species that feed on the bottom will be used to assess the performance standard pertaining to benthic food chain support. The Principal Scientists will be assisted by subcontractors from CSUN with expertise in fish production and reproduction.

f. Monitor recruitment growth, and survivorship of Muricea *in long-term plots on the experimental modules and reference reefs.*

The sea fan *Muricea* has been known to colonize artificial reefs in high densities to the exclusion of other reef biota, including giant kelp. Data collected from permanently located sampling plots on 21 rock modules of the experimental reef since summer 2000 have provided valuable information on patterns of *Muricea* colonization, growth and survivorship. Project scientists will continue to monitor these plots in 2012 and 2013 for additional colonization by *Muricea,* and to determine whether there is evidence for density dependent changes in *Muricea* growth and survivorship that might minimize (or at least stabilize) the potential adverse effects of *Muricea* on giant kelp and other components of the benthic community.

2.2 Reef Data Management, Analyses and Reporting

a. Enter, organize, and manage data collected during the monitoring studies.

Data management and quality assurance are critically important tasks that require a substantial amount of effort by the team of contract scientists. All monitoring data for the wetland and reef mitigation projects are entered and stored in electronic databases. The SONGS reef mitigation monitoring project's data entry procedures have been designed to facilitate rapid data entry while continuing to ensure the quality and integrity of the data as they are transformed from physical to electronic form. The project employs a highly redundant, multi-server system to ensure maximum data integrity, preservation, and access. The system consists of a central data server, and multiple mirror and backup servers located at UCSB's Carlsbad office, and at the Marine Science Institute on UCSB's main campus in Santa Barbara, CA. The operation, maintenance, and security of this system require a dedicated system administrator in Carlsbad who works closely with the scientific staff on the project and with system administrators on UCSB's main campus.

b. Prepare annual reports for the Commission (with a copy to SCE) on the performance compliance of the mitigation reef project.

c. Respond to requests from SCE and other parties for data and analyses.

d. Maintain public website with current information on the monitoring of the reef mitigation project.

The Principal Scientists have developed a public website that provides information on the history, current status, and other relevant information pertaining to the monitoring of the SONGS reef and wetland mitigation projects (http://marinemitigation.msi.ucsb.edu/). The website serves as a repository for progress reports, workshop proceedings and other project related documents, and thus helps facilitate the transfer of information between the contract scientists and the Commission, SCE, other agencies and the general public.

e. Synthesize monitoring data and use them to assess whether the mitigation reef is in compliance with the biological and physical performance standards specified in the SONGS permit.

f. Present monitoring results at annual public workshops and at scientific meetings deemed appropriate by the Coastal Commission and post results on the project's public website.

2.3 Reef Project Management, Oversight, Administration, and Daily Operation

a. Consult with the permittee.

Correspond and meet with the permittee and their contractors to inform them of the status of the reef mitigation project and of any unexpected changes or concerns that might arise.

b. Direct the field and analytical studies described in the 2012-2013 Work Plan.

The Principal Scientists manage a team of university contract research assistants (i.e., marine biologists trained in scientific diving and data management and analyses) who are responsible for conducting the rigorous field work and extensive data management. They also dive periodically at the artificial reef and nearby reference reefs as needed to resolve issues that arise in the monitoring, and conduct site visits to inspect routine and unexpected changes in the physical and biological properties of the artificial reef and natural reference reefs.

c. Perform assorted tasks to maintain University of California research diver certification (e.g. pass physical exams, attend classes in CPR, First-Aid, Nitrox, O_2 administration, complete dive logs, service scuba equipment, etc.).

d. Maintain boats, vehicles and other equipment in proper working condition.

e. Perform assorted tasks to maintain a functional working environment.

f. Work with University of California administrative staff on project issues pertaining to contracts, payroll, purchasing and personnel.

g. Maintain database software, hardware, and network services.

Troubleshoot and remedy any problems that arise. Work with UC computer consultants as needed to maintain reliability and security of network and desktop operations.

h. Consult with members of the Science Advisory Panel, Coastal Commission staff, other resource agencies, and the permittee and its contractors on the status of the monitoring and process studies.

i. Prepare 2014-2015 Work Plan.

D.3. Behavioral Barriers Tasks

3.1 Condition Compliance Review

a. Review the permittee's annual report on impingement losses, Fish Chase Procedures and efficacy of the Fish Return System and consult with Science Advisory Panel and SCE on issues pertaining to the report.

b. Provide the Executive Director with an annual summary on the status of Condition B and on whether SONGS operations during the previous year were in compliance with it.

D.4. Fish Hatchery Tasks

SCE has fulfilled all of its obligations for funding the fish hatchery requirements of the SONGS permit. Thus, there are no fish hatchery tasks to be conducted by CCC contract scientists or funded through this work program. Permanent Commission staff provides oversight of the Department of Fish and Game's continuing fish hatchery program.

E. BUDGET: 2012 AND 2013

Condition D of the permit requires SCE to fund the Commission's oversight of the mitigation and independent monitoring functions identified in and required by Conditions A through C. The permittee is required to provide "reasonable and necessary costs" for the Commission to retain personnel with appropriate scientific or technical training and skills, as well as reasonable funding for necessary support personnel, equipment, overhead, consultants, the retention of contractors needed to conduct identified studies, and to defray the costs of members of any scientific advisory panel convened by the Executive Director to provide advice on the design, implementation, monitoring and remediation of the mitigation projects. The Commission has operated under approved work programs and budgets since 1993. The funds for the oversight and monitoring program are managed by an independent accounting firm.

The budgets for the Commission's monitoring and oversight program are "zero-based budgets," that is, each budget period begins anew, based on the proposed activities, with no funds from the previous budget carried forward to the new budget period. The total budget to implement the work program is intended as a "not-to-exceed" amount. The permittee provides funds periodically throughout the budget period rather than as a lump sum to minimize the advance outlay of cash. Any funds not expended at the end of the budget period are returned to the permittee.

History of Expenditures for Independent Monitoring

The Commission began its oversight and independent monitoring program in November 1991 following adoption in July 1991 of the SONGS mitigation requirements. This start-up period was funded directly by SCE and covered the work necessary to establish the implementing structure and the initial administration of the program. The next year the Commission operated under an interim work program and budget, during which time the first contract scientists were hired and the Scientific Advisory Panel convened to begin working with SCE on project planning. The

Commission approved annual work programs and budgets for calendar years 1994 through 1997, and then, in accordance with the provisions of the permit, adopted two-year work programs and budgets beginning with the 1998-1999 period. These work programs have included planning, environmental analyses, permit compliance issues, five years of experimental reef monitoring, construction monitoring and the first three years of performance monitoring of the Phase 2 mitigation reef, pre-restoration and construction monitoring for the wetland project, development of performance monitoring plans, and necessary studies for managing potentially invasive species. The status section of this report (see Section C) summarizes the accomplishments of the Commission's program.

The budgets and expenditures for the SONGS oversight and monitoring program since its inception are summarized below. As a normal practice, the Commission requires an independent financial audit of its expenditures for each budget period. To date, those audits have disclosed no discrepancies or deficiencies in the financial systems.

Period	Total Budget	Actual Expenditures
Nov 1991-Dec 1992	$ 57,654	$ 57,654
Oct 1992-Dec 1993	610,646	334,632
1994	1,173,105	387,096
1995	849,084	467,888
1996	440,139	397,631
1997	423,035	379,571
1998-1999	1,039,072	970,118
2000-2001	2,293,162	2,151,820
2002-2003	2,423,045	2,174,706
2004-2005	2,338,957	2,256,543
2006-2007	2,266,141	2,162,750
2008-2009	3,055,170	2,776,632
2010-2011	3,953,014	3,842,086 (projected)
20-YEAR TOTAL	$20,922,224	$18,359,127

The oversight and independent monitoring program has consistently come in under budget, and in some years substantially so. The early work programs and budgets were marked by considerable uncertainty in the timing of the planning process for the two major projects (wetland restoration and experimental kelp reef) as well as significant discussions with SCE regarding the Commission staff's interpretation of the permit conditions. In more recent years, the staff has been able to better predict the funding necessary to carry out the program. As performance monitoring for the mitigation projects is implemented, the staff, in consultation with SCE, has made its best predictions for the required tasks, timing, and funding necessary to support those tasks in the 2012 and 2013 work program and budget.

Proposed Budget for 2012 and 2013

The proposed budget for calendar years 2012 and 2013 covers the monitoring and oversight program costs for the Commission's contract scientists, contract field biologists and subcontractors to monitor the wetlands and mitigation reef, science advisory panel, consultants, contract administrative support, and operating expense during the two-year budget period. All of the current and proposed contract program staff, except for the part-time administrator, are hired

under contract with the University of California, Santa Barbara, while subcontractors are retained through separate contracts. Costs associated with the implementation of the SONGS permit and attributable to permanent Coastal Commission staff work are not paid by the permittee and thus are not included in this budget.

The funding proposed to cover the monitoring and oversight program costs during the two-year budget period (calendar years 2012 and 2013) is $4,738,886, as shown below. This budget is based on the minimum scientific staff required to accomplish the goals of the SONGS permit and carry out the proposed tasks (see discussion above). The wetland project will gear up with additional field biologists required for performance monitoring in 2012-2013. The fourth and fifth years of performance monitoring will be the primary work for the reef. Personnel rates are set by U.C. Systemwide Administration. Narrative budget notes explaining each budget category are contained in Appendix A.

SONGS PROGRAM BUDGET 2012

	2012 Wetland	2012 Reef	2012 Admin/Mgt	2012 Total
SALARIES				
Core Program Staff				
Principal Scientist (0.5 PY)	7,492	67,423		74,915
Principal Scientist (1.0 PY)	59,946	59,946		119,892
Principal Scientist (0.5 PY)	45,278	5,031		50,309
Senior Administrator (0.5 PY)			47,810	47,810
Field Biologists				
Staff Research Associate IV (1.0 PY)	7,568	68,116		75,684
Staff Research Associate III (1.0 PY)		60,450		60,450
Staff Research Associate III (1.0 PY)	54,876			54,876
Staff Research Associate II (1.0 PY)	40,344			40,344
Staff Research Associate I (1.0 PY)		36,972		36,972
Staff Research Associate I (1.0 PY)		36,972		36,972
Staff Research Associate I (1.0 PY)		36,186		36,186
Staff Research Associate I (1.0 PY)	36,186			36,186
Staff Research Associate I (1.0 PY)	36,186			36,186
Staff Research Associate I (1.0 PY)	36,186			36,186
Lab Assistant III (3 @ 6 mos, 1.5 PY)		52,578		52,578
Lab Assistant I (6 @ 4 mos; 2.0 PY)	54,912			54,912
Assistant I @ 600 hr/yr (0.30 PY)	6,000			6,000
SUBTOTAL SALARIES	384,974	423,674	47,810	856,458
UCSB Indirect Cost @ 26% (excluding SrAdmin)	100,094	110,155		210,249
TOTAL SALARIES	**485,068**	**533,829**	**47,810**	**1,066,707**
BENEFITS				
Core Program Staff				
Principal Scientist	2,462	22,156		24,618
Principal Scientist	18,859	18,859		37,718
Principal Scientist	14,647	1,630		16,277
Senior Administrator			22,139	22,139
Field Biologists				
Staff Research Associate IV	3,475	31,273		34,748
Staff Research Associate III		19,834		19,834
Staff Research Associate III	20,639			20,639
Staff Research Associate II	16,626			16,626
Staff Research Associate I		15,347		15,347
Staff Research Associate I		15,347		15,347
Staff Research Associate I		14,261		14,261
Staff Research Associate I	14,515			14,515
Staff Research Associate I	14,515			14,515
Staff Research Associate I	14,370			14,370
Lab Assistant III (3)		1,630		1,630
Lab Assistant I (6)	1,702			1,702
Assistant I	264			264
SUBTOTAL BENEFITS	122,074	140,337	22,139	284,550
UCSB Indirect Cost @ 26% (excluding SrAdmin)	31,739	36,488		68,227
TOTAL BENEFITS	**153,813**	**176,825**	**22,139**	**352,777**

2012 Budget continued.

	2012 Wetland	2012 Reef	2012 Admin/Mgt	2012 Total
SCIENTIFIC ADVISORY PANEL	**36,684**	**36,683**		**73,367**
CONSULTANTS AND CONTRACTORS				
Wetlands				
Task 1.1a-as-built surveys, wetland engineering	49,000			49,000
Task 1.1a&d-aerial photo surveys	48,000			48,000
Task 1.1c-bird sampling	57,600			57,600
Task 1.1c-invertebrate taxonomy	2,400			2,400
Reef				
Task 2.1c-d-e-fish reproductive rates, food chain support, and fish reproduction		221,920		221,920
TOTAL CONSULTANTS & CONTRACTORS	**157,000**	**221,920**		**378,920**
TRAVEL				
SrAdmin & reimbursement for permanent CCC staff	5,730	3,820		9,550
UCSB Principal Scientists & Field Biologists	21,121	25,000		46,121
UCSB indirect cost (excl. SrAdmin & CCC staff)	5,491	6,500		11,991
TOTAL TRAVEL	**32,342**	**35,320**		**67,662**
OPERATING EXPENSE				
General expense (SF office)			32,000	32,000
General expense (UCSB contract, incl. indirect cost)	63,144	106,481		169,625
Facilities operations (Carlsbad office)	46,716	46,716		93,432
Marina storage/offsite facilities (UCSB contract)		8,124		8,124
Computer technical support, repair & maintenance			1,500	1,500
Review workshop			2,200	2,200
Administrative/financial processing services			12,000	12,000
TOTAL OPERATING EXPENSE	**109,860**	**161,321**	**47,700**	**318,881**
EQUIPMENT				
SF office			1,000	1,000
Miscellaneous equipment, as needed (UCSB)	15,000	10,000		25,000
Water quality environmental data loggers (UCSB)	54,000			54,000
TOTAL EQUIPMENT	**69,000**	**10,000**	**1,000**	**80,000**
TOTAL EXPENSE 2012	**1,043,767**	**1,175,898**	**118,649**	**2,338,314**

SONGS PROGRAM BUDGET 2013

	2013 Wetland	2013 Reef	2013 Admin/Mgt	2013 Total
SALARIES				
Core Program Staff				
Principal Scientist (0.5 PY)	7,913	71,212		79,125
Principal Scientist (1.0 PY)	63,243	63,243		126,486
Principal Scientist (0.5 PY)	46,184	5,132		51,316
Senior Administrator (0.5 PY)			49,246	49,246
Field Biologists				
Staff Research Associate IV (1.0 PY)	7,795	70,160		77,955
Staff Research Associate III (1.0 PY)		62,265		62,265
Staff Research Associate III (1.0 PY)	56,520			56,520
Staff Research Associate II (1.0 PY)	42,399			42,399
Staff Research Associate I (1.0 PY)		38,652		38,652
Staff Research Associate I (1.0 PY)		39,813		39,813
Staff Research Associate I (1.0 PY)		37,890		37,890
Staff Research Associate I (1.0 PY)	37,890			37,890
Staff Research Associate I (1.0 PY)	37,890			37,890
Staff Research Associate I (1.0 PY)	37,890			37,890
Lab Assistant III (3 @ 6 mos, 1.5 PY)		54,153		54,153
Lab Assistant I (6 @ 4 mos; 2.0 PY)	56,544			56,544
Assistant I @ 600 hr/yr (0.30 PY)	6,000			6,000
SUBTOTAL SALARIES	400,268	442,520	49,246	892,034
UCSB Indirect Cost @ 26% (excluding SrAdmin)	104,070	115,055		219,125
TOTAL SALARIES	**504,338**	**557,575**	**49,246**	**1,111,159**
BENEFITS				
Core Program Staff				
Principal Scientist	2,794	25,141		27,935
Principal Scientist	21,443	21,443		42,886
Principal Scientist	16,120	1,791		17,911
Senior Administrator			22,804	22,804
Field Biologists				
Staff Research Associate IV	3,773	33,962		37,735
Staff Research Associate III		21,984		21,984
Staff Research Associate III	22,669			22,669
Staff Research Associate II	18,532			18,532
Staff Research Associate I		17,010		17,010
Staff Research Associate I		17,521		17,521
Staff Research Associate I		15,879		15,879
Staff Research Associate I	16,143			16,143
Staff Research Associate I	16,143			16,143
Staff Research Associate I	15,992			15,992
Lab Assistant III (3)		1,679		1,679
Lab Assistant I (6)	1,753			1,753
Assistant I	264			264
SUBTOTAL BENEFITS	135,626	156,410	22,804	314,840
UCSB Indirect Cost @ 26% (excluding SrAdmin)	35,262	40,667		75,929
TOTAL BENEFITS	**170,888**	**197,077**	**22,804**	**390,769**

2013 Budget continued.

	2013 Wetland	2013 Reef	2013 Admin/Mgt	2013 Total
SCIENTIFIC ADVISORY PANEL	**37,794**	**37,794**		**75,588**
CONSULTANTS AND CONTRACTORS				
Wetlands				
Task 1.1a-as-built surveys, wetland engineering	37,750			37,750
Task 1.1a&d-aerial photo surveys	48,000			48,000
Task 1.1c-bird sampling	57,600			57,600
Reef				
Task 2.1c-d-e-fish reproductive rates, food chain support, and fish reproduction		221,920		221,920
TOTAL CONSULTANTS & CONTRACTORS	**143,350**	**221,920**		**365,270**
TRAVEL				
Sr Admin & reimbursement for permanent CCC staff	5,902	3,935		9,837
UCSB Principal Scientists & Field Biologists	21,755	25,750		47,505
UCSB indirect cost (excl. Sr Admin & CCC staff)	5,656	6,695		12,351
TOTAL TRAVEL	**33,313**	**36,380**		**69,693**
OPERATING EXPENSE				
General expense (SF office)			32,960	32,960
General expense (UCSB contract, incl. indirect cost)	69,514	109,677		179,191
Facilities operations (Carlsbad office)	47,179	47,179		94,358
Marina storage/offsite facilities (UCSB contract)		8,368		8,368
Computer technical support, repair & maintenance			1,500	1,500
Review workshop			2,266	2,266
Audit			4,000	4,000
Administrative/financial processing services			12,000	12,000
TOTAL OPERATING EXPENSE	**116,693**	**165,224**	**52,726**	**334,643**
EQUIPMENT				
SF office			1,000	1,000
Miscellaneous equipment, as needed (UCSB)	15,450	10,000		25,450
Water quality environmental data loggers (UCSB)	27,000			27,000
TOTAL EQUIPMENT	**42,450**	**10,000**	**1,000**	**53,450**
TOTAL EXPENSE 2013	**1,048,826**	**1,225,970**	**125,776**	**2,400,572**

TWO-YEAR TOTAL EXPENSE FOR 2012 and 2013 **$4,738,886**

F. PRE-APPROVED CONTINGENCY FUND FOR 2012 AND 2013

Staff is proposing pre-approved contingency funds in the amount of $276,841, specifically for potential additional costs for: (1) the Scientific Advisory Panel, (2) additional hydrology analyses and recommendations for remediation, if needed, in the event the restored wetland hydrology is not performing as expected, (3) early office lease termination, and (4) unexpected repair and/or replacement of field vehicles and outboard engines. Staff proposes these pre-approved contingency funds as a way of reducing the overall budget, but still providing the necessary Commission authorization for certain specified activities that may become necessary during the two-year work period. Staff has used this approach since the 2002-2003 work program. To date, staff has not had to use the contingency funds.

A contingency amount is proposed for the Scientific Advisory Panel as that effort may increase over past years' expenditures for advice to the Commission on the performance monitoring for the wetland restoration and mitigation reef projects, as well as potential compliance issues with the performance standards contained in the SONGS permit. Although the permit authorizes the Scientific Advisory Panel to be funded up to $100,000 *per year*, plus annual adjustments due to increases in the consumer price index applicable to California[2], staff proposes less total funding for the Scientific Advisory Panel for the two budget years ($73,367 for 2012 plus $75,588 for 2013, for a two-year total of $148,955) based on current rates of expenditure. However, the overall budget does not provide any cushion for any increased effort that may be required; thus, the staff proposes a two-year pre-approved contingency fund amount of $195,638 to be earmarked for the Scientific Advisory Panel to allow the timely response to changing circumstances. This amount is derived from the total authorized amount for the two years as adjusted ($344,593, see footnote) less the budgeted amount ($148,955).

The staff also proposes a contingency fund amount of $15,000 for additional independent hydrology analyses and recommendations for remediation, if needed, in the event the hydrology in the restored wetland does not perform as required to meet the performance standards.

In addition, staff proposes funds for early lease termination for the Carlsbad office. The need for early lease termination is unlikely; however, should circumstances arise that necessitate canceling the lease, the contingency fund amount of $31,203 would be available to satisfy the lease obligations. Similarly, the contingency fund includes $35,000 for unexpected repairs or replacement of the 15+ year old, high mileage field vehicles or outboard engines.

Any expenditure from the pre-approved contingency fund would be made in consultation with SCE. If a dispute arises, the staff would bring the issue to the Commission for resolution.

[2] Based on the average percent change in the Consumer Price Index-All Urban Consumers for the San Francisco and San Diego areas from the original 1991 permit to mid-year 2011, the adjusted amount for 2012 is $169,750. A 3% escalator is used for estimating adjustments for 2013, resulting in an adjusted amount for 2013 of $174,843. Thus, the total adjusted amount authorized for the two budget years 2012 and 2013 is $344,593.

APPENDIX A: BUDGET NOTES

SALARIES. Includes salaries and wages for the contract program staff, which includes two scientist positions, administrative support, and field biologists. All of the current and proposed contract program staff except a part-time administrator are hired under contract with the University of California, Santa Barbara; costs include the University's indirect costs.[3] The part-time administrator is hired under contract with Simpson & Simpson CPAs, the firm that provides financial services for the program. The costs for the Commission's permanent staff that spend a portion of their time on this program are not included here; they are paid by the Commission.

BENEFITS. Includes benefits and employer-paid payroll taxes for contract program staff. Includes the indirect costs for personnel hired under contract to UCSB.

SCIENTIFIC ADVISORY PANEL. The Scientific Advisory Panel is a panel of experts established by the Commission pursuant to the permit conditions to provide scientific and technical advice. Expenses cover members' time and travel and are authorized in the permit at $100,000 per year adjusted annually in accordance with the consumer price index (CPI) applicable to California. CPI adjustments have been made in previous budgets. Based on previous years' expenditures, staff budgeted less than the authorized amount. However, staff proposes additional funds in a pre-approved contingency fund up to the adjusted yearly authorized amount to be expended as needed, in consultation with SCE.

CONSULTANTS AND CONTRACTORS. Includes estimated costs for consultants and contractors to provide the technical and expert advice identified in individual tasks of the work program to assist the contract scientists in completing the tasks. Estimated costs are based on previous experience with similar consultants, at rates ranging from $50 to $210 per hour.

TRAVEL. Covers travel for meetings with SCE, Commission staff, consultants and contractors, field monitoring work, attendance at agency and public workshops and meetings, site visits, and attendance at conferences related to wetland and kelp forest community restoration issues. Total travel costs are based on previous years' expenditures plus anticipated increases in airline fares. A 3% escalator is applied for 2013.

GENERAL EXPENSE (SF). Covers operating expense for contract program staff working out of the Commission's San Francisco office (part-time administrator). Annual costs are based on the Commission's operating expense per PY for general expense, printing, communications, postage, training and facilities operations.

GENERAL EXPENSE (UCSB CONTRACT). Covers annual costs for reef surveys (NITROX for SCUBA), miscellaneous office, laboratory and field supplies, annual boat operating expense, annual insurance, registration and license fees for boats and vehicles, annual dive physicals required of each diver, and on-campus communications services for contract staff located at UCSB. A 3% escalator is applied for 2013.

FACILITIES OPERATIONS (CARLSBAD OFFICE). Rented office space in Carlsbad houses one full time contract scientific staff and contract field biologists for the reef and wetland monitoring programs. Annual costs cover space rental, utilities, security, office services and supplies, and communications (including telephone, cell phone service, and DSL service). A 3% escalator is used for 2013 where anticipated increases are not yet known.

OFFSITE STORAGE/FACILITIES (UCSB CONTRACT). Covers costs for storage and launch fees for the reef dive boats. A 3% escalator is applied for 2013.

[3] The indirect cost rate of 26% of direct costs is the U.S. Department of Health and Human Services negotiated, pre-determined off-campus rate for research projects. For these costs, the project receives: office space at UCSB for two 0.5 PY contract scientists (even though the on-campus overhead rate is normally 46%), utilities, internet services, laboratory facilities and equipment, administrative services associated with payroll, employee benefits, liability insurance, dive and boat safety programs, and purchasing for both on-campus staff and staff located in the Carlsbad office, library services, UC subsidized pricing on goods and services, site licenses for software, and access to faculty and staff expertise on a wide variety of issues.

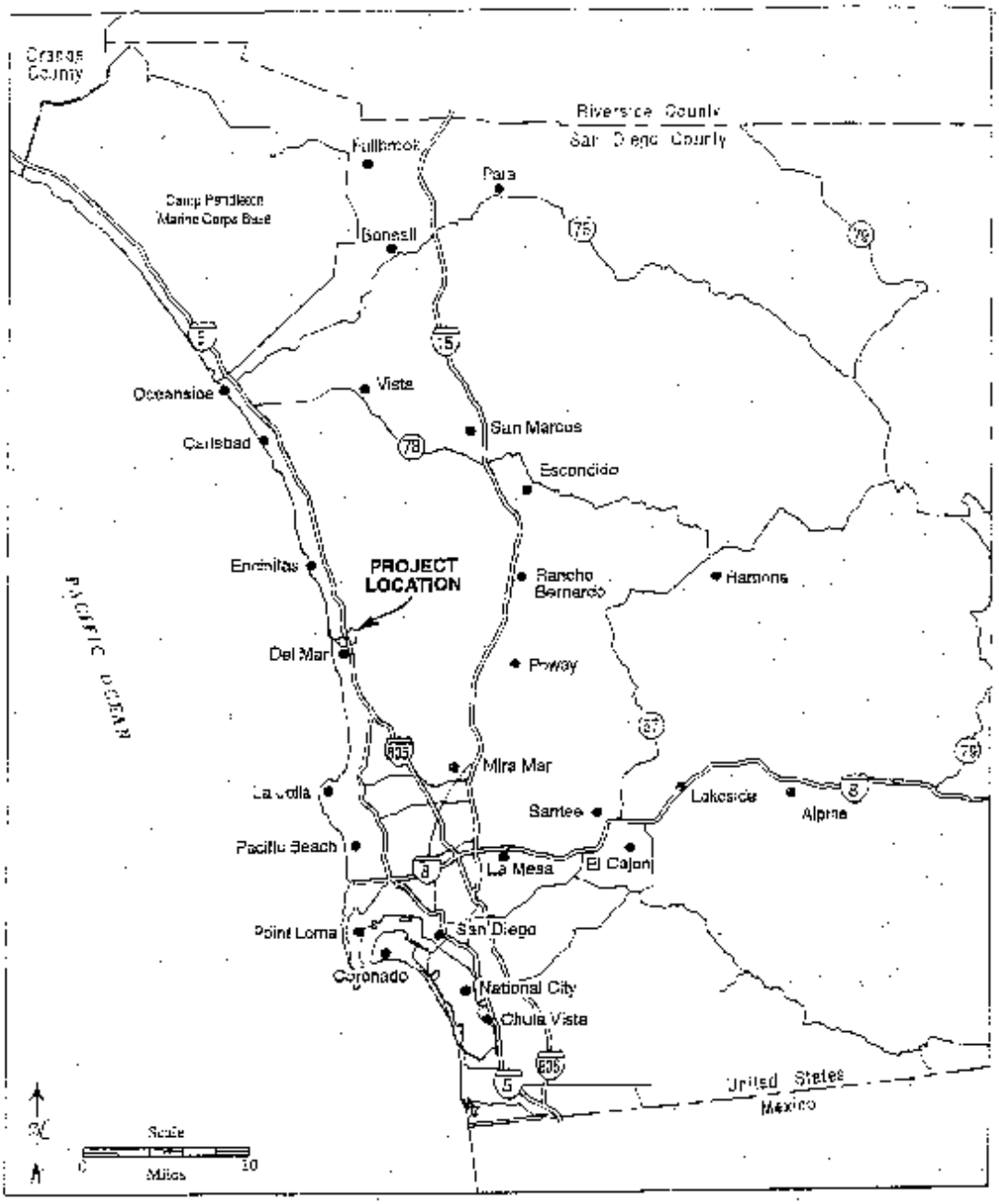
COMPUTER TECHNICAL SUPPORT. Covers costs for maintaining the computers used by contract program staff and field biologists, including regular maintenance, repairs, and technical support needed for troubleshooting problems.

REVIEW WORKSHOP. Covers costs for conducting an annual review workshop, excluding costs for consultants who may be requested to attend the workshop. The intent of the workshop is to review whether performance standards have been met, whether revisions to the standards are necessary, and whether remedial measures are required. A 3% escalator is applied for 2013.

AUDIT. Covers costs for an independent audit of the contract reimbursements and service fees for the Commission's oversight and monitoring program. Independent audits have been conducted since 1994; no deficiencies in the financial systems have been discovered. Costs are estimated for a 2-year audit.

ADMINISTRATIVE/FINANCIAL PROCESSING SERVICES. Covers the annual cost of administrative and financial processing services provided by Simpson & Simpson CPAs.

EQUIPMENT. Covers durable equipment for the reef and wetland monitoring programs, including computers and networking equipment, office equipment (such as scanner or copier), and miscellaneous equipment. A 3% escalator is applied where applicable for 2013. Also included are funds for water quality data loggers and total station instruments for the wetland monitoring program.



San Dieguito Wetland Restoration Project Regional Location Map

EXHIBIT 1: Wetland Restoration Project Location

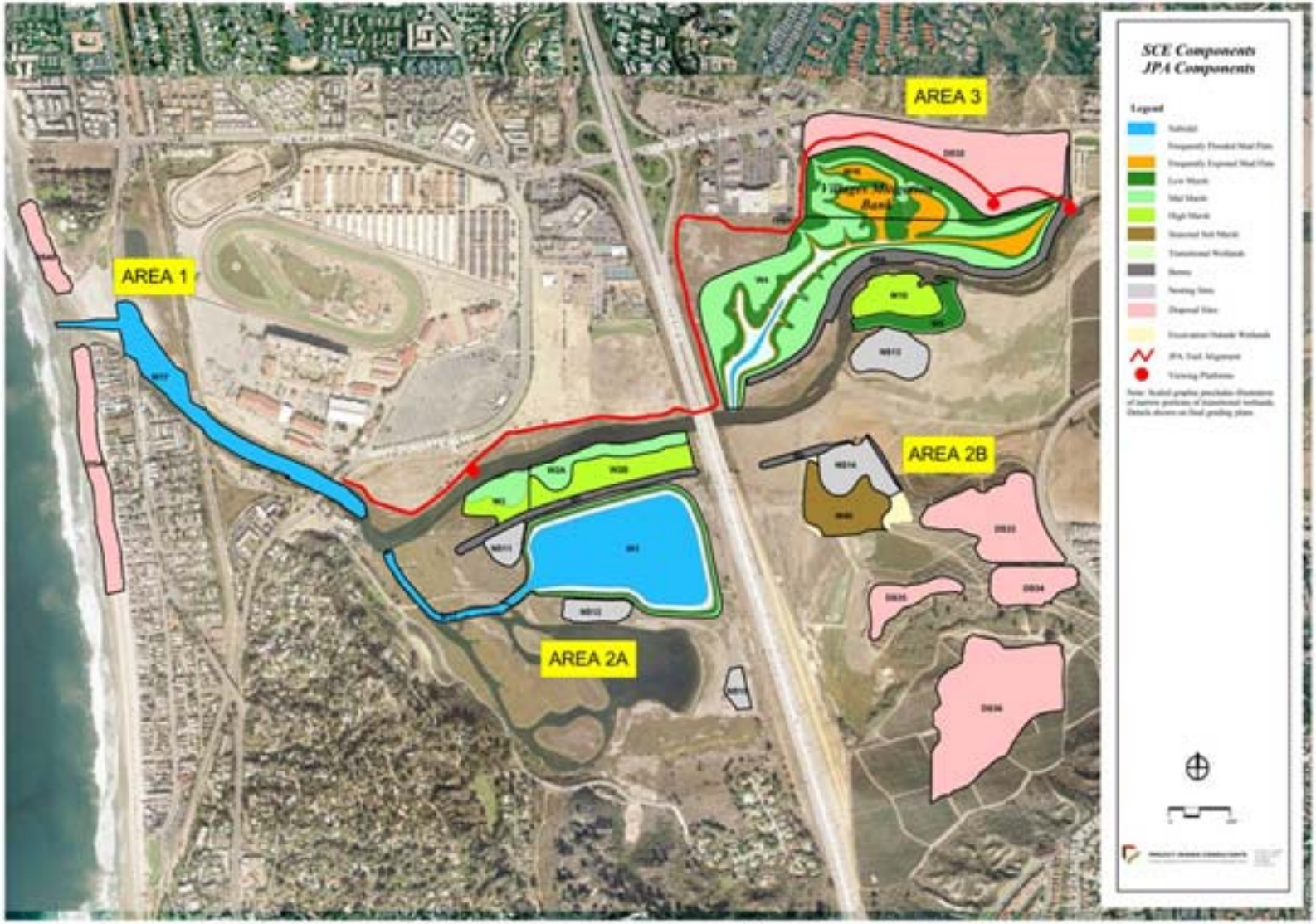


EXHIBIT 2: San Dieguito Wetland Restoration Plan

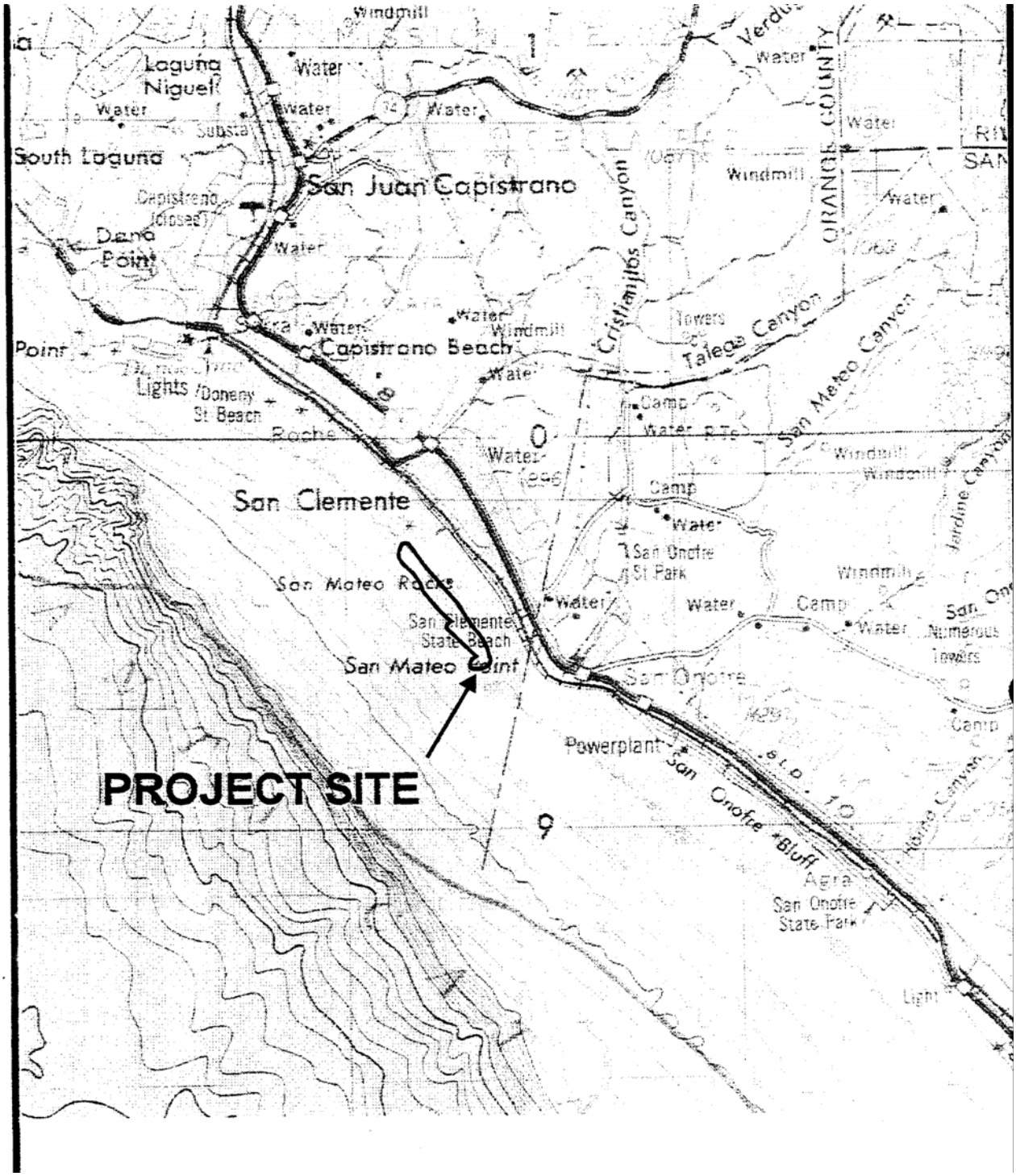
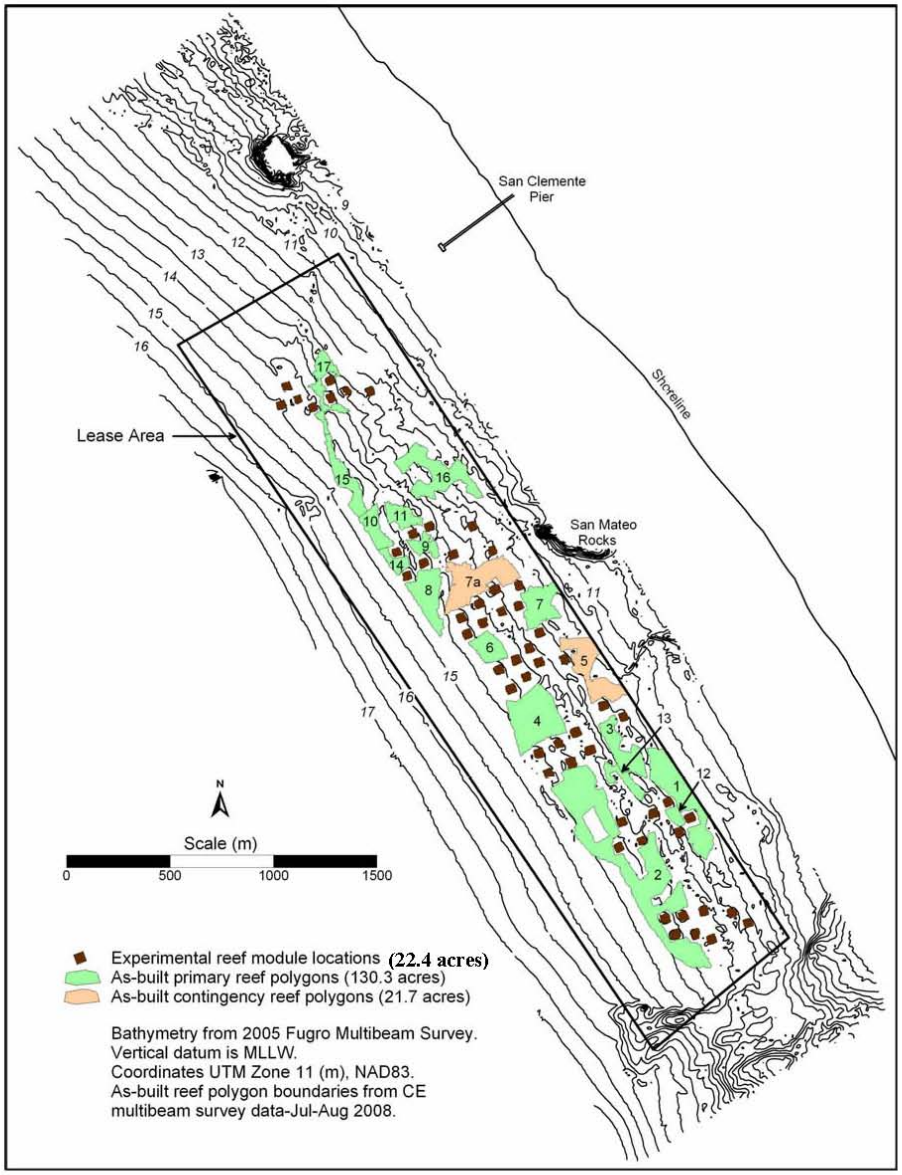


EXHIBIT 3: Mitigation Reef Project Location Map



Phase 1 and 2 Mitigation Reef (WNR), consisting of the experimental modules (dark brown) and primary polygons (green) that combined equal 152.7 acres, approved by the CCC Executive Director as meeting the requirements of SONGS CDP #'s 6-81-330-A and E-07-010.

EXHIBIT 4: Mitigation Reef

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

October 11, 2011

Ms. Susan M. Hansch, Chief Deputy Director
Energy and Ocean Resources
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, CA 94105-2219

Dear Ms. Hansch:

SUBJECT: SONGS Mitigation Program:
2012-13 Two-Year Work Program and Budget

Southern California Edison (SCE) has reviewed the draft work program and budget for the SONGS Mitigation Program and supports your request for its approval by the Coastal Commission.

The draft reflects our recent discussions. SCE appreciates your efforts to help us contain the costs of Coastal Commission oversight and monitoring of the mitigation projects as required by our Coastal Development Permit. We also appreciate your efforts to clearly articulate the specific tasks to be undertaken by your contract scientists, the justification for those tasks, and the estimated costs of each.

In total, the proposed work program will cost SCE and the other SONGS owners nearly $4.7 million during the next two years. However, I am hopeful that continued collaboration between our respective team members will further economize the work program as it progresses.

Please call me at (626) 484-9543 if you should have any questions.

Sincerely,

Patrick Tennant

Patrick Tennant
Manager of Power Generation and Environmental Projects

cc: Ms. Jody Loeffler, California Coastal Commission
Dr. David Kay, SCE