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W 16

Energy and Ocean Resources
Staff: SMH, JJL, JD & SONGS Mitigation Program Scientific Team—SF
Staff Report: October 15, 2009
Hearing Date: November 4, 2009
Item Number: W16
Commission Action:

SAN ONOFRE NUCLEAR GENERATING STATION (SONGS) Mitigation Program: 2010 and 2011 Two-Year Work Program and Budget

EXECUTIVE SUMMARY

The staff is recommending Commission approval of a two-year work program and $3,953,014 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 $239,398 contingency fund to be used, in consultation with SCE, if needed for the specified purposes (additional time for the Scientific Advisory Panel, 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 at 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). 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 2010 and 2011. SCE asked for clarification of the 2011 budget increases. These increases are necessary because performance monitoring for the wetland restoration (Task 1.4) is expected to begin in January 2011 and additional staff will be needed for this task, which includes monitoring of the reference wetlands. SCE also questioned the cost for assessing the mitigation reef performance standards for fish production, fish reproductive rates, and benthic food chain support (Tasks 2.1.c, d and e). SCE was satisfied with staff's explanation that a wide range of possible methods for assessing these performance standards were evaluated and that the methods proposed in the 2010-2011 work plan represent the most cost-effective, scientifically defensible means available. As with all performance standards, the methods and sampling effort used to assess the performance standards pertaining to fish production, fish reproductive rates, and food chain support will be re-evaluated on an annual basis and modified accordingly to insure cost effectiveness and scientific integrity.

In addition, SCE remains concerned about the potential effect on the mitigation reef from increased fishing pressure that may result from adjacent areas being designated as no-take reserves in accordance with the Marine Life Protection Act. In the event that this occurs, additional monitoring of fishing mortality at the artificial reef and nearby reference reefs will be needed to account for differential fishing pressure that results from the designation of marine reserves in the San Clemente region. Funds required to complete such monitoring would be amended to the 2010-2011 work plan and budget.

Following consultation on the work tasks, SCE indicated its satisfaction with the proposed Commission oversight and independent monitoring work plan for the wetland, reef and fish behavioral mitigation for 2010-2011. 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. Field assistants also are retained under contract to conduct the monitoring, and independent consult-

ants 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 scientists as project managers at no additional cost, with data collection done by contract field assistants under their direction. 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 2010 and 2011

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 is expected to be completed in 2010 with inlet dredging and planting. During the 2010 work period, the contract scientists will continue independent construction monitoring as required in the SONGS permit to ensure that the restoration proceeds according to the approved Final Restoration Plan and in compliance with the conditions of the CDP. Contract staff will also prepare for and then implement performance monitoring at the conclusion of the wetland project construction during the 2011 work period.

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 be constructed 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 meets 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 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 work period, contract scientists initiated the first year of performance monitoring on the mitigation reef. Reef tasks for the 2010 and 2011 work period will continue with the second and third year of post-construction performance monitoring.

In October 2000, the Commission reviewed the conclusions on the effectiveness of the fish behavioral barrier, and has monitored the reduction of fish losses at SONGS. Contract scientists will continue to review SCE's annual reports and investigate any unusual 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 2010 and 2011

The proposed budget for calendar years 2010 and 2011 covers the independent monitoring and technical oversight program costs for the Commission's contract scientists, contract field personnel, 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 2010-2011 work program. The proposed funding totals $3,953,014 for the two years.

Staff also is proposing pre-approved contingency funds in the amount of $239,398 specifically for potential additional costs for (1) the Scientific Advisory Panel[1], (2) early office lease termination, and (3) 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 programs. To date, staff has not had to tap 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 2010 and 2011 for a total amount of $3,953,014 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 $239,398 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, 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.

II. MOTION AND RESOLUTION

Commission approval of the 2010 and 2011 two-year Work Program and Budget requires the following motion:

[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.

I hereby move that the Commission approve the 2010 and 2011 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 2010 and 2011 two-year SONGS Work Program and Budget and contingency fund that is set forth in the staff recommendation, dated October 15, 2009, 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 staff's 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 2010 AND 2011 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, (2) install fish barrier devices at the power plant, and (3) construct a 300-acre kelp reef (Conditions A through 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 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 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.

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. Field assistants also are retained under contract to conduct the monitoring. In addition, independent consultants and contractors are called upon when specific expertise or assistance is needed for specific tasks. Costs for permanent Coastal Commission staff that spend a portion of their time on this program are ***not*** paid by the permittee but are absorbed by the Commission.

In approving previous years' work programs and budgets for the monitoring and oversight program, the Commission 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 contract field assistants 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 2010 and 2011 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 Final EIR/EIS was released in September 2000. On September 15, 2000, the JPA certified the EIR/EIS 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 #6-84-88, 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 the requirements of certain 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.

In March 2009 the Executive Director provided to SCE the selection of experts to be named to the Coastal Processes Technical Panel to assist with the Beach Monitoring Program required under Special Condition #25. SCE is currently in the process of confirming their service on the panel and providing background data and information.

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. This was done to comply with the timing of Special Condition #8, which specifies the mitigation program must be implemented prior to or concurrent with construction of the trail segments #4 through 8. On August 24, 2009, JPA submitted a revised mitigation plan to address the alternative mitigation site as well as propose changes in the revegetation plan for the Treatment Ponds and revisions to the coastal sage scrub mitigation site location. Staff is currently reviewing the submittal. Following its approval, staff expects JPA to record the requisite deed restrictions prior to completion of construction of trail segment #8.

Wetland CDP Amendments

The following permit amendments have been submitted:

1. On August 24, 2006, the Commission issued a non-material 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 non-material 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 not filed complete pending revisions from SCE. On September 16, 2009, SCE submitted a revised amendment request, which is being reviewed by staff.

5. On October 25, 2007, the Commission issued a non-material 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 a non-material amendment to modify the trail crossing under Interstate 5 from open bottom box culverts to bridges.
7. On October 13, 2009, staff issued a non-material 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.

Wetland Restoration Construction

Construction of the wetland restoration project at San Dieguito commenced in August 2006 and is expected to be completed by the end of 2010. Construction activities began with the delivery of rock and gravel material for use in constructing 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 installation of haul roads to transport dredge materials to disposal sites, the importation, screening, and stockpiling of rock and sandy clay to create berms and permanent access roads, and 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. Upland topsoil was stripped from the disposal sites and stockpiled, and wetland base soil was removed from excavation areas and stockpiled. 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.

In April 2007, the 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 will be 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. Construction to create middle and high marsh has been completed in Area 2A (Modules W2, W2A, W3) adjacent to the San Dieguito River. 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 have been completed along the boundary of the effective flow area of the San Dieguito River. The disposal sites and berms were covered with topsoil and hydroseeded in December 2007 and October 2008 to control erosion. However, neither hydroseed application was successful in producing native vegetation and the berm slopes and disposal sites are currently covered with weeds. SCE is evaluating a new hydroseed mix and plans to weed and re-hydroseed these areas once this evaluation is complete.

Following excavation and grading, portions of the restoration project are to be planted with salt marsh vegetation. This is anticipated to be accomplished in two phases. The first phase involved planting selected species in high marsh habitat. The second phase, to be accomplished following full inlet dredging, will involve planting cordgrass in the low marsh habitat of Area 2A. Planting

of selected species (largely pickleweed) in high marsh habitat occurred in January/February 2009. The performance of these plantings has 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 are on-going between CCC staff and SCE regarding the feasibility of lowering the elevation of portions of W2/W3 to facilitate better natural recruitment of marsh vegetation.

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.) There are still unresolved issues pertaining to the completion of construction of the nesting sites, including the replacement of currently installed predator control fencing with fencing recommended by the resource agencies, an evaluation of the suitability of the coarseness and color of the surface material used in construction, and weed abatement.

Inlet dredging for full tidal exchange is anticipated to be completed by the end of March 2010. 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. Dredging of the inlet presently awaits NCTD action to re-enforce the bridge through the wrapping of pilings and bracing the north part of the bridge.

Wetland Construction Monitoring

The SONGS permit requires independent monitoring by CCC contract scientists to ensure that the restoration work is conducted according to approved plans. To accomplish this task, CCC contract scientists have 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 are monitoring construction activities through attendance at briefings, discussions with SCE and its consultants, and field inspections of work in progress to ensure the wetland is constructed according to the approved Final Plan. These inspections include verifying module boundaries and elevations, habitat areas, and the appropriate tidal regime. CCC contract scientists are also monitoring 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 administers these changes through condition compliance, where appropriate, and 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 include 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, scientists retained by the Executive Director shall develop 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 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.

SCE has a permit requirement and 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, 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. Topographic degradation of the wetland and berms is likely to occur over time as a result of sedimentation and scour. If aerial photographs or topographic surveys taken as part of post-restoration monitoring indicate that major topographic degradation has occurred, then the appropriate corrective action (e.g., dredging) will be taken to reconfigure the wetland to its "as designed" condition. Exotic species may invade restored habitats. If invasive exotic species are found in the restored wetland during post-restoration

monitoring, and these species could adversely affect the success of the restoration, experts working in this field will be consulted and a program to control the spread of these species will be developed.

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 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 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 I experimental reef. The project area is located offshore of San Clemente, California, on an 862-acre parcel leased from the California State Lands Commission. 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.

Reef Construction and Construction Monitoring

Construction of the Phase 2 mitigation reef (also known as Wheeler North Reef, or WNR) began on June 9, 2008 and was completed on September 11, 2008. The Phase 2 reef was designed as 17 polygons ranging in area from 1.35 to 38.88 acres for a total reef area of 152 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 was based on avoiding the historical distributions of giant kelp and multibeam and sub-bottom profiling sonar surveys conducted at the offshore lease site. The acoustical surveys were 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 as well as areas of special interest to local fisheries.

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 will be repeatedly monitored to determine compliance 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 17 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 show that percent cover of the sea floor covered by quarry boulders ranged from 33.7% to 65.5% on the 17 polygons with an overall average of 40.8% for the entire 152 acre Phase 2 reef, which is below the required range of 42% to 86%. However, the combined area of the Phase1 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 do not meet the hard substrate coverage requirement (polygon 5 and the north-western section of polygon 7) are excluded from being counted toward the overall acreage requirement, the Phase 2 reef totals 130.3 acres and achieves 42.3% rock coverage. This acceptable 130.3 acres of the Phase 2 reef combined with the 22.4 acre Phase 1 experimental reef meet the minimum requirements for area (150 acres) and coverage (42%).

Summary of 2009 Reef Performance Monitoring

Concurrent monitoring of physical and biological attributes of the Wheeler North Reef and the two reference reefs is being used to evaluate whether the Wheeler North Reef meets the performance criteria identified in Condition C. Quantitative underwater surveys of the reefs by CCC contract scientists began in June 2009 and are scheduled for completion in October 2009. Initial results from these surveys are promising in that they reveal kelp, understory algae and sessile invertebrates have colonized all of the newly constructed polygons of the Wheeler North Reef. Formal data analyses will commence once the collection of field data is complete and all data have been entered into project databases and undergone thorough quality control and quality assurance protocols.

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)

SCE conducted a number of laboratory and in-plant experiments testing the behavioral response of fish to lights and sound devices from 1992 through 1999. None of the experiments showed evidence that these devices would reduce fish impingement losses as required by Condition B. At the same time, SCE continued its modified heat cleaning treatments 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 this 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. However, the Fish Chase Procedure effectiveness relative to impingement dropped below the 10% target value in both 2004 (4.82%) and 2005 (7.6%). In 2004 the mortality rates associated with the fish chase also failed to meet the standards.

SCE submitted follow-up analyses to the 2005 report in April 2006, which indicated that there had been no changes in the procedures or operation of the fish return system or heat treatments during 2004 to explain increases in fish impingement. SCE noted that the increases in fish impingement were associated entirely with increases in the entrainment of Pacific sardines. Following the staff's review of the data for the year 2005 (contained in SCE's July 2006 report), on October 23, 2006 staff requested SCE provide additional data and analyses in order to assess the importance of the sub-standard performance of the Fish Chase Procedure. Staff also indicated the need to initiate discussions with SCE on the possibility of implementing new technologies that could significantly reduce losses due to heat treatments and normal impingement.

Staff met with SCE on April 23, 2007 to discuss: (1) the current status of impingement levels at SONGS, (2) the need for additional monitoring to more accurately assess impingement levels, and (3) implementation of new technologies that could significantly reduce fish losses. In September 2007, SCE submitted to the Commission its annual report for the year 2006 on SONGS impingement and fish return data. The 2006 data showed that fish impingement losses at SONGS were significantly reduced. SCE attributed this reduction to a shift in the local fish assemblage to species that are less inclined to be impinged by SONGS.

In September 2008, SCE submitted its annual report for the year 2007. Staff and contract scientists concluded that SCE is in compliance with the goals and requirements concerning the

behavioral barriers condition for 2007 and that the Fish Chase Procedure was again, as in 2006, extremely effective and impingement was considerably lower than in most years.

Contract scientists also have been working with SCE to evaluate the adequacy of SCE's sampling program in providing reliable estimates of annual fish impingement losses. As SCE noted, the accuracy of the impingement assessment increased over 2006-2007 because of increased frequency of sampling. Staff is concerned that a return to the former quarterly sampling may lead to inaccuracies in future assessments concerning the effectiveness of the Fish Chase Procedure and the need to consider new approaches to behavioral barriers.

SCE is currently waiting for a federal ruling on water quality that effectively sets the level of fish losses allowed for cooling systems of power plants. Given the potential for less accurate assessments coupled with 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 to see SCE take a proactive role in developing new technologies at SONGS that will meet the stricter standards currently proposed by the federal government.

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. The permittee has paid the $4.8 million, therefore fulfilling its permit condition requirement.

Department of Fish and Game Hatchery Program

The marine fish hatchery program is operated by 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. 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 125,000 fish annually. The OREHP operates under the terms and conditions of 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: 2010 AND 2011

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 half-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 2010-2011 work program, the contract program staff is aided by contract field assistants who are responsible for collecting and assembling the monitoring data. The 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 at supporting 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 contract field assistants under their direction. They are responsible for supervising the contract field assistants, 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 field assistants is crucial to fulfilling the monitoring tasks for both the wetland restoration and experimental reef.

Before starting the five-year experimental reef monitoring program back 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, personnel rates for private consultants ranged primarily from $65 to $80 per hour and diving related costs (dive boat, equipment, travel costs) and profit margins added by the private consultants exceeded $650,000

per year. In contrast, fourteen years later, the fully-loaded 2009 personnel rates for UCSB-hired field assistants (salary, benefits and indirect costs) range from about $25 to $55 per hour and field-related operating costs for both the wetland and reef monitoring average about $225,000 per year.

In making the decision to implement the monitoring program through UCSB, the Commission recognized that there are important differences between the way the university and a private consulting company service a contract. Foremost among these differences is the need for full time university employees to service contracts located far from campus (i.e., more than a reasonable commuting distance). Unlike large consulting firms or on-campus university research groups, the Commission's SONGS monitoring project (located in Carlsbad, California) is a relatively self-contained unit that does not have the flexibility to cost-share personnel or resources with other university projects. Past experience has proven that staffing the project with full time employees, supplemented by additional seasonal employees, is necessary to maintain consistency in data collection and processing and for getting the field work accomplished in a timely manner. Despite the need for mostly full time employees, UCSB's overall costs for conducting the monitoring work are still far below those of a private consulting firm.

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 staff 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 on-going construction monitoring.

The full time wetland biologist and one database programmer/systems analyst working 10% time on the wetland project will continue to assist contract scientists with construction monitoring through the completion of construction in 2010. A second full time wetland biologist/database assistant will be retained beginning the last three months of 2010 at the SONGS Mitigation Program office in Carlsbad in preparation for the performance monitoring that will commence in 2011. Specifically, this staff member will have primary responsibilities to 1) work with the project database programmer/systems analyst to prepare data entry schemes, quality assurance and quality control procedures for the wetland data, and the training of other project personnel on these procedures, 2) assist in the development of the web-based wetland database, 3) assemble field sampling protocols, metadata, and create database user guides, 4) participate in monitoring activities at the San Dieguito Lagoon restoration (in 2011), and 5) supervise the activities of wetland project staff.

At the start of performance monitoring in 2011, contract scientists will be further assisted in performance monitoring in 2011 by the addition of one full time wetland biologist 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). This staff biologist will also be responsible for organizing and entering these 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.

CCC contract scientists plan to use temporary assistants 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, taking invertebrate samples, and recording data. CCC contract staff has determined during pre-restoration monitoring that from five to six people, depending on the type of sampling gear used, are the minimum number needed for fish and invertebrate sampling at a given location. 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 two wetland staff biologists based at Carlsbad will be assisted by three temporary field assistants during the intensive summer sampling. The one staff biologist at UCSB will be assisted by four temporary field assistants at the northern reference wetlands.

In addition to being experts in invertebrate, fish and plant taxonomy, and the use of environmental data loggers, global positioning systems, and scientific and data collection methods, wetland project staff have other skills, similar to those of scientists employed on the reef project, that are required to complete the monitoring requirements of the mitigation project (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.

Commission contract scientists 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 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 2010 and 2011 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 required 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 mostly full-time 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 needs 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 staff 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 technicians 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 science staff are assigned other project-related tasks.

One of the unwritten goals staff has in managing the monitoring program is to have no backlog in processing and analyzing the collected data, so that the work the Commission is doing does not become a bottleneck that delays the mitigation projects. Field staff are highly qualified scientists and capable of performing all technical and scientific aspects of the monitoring program. Without them, the Principal Scientists and staff could not complete the data analysis in a timely fashion.

Contract scientists propose to 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 on each module without having to anchor the boat at each location.

Based on these considerations, staff has 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 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 year of performance monitoring. 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 2010 and 2011. SCE asked for clarification of the 2011 budget increases. These increases are necessary because performance monitoring for the wetland restoration (Task 1.4) is expected to begin in January 2011 and additional staff will be needed for this task, which includes monitoring of the reference wetlands. SCE also questioned the cost for assessing the mitigation reef performance standards for fish production, fish reproductive rates, and benthic food chain support (Tasks 2.1.c, d and e). SCE was satisfied with staff's explanation that a wide range of possible methods for assessing these performance standards were evaluated and that the methods proposed in the 2010-2011 work plan represent the most cost-effective, scientifically defensible means available. As with all performance standards, the methods and sampling effort used to assess the performance standards pertaining to fish production, fish reproductive rates, and food chain support will be re-evaluated on an annual basis and modified accordingly to insure cost effectiveness and scientific integrity.

In addition, SCE remains concerned about the potential effect on the mitigation reef from increased fishing pressure that may result from adjacent areas being designated as no-take reserves in accordance with the Marine Life Protection Act. In the event that this occurs, additional monitoring of fishing mortality at the artificial reef and nearby reference reefs will be needed to account for differential fishing pressure that results from the designation of marine reserves in the San Clemente region. Funds required to complete such monitoring would be amended to the 2010-2011 work plan and budget.

Following consultation on the work tasks, SCE indicated its satisfaction with the proposed Commission oversight and independent monitoring work plan for the wetland, reef and fish behavioral mitigation for 2010-2011. SCE's letter of support is attached.

D.1. Wetlands Tasks

The SONGS permit requires independent monitoring by Commission contract scientists to ensure that construction of the wetland is conducted according to approved plans. Upon completion of construction of the wetland, the permit requires the Commission's contract scientists to monitor the wetland to determine whether the physical and biological performance standards of Condition A are met. To accomplish these tasks, CCC contract scientists will continue to interact closely with SCE, project contractors, biologists, and others involved with implementation of the Final Plan. Construction of the wetland is expected to be completed by the end of 2010. CCC contract scientists will continue to be assisted in construction monitoring efforts in 2010 by one full time wetland biologist, one database programmer/systems analyst working 10% time. A second full time wetland biologist/database assistant will be added for the final three months of 2010 to prepare for performance monitoring. Post-construction performance monitoring, including monitoring the reference wetlands, is anticipated to begin in January 2011, at which time the contract scientists will be further assisted by another full time wetland biologist to oversee the northern reference wetlands monitoring as well temporary assistants for the intensive summer sampling program.

During the 2010-2011 work period, CCC contract scientists and their field assistants and consultants will complete the following wetland tasks:

1.1 Wetland Restoration Implementation (2010-2011)

a. Consult with the permittee on the restoration. Attend meetings and interact with the permittee and their contractors to ensure that restoration proceeds in a timely manner according to the Final Wetland Restoration Plan approved by the Coastal Commission and in accordance with the conditions of the SONGS coastal development permit.

b. Assist CCC staff as needed on scientific issues pertaining to compliance of the wetland restoration project with the SONGS permit.

1.2 Construction Monitoring (2010)

CCC construction monitoring is anticipated to occur through 2010 and will continue to include the monitoring of both planned construction activities, as set forth in the Final Plan, and of unplanned changes and impacts that arise during construction. To implement construction monitoring, CCC contract scientists and support staff will continue to:

a. Attend planning meetings and briefings and consult with SCE on the status of construction.

b. Conduct on-site monitoring to:

i) Ensure that SCE's inspection activities associated with potential construction impacts are implemented as specified in the Final Restoration Plan.

ii) Spot check the construction site with regard to proper implementation of the Final Plan (e.g., timetable, placement of module boundaries, elevations, avoidance of sensitive habitats and species, best management practices, and planting program). Engage consultants as needed to verify that the placement of module boundaries and wetland elevations conform to the Final Plan.

iii) React to unforeseen events (e.g., unusual erosion or sedimentation within the lagoon.

c. Review inspection reports associated with the restoration produced by other agencies or SCE consultants to make sure they are complete and up to date.

d. Consult with permittee, resource agencies and other wetland ecology experts on wetland restoration and management issues. These issues include changes in construction methods or timetable, planting plan implementation, and sensitive species.

1.3 Prepare for Performance Monitoring of the Restored Wetland (2010)

a. Refine Commission approved wetland monitoring plan to include estimates of effort and schedules for monitoring of birds. Wetland birds are highly mobile and vary in abundance across nearly all spatial and temporal scales. CCC contract staff have developed a tentative sampling design for birds, based on available data, to account for this variability in a cost-effective manner. However, unlike the sampling design for fish and macroinvertebrates, the sampling design for birds has not been evaluated in the

restored and reference wetlands. In this task, birds will be sampled at the restored wetland and one reference wetland using the proposed design to provide information as to whether the timing of sampling, sample locations, and number of sample replicates is sufficient for evaluating the performance standard that pertains to birds. This task will be undertaken in consultation with bird experts.

b. Assemble monitoring team to begin work in January 2011.

c. Purchase and prepare sampling gear for performance monitoring.

1.4 Performance Monitoring of the Restored Wetland (2011)

The SONGS permit requires CCC 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 2011 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. Performance monitoring of the wetland is expected to begin in January 2011 upon completion of wetland construction.

The following tasks will be undertaken by Commission contract scientists and support staff:

a. Conduct field surveys and use aerial photographs to assess the performance standards pertaining to topography and habitat areas. Observations by CCC contract 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 at least quarterly 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. Low-level aerial photographs taken in spring and fall will also be used to identify areas of erosion and sedimentation and in determining whether the areas of planned wetland habitats (subtidal, intertidal mudflat, vegetated marsh) have changed from the habitat areas specified in the Final Restoration Plan. CCC 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 at least 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. The water quality standard will be evaluated using data on water temperature, salinity, dissolved oxygen, and turbidity collected using continuously recording environmental data loggers in the restored and the reference wetlands. Water quality will also be determined from samples taken once every two weeks at additional locations in the restored wetland where this standard is

most likely to be problematic (e.g. tidal creeks, back of basins). In addition, because of its importance to wetland health, dissolved oxygen concentration will be measured in comprehensive surveys at the San Dieguito Lagoon restoration and the reference wetlands and compared among these wetlands. Data on changes in water level within San Dieguito Lagoon that may indicate tidal muting, will be collected using dataloggers, and evaluated over time as a function of tidal elevation, to assess the tidal prism standard.

c. *Survey fish, macroinvertebrates, and birds to assess the performance standards pertaining to biological communities and food chain support.* During pre-restoration monitoring, CCC contract 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 standard 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 CCC contract staff to determine the abundance and number of species of birds and assess bird feeding activity.

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, which has proved to be effective. 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 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 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.

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 that covers as much of the wetland as possible that looks for exotic species will be conducted in summer 2011.

1.5 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 status reports for the Commission on the progress of the wetland restoration project including the results of independent construction monitoring by CCC contract scientists.

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. Contract 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. 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 CCC, SCE, other agencies and the general public.

e. Synthesize construction monitoring information and use this information to assess whether the wetland restoration is in compliance with 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.

1.6 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 contract scientists manage a team of University 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. The contract scientists 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 monthly 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 2012-2013 Work Plan.

D.2. Reef Tasks

The permit requires the Commission's contract scientists to monitor the mitigation reef to determine whether: (1) the 13 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 2010 and 2011 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. Eight diver biologists working full time during the six month field seasons of each year are needed to complete these monitoring activities. 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 and require five biologists working fulltime.

During the 2010-2011 work period contract scientists and their field assistants and subcontractors will complete the following tasks pertaining to the mitigation reef.

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 2010 and 2011 to assess the performance standards pertaining to substrate coverage, kelp density and the benthic community. Extensive analyses of data collected during the experimental phase of the reef mitigation project showed that a minimum of 80 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 174 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 2010 and 2011 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 our 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 2010 and 2011 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 work plan 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 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 contract scientists will be assisted by subcontractors 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 standard on reproductive rates, and data on gut fullness in two species that feed on the bottom will be used to assess the standard pertaining to benthic food chain support. The contract scientists will be assisted by subcontractors with expertise in fish production and reproduction.

f. Review sonar report. Multibeam sonar surveys are needed to determine the footprint acreage of the Wheeler North Reef in order to evaluate the performance standards pertaining to hard substrate and giant kelp. The CCC and SCE entered into a Memorandum of Agreement on August 11, 2009 that allows SCE's contractors to conduct the sonar surveys with provisions to protect the Commission's independent evaluation of the data via independent review of them done under the direction of CCC contract scientists. CCC staff are anticipating receiving SCE's sonar survey data and report by mid November 2009 and expect to have an external review of the survey results completed by early 2010.

2.2 Sea Fan Assessment and Management

Ongoing data collection and analyses of established monitoring stations on the experimental reef modules constructed in 1999 show a reasonable probability that dense populations of large sea fans could prevent the Wheeler North Reef from meeting several of the performance standards. Results to date show high densities of the native sea fan *Muricea* on many of the modules and a steady increase in the percentage of the sea floor that they occupy. Moreover, at present the density of giant kelp and the abundance and number of species of understory algae and benthic invertebrates on the experimental modules are negatively related to the density of *Muricea.* Whether these relationships are causal, whether they persist over time, and whether they appear on the newly constructed Wheeler North Reef remain unknown. Information on the population dynamics of *Muricea* and its interactions with other components of the benthic community obtained from the continued sampling of the experimental reef modules will provide critically important information for evaluating the performance of the 174 acre Wheeler North Reef and determining the causes for its sub par performance in the event that it fails to meet the performance standards. Contract scientists will perform the tasks listed below in 2010 and 2011 to obtain the much needed information on *Muricea.* As the work progresses, staff and contract scientists will consult regularly with SCE and its technical consultants to adapt the tasks if necessary to ensure collection of necessary information.

a. Monitor recruitment growth, and survivorship of Muricea *in long-term plots on the experimental modules and reference reefs.* 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. Contract scientists will continue to monitor these plots in 2010 and 2011 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.

b. Set up and monitor Muricea *removal experiment to determine whether* Muricea *is the cause of poor performance on the experimental reef.* Experiments that isolate the effects of *Muricea* are needed to determine whether its inverse relationship with giant kelp and other components of the benthic community is causal. To this end, contract scientist will conduct a *Muricea* removal experiment using the modules of the experimental reef. The experiment will consist of paired *Muricea* removal and *Muricea* control plots and will take advantage of the natural variation in *Muricea* density on the experimental modules to determine any threshold levels below which *Muricea* density and percent cover have no significant effects on giant kelp, understory algae and invertebrates. The experiment will commence in spring 2010 and will be sampled twice per year in spring and autumn of 2010 and 2011.

c. Continue analyzing data on Muricea *and the benthic community collected from the experimental reef modules, newly constructed portions of the Wheeler North Reef, and from permanent sampling stations at the two reference sites for insight into patterns and potential consequences of* Muricea *population dynamics.*

2.3 Reef Data Management, Analyses and Reporting

a. Enter, organize, and manage data collected during the monitoring studies. Data management and quality assurance are a critically important task that requires 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 on the status 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. Contract 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. 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 CCC, 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.

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

a. Consult with the permittee. Correspond and meet with the permittee and their contractors to ensure that reef construction proceeds in a timely manner according to the Final Plan approved by the Coastal Commission and conforms to the SONGS coastal development permit.

b. Direct the field and analytical studies described in the 2010-2011 Work Plan. The contract scientists manage a team of University 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. The lead contract scientists will also dive at the artificial reef and nearby reference reefs 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 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.) and to conform with IACUC (Institution of Animal Care and Use Committees) which is required for all University sponsored research involving vertebrates (i.e., fish).

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 2012-2013 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: 2010 AND 2011

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 year 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	Total 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	2,702,131 (projected)
18-YEAR TOTAL	$16,969,210	$14,442,540

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 we complete construction monitoring on the wetland and enter the performance monitoring stage for the mitigation projects, 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 2010 and 2011 work program and budget.

Proposed Budget for 2010 and 2011

The proposed budget for calendar years 2010 and 2011 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 half-time administrator, are hired

under contract with the University of California, Santa Barbara. 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 2010 and 2011) is $3,953,014, 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). Work on the wetland will continue with construction monitoring during 2010 and then gear up with additional field assistants required for performance monitoring in 2011. The second and third years of performance monitoring will be the primary work for the reef (the first year of performance monitoring is being completed in 2009). Personnel rates are set by U.C. Systemwide Administration. Narrative budget notes explaining each budget category are contained in Appendix A.

SONGS PROGRAM BUDGET 2010

	2010 Wetland	2010 Reef	2010 Admin/Mgt	2010 Total
SALARIES				
Core Program Staff				
Principal Scientist (0.5 PY)	7,018	63,158		70,176
Principal Scientist (1.0 PY)	56,182	56,184		112,366
Principal Scientist (0.5 PY)	40,794	4,533		45,327
Senior Administrator (0.5 PY)			40,824	40,824
Field Assistants				
Staff Research Associate IV (1.0 PY)	7,348	66,134		73,482
Staff Research Associate III (1.0 PY)		49,413		49,413
Staff Research Associate III (1.0 PY)		49,413		49,413
Staff Research Associate III (0.25 PY)	12,867			12,867
Staff Research Associate II (1.0 PY)	42,207			42,207
Staff Research Associate II (0.20 PY)	6,512			6,512
Staff Research Associate I (1.0 PY)		35,166		35,166
Staff Research Associate I (1.0 PY)		35,166		35,166
Lab Assistant III (3 @ 6 mos; 1.5 PY)		51,174		51,174
Student Assistant I @ 200 hr/yr (0.10 PY)	2,000			2,000
SUBTOTAL SALARIES	174,928	410,341	40,824	626,093
UCSB Indirect Cost @ 26% (excluding SrAdmin)	45,481	106,689		152,170
TOTAL SALARIES	**220,409**	**517,030**	**40,824**	**778,263**
BENEFITS				
Core Program Staff				
Principal Scientist	1,882	16,930		18,812
Principal Scientist	13,824	13,826		27,650
Principal Scientist	8,650	963		9,613
Senior Administrator			18,904	18,904
Field Assistants				
Staff Research Associate IV	2,241	20,176		22,417
Staff Research Associate III		13,395		13,395
Staff Research Associate III		18,880		18,880
Staff Research Associate III	3,860			3,860
Staff Research Associate II	17,266			17,266
Staff Research Associate II	1,954			1,954
Staff Research Associate I		10,975		10,975
Staff Research Associate I		11,256		11,256
Lab Assistant III (3)		8,853		8,853
Student Assistant I	88			88
SUBTOTAL BENEFITS	49,765	115,254	18,904	183,923
UCSB Indirect Cost @ 26% (excluding SrAdmin)	12,939	29,966		42,905
TOTAL BENEFITS	**62,704**	**145,220**	**18,904**	**226,828**

2010 Budget continued.

	2010 Wetland	2010 Reef	2010 Admin/Mgt	2010 Total
SCIENTIFIC ADVISORY PANEL	**40,145**	**40,145**		**80,290**
CONSULTANTS AND CONTRACTORS				
Wetlands				
Task 1.2b-wetland engineering	20,000			20,000
Task 1.2b-aerial photo surveys	23,200			23,200
Task 1.3-bird sampling design	28,800			28,800
Reef				
Task 2.1c-d-e-fish reproductive rates, food chain support, and fish reproduction		211,994		211,994
Task 2.1f-review of multi-beam sonar survey data		10,000		10,000
TOTAL CONSULTANTS & CONTRACTORS	**72,000**	**221,994**		**293,994**
TRAVEL				
SrAdmin & reimbursement for permanent CCC staff	5,040	2,160		7,200
UCSB Principal Scientists & Field Assistants	20,000	25,000		45,000
UCSB indirect cost (excl. SrAdmin & CCC staff)	5,200	6,500		11,700
TOTAL TRAVEL	**30,240**	**33,660**		**63,900**
OPERATING EXPENSE				
General expense (SF office)			37,999	37,999
General expense (UCSB contract, incl. indirect cost)	22,050	84,155		106,205
Facilities operations (Carlsbad office)	39,536	39,537		79,073
Marina storage/offsite facilities (UCSB contract)		9,666		9,666
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	**61,586**	**133,358**	**53,699**	**248,643**
EQUIPMENT				
SF office			1,000	1,000
Replacement tow vehicle (UCSB contract)		20,000		20,000
Miscellaneous equipment, as needed (UCSB)	15,000	10,000		25,000
TOTAL EQUIPMENT	**15,000**	**30,000**	**1,000**	**46,000**
TOTAL EXPENSE 2010	**502,084**	**1,121,407**	**114,427**	**1,737,918**

SONGS PROGRAM BUDGET 2011

	2011 Wetland	2011 Reef	2011 Admin/Mgt	2011 Total
SALARIES				
Core Program Staff				
Principal Scientist (0.5 PY)	7,148	64,330		71,478
Principal Scientist (1.0 PY)	57,304	57,304		114,608
Principal Scientist (0.5 PY)	42,021	4,669		46,690
Senior Administrator (0.5 PY)			42,866	42,866
Field Assistants				
Staff Research Associate IV (1.0 PY)	7,578	68,199		75,777
Staff Research Associate III (1.0 PY)		51,144		51,144
Staff Research Associate III (1.0 PY)		51,144		51,144
Staff Research Associate III (1.0 PY)	51,855			51,855
Staff Research Associate II (1.0 PY)	43,476			43,476
Staff Research Associate II (1.0 PY)	39,366			39,366
Staff Research Associate I (1.0 PY)		36,399		36,399
Staff Research Associate I (1.0 PY)		36,399		36,399
Laboratory Assistant III (3 @ 6 mos; 1.5 PY)		52,965		52,965
Laboratory Assistant III (7 @ 5 mos; 2.9 PY)	100,730			100,730
Student Assistant I @ 600 hr/yr (0.30 PY)	6,000			6,000
SUBTOTAL SALARIES	355,478	422,553	42,866	820,897
UCSB Indirect Cost @ 26% (excluding SrAdmin)	92,424	109,864		202,288
TOTAL SALARIES	**447,902**	**532,417**	**42,866**	**1,023,185**
BENEFITS				
Core Program Staff				
Principal Scientist	1,987	17,884		19,871
Principal Scientist	14,670	14,671		29,341
Principal Scientist	9,329	1,038		10,367
Senior Administrator			19,849	19,849
Field Assistants				
Staff Research Associate IV	2,387	21,483		23,870
Staff Research Associate III		14,371		14,371
Staff Research Associate III		20,048		20,048
Staff Research Associate III	15,557			15,557
Staff Research Associate II	18,216			18,216
Staff Research Associate II	11,810			11,810
Staff Research Associate I		11,720		11,720
Staff Research Associate I		12,012		12,012
Laboratory Assistant III (3)		9,163		9,163
Laboratory Assistant III (7)	17,426			17,426
Student Assistant I	264			264
SUBTOTAL BENEFITS	91,646	122,390	19,849	233,885
UCSB Indirect Cost @ 26% (excluding SrAdmin)	23,828	31,821		55,649
TOTAL BENEFITS	**115,474**	**154,211**	**19,849**	**289,534**

2011 Budget continued.

	2011 Wetland	2011 Reef	2011 Admin/Mgt	2011 Total
SCIENTIFIC ADVISORY PANEL	**41,590**	**41,590**		**83,180**
CONSULTANTS AND CONTRACTORS				
Wetlands				
Task 1.4a-wetland engineering	30,000			30,000
Task 1.4a-b-aerial photo surveys	58,000			58,000
Task 1.4c-bird sampling	57,600			57,600
Reef				
Task 2.1c-d-e-fish reproductive rates, food chain support, and fish reproduction		211,994		211,994
TOTAL CONSULTANTS & CONTRACTORS	**145,600**	**211,994**		**357,594**
TRAVEL				
Sr Admin & reimbursement for permanent CCC staff	5,221	2,238		7,459
UCSB Principal Scientists & Field Assistants	40,644	25,900		66,544
UCSB indirect cost (excl. Sr Admin & CCC staff)	10,567	6,734		17,301
TOTAL TRAVEL	**56,432**	**34,872**		**91,304**
OPERATING EXPENSE				
General expense (SF office)			37,999	37,999
General expense (UCSB contract, incl. indirect cost)	50,467	87,184		137,651
Facilities operations (Carlsbad office)	40,467	40,467		80,934
Marina storage/offsite facilities (UCSB contract)		10,014		10,014
Computer technical support, repair & maintenance			1,500	1,500
Review workshop			2,300	2,300
Audit			4,000	4,000
Administrative/financial processing services			12,000	12,000
TOTAL OPERATING EXPENSE	**90,934**	**137,665**	**57,799**	**286,398**
EQUIPMENT				
SF office			1,000	1,000
YSI water quality environmental data loggers (UCSB)	45,000			45,000
Total Station (UCSB)	12,000			12,000
Miscellaneous equipment, as needed (UCSB)	15,540	10,360		25,900
TOTAL EQUIPMENT	**72,540**	**10,360**	**1,000**	**83,900**
TOTAL EXPENSE 2011	**970,472**	**1,123,110**	**121,514**	**2,215,096**

TWO-YEAR TOTAL EXPENSE FOR 2010 and 2011 **$3,953,014**

F. PRE-APPROVED CONTINGENCY FUND FOR 2010 AND 2011

Staff is proposing pre-approved contingency funds in the amount of $239,398 specifically for potential additional costs for: (1) the Scientific Advisory Panel, (2) early office lease termination, and (3) 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 tap 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 wetland restoration implementation and construction and performance monitoring as well as performance monitoring of the full mitigation reef. 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 ($163,470) based on current rates of expenditure. However, the overall budget does not provide any cushion for any increased effort; thus, the staff proposes a pre-approved contingency fund amount of $173,284 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 ($336,754, see footnote) less the budgeted amount ($163,740).

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 $31,114 would be available to satisfy the lease obligations. Similarly, the contingency fund includes $35,000 for unexpected repairs or replacement of the 16 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 2009, the adjusted amount for 2010 is $165,400. A 3.6% escalator is used for estimating adjustments for 2010, based on the average percent change from 2007 to mid-year 2009, resulting in an adjusted amount for 2011 of $171,354. Thus, the total adjusted amount authorized for the two budget years 2010 and 2011 is $336,754.

APPENDIX A: BUDGET NOTES

SALARIES. Includes salaries and wages for the contract program staff, which includes two scientist positions, administrative support, and field assistants. All of the current and proposed contract program staff except a half-time administrator are hired under contract with the University of California, Santa Barbara; costs include the University's indirect costs.[3] The half-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 originally 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 3.6% escalator is applied for 2011.

GENERAL EXPENSE (SF). Covers operating expense for contract program staff working out of the Commission's San Francisco office (half-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 3.6% escalator is applied for 2011.

FACILITIES OPERATIONS (CARLSBAD OFFICE). Rented office space in Carlsbad houses one full time contract scientific staff and contract field assistants for the reef and wetland mitigation programs. Annual costs cover space rental, utilities, security, office services and supplies, and communications (including telephone, cell phone service, and DSL service). A 3.6% escalator is used for 2011 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 3.6% escalator is applied for 2011.

[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.

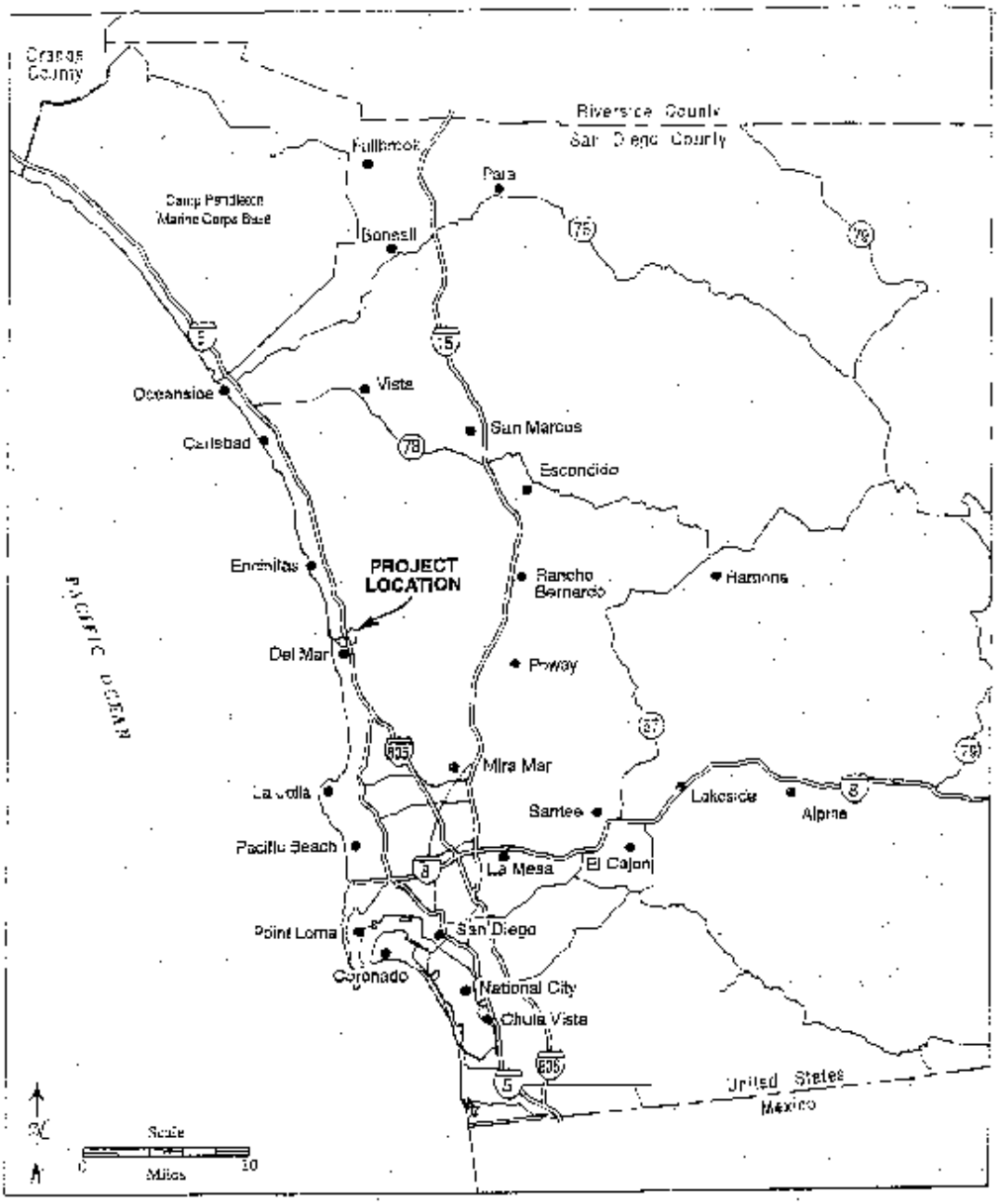
COMPUTER TECHNICAL SUPPORT. Covers costs for maintaining the computers used by contract program staff and field assistants, including regular maintenance, repairs, and technical support needed for troubleshooting problems.

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 review workshop is to determine whether performance standards have been met, whether revisions to the standards are necessary, and whether remedial measures are required. While the mitigation projects are still in the construction stages, annual status reviews of the mitigation projects may be conducted for the Commission and the public.

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 mitigation programs, including computers and networking equipment, office equipment (such as fax and copier), and miscellaneous equipment for the reef and wetland mitigation programs. A 3.6% escalator is applied where applicable for 2011. Also included are funds for a replacement tow vehicle for the reef monitoring program and 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

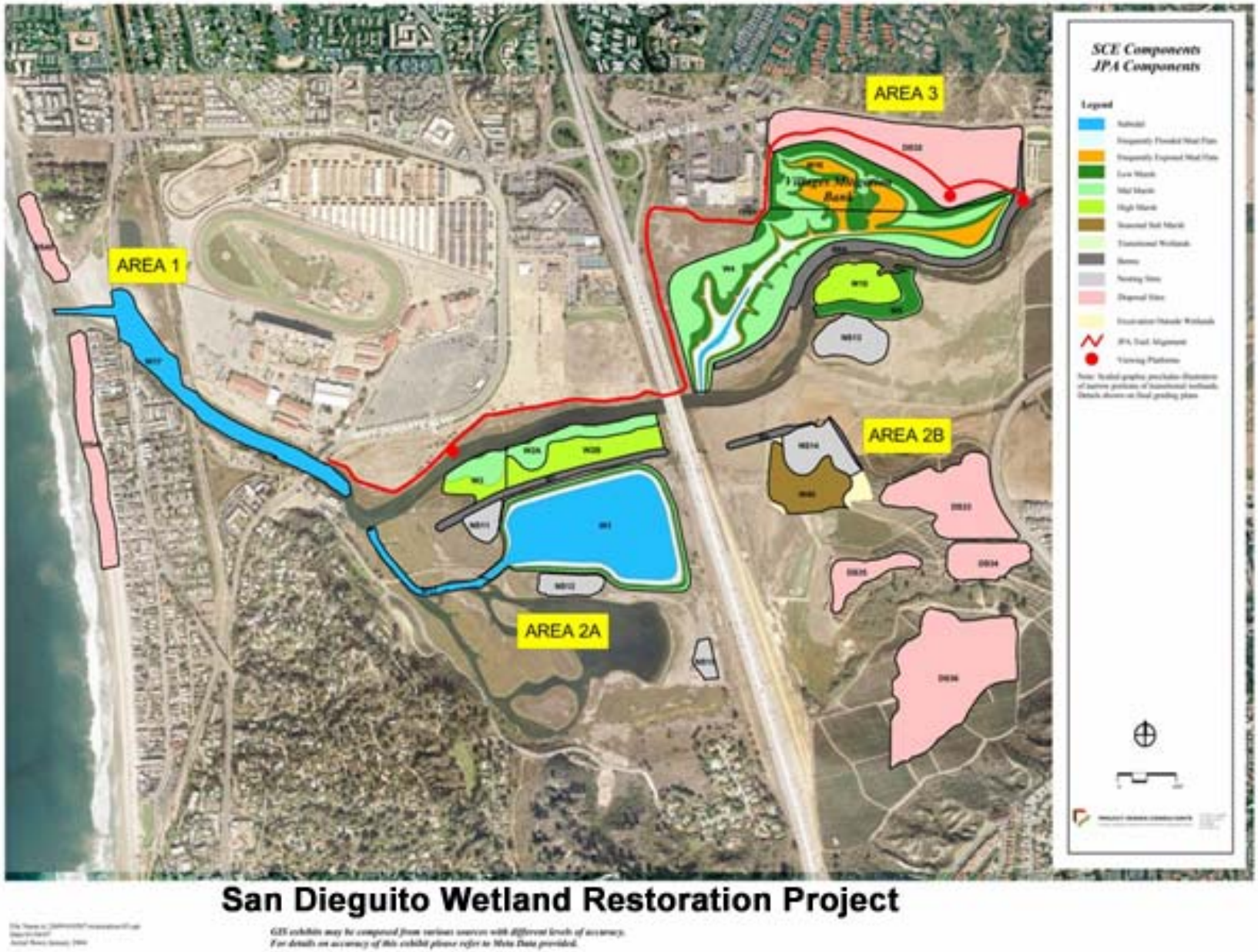


EXHIBIT 2: San Dieguito Wetland Restoration Plan

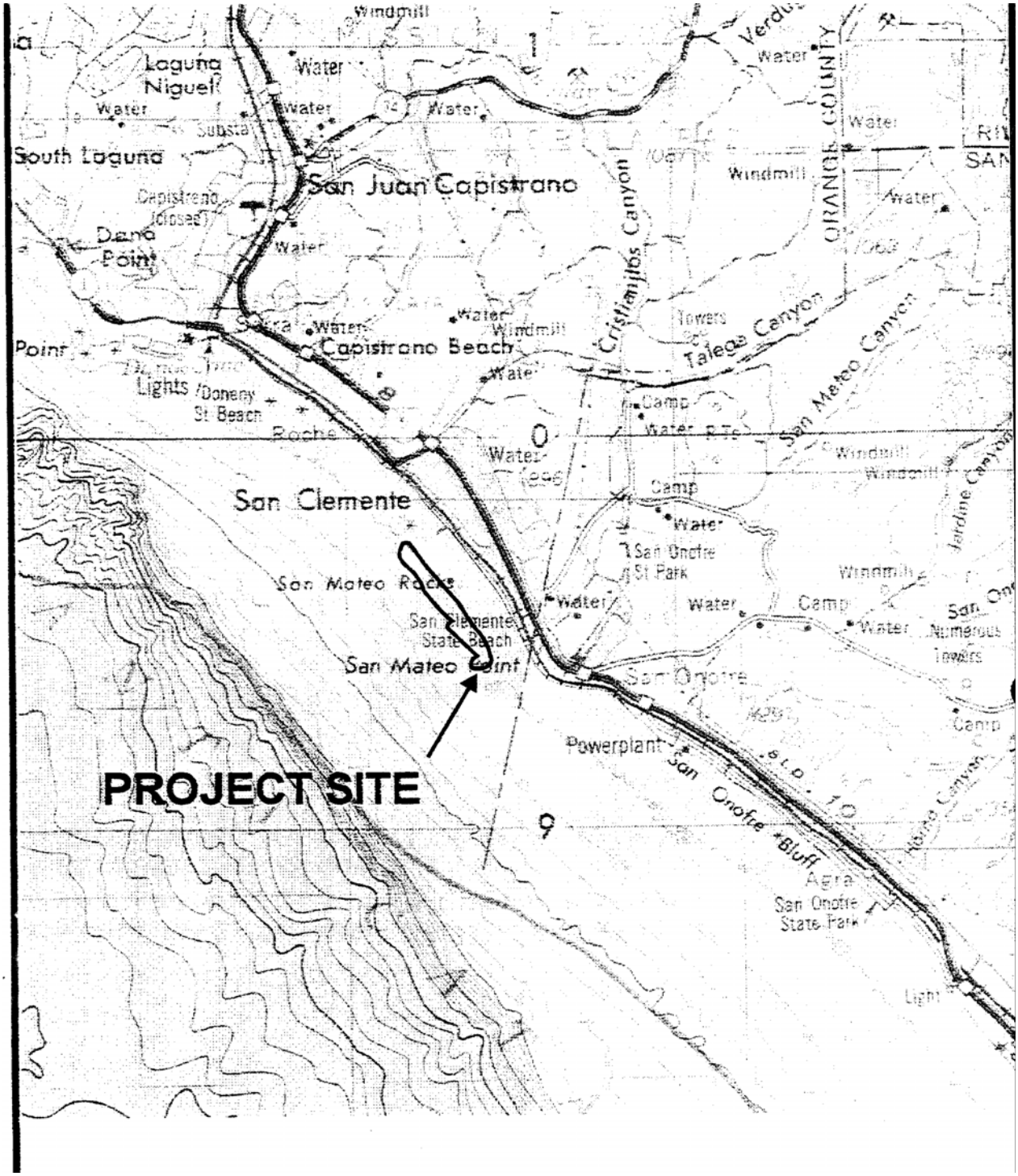
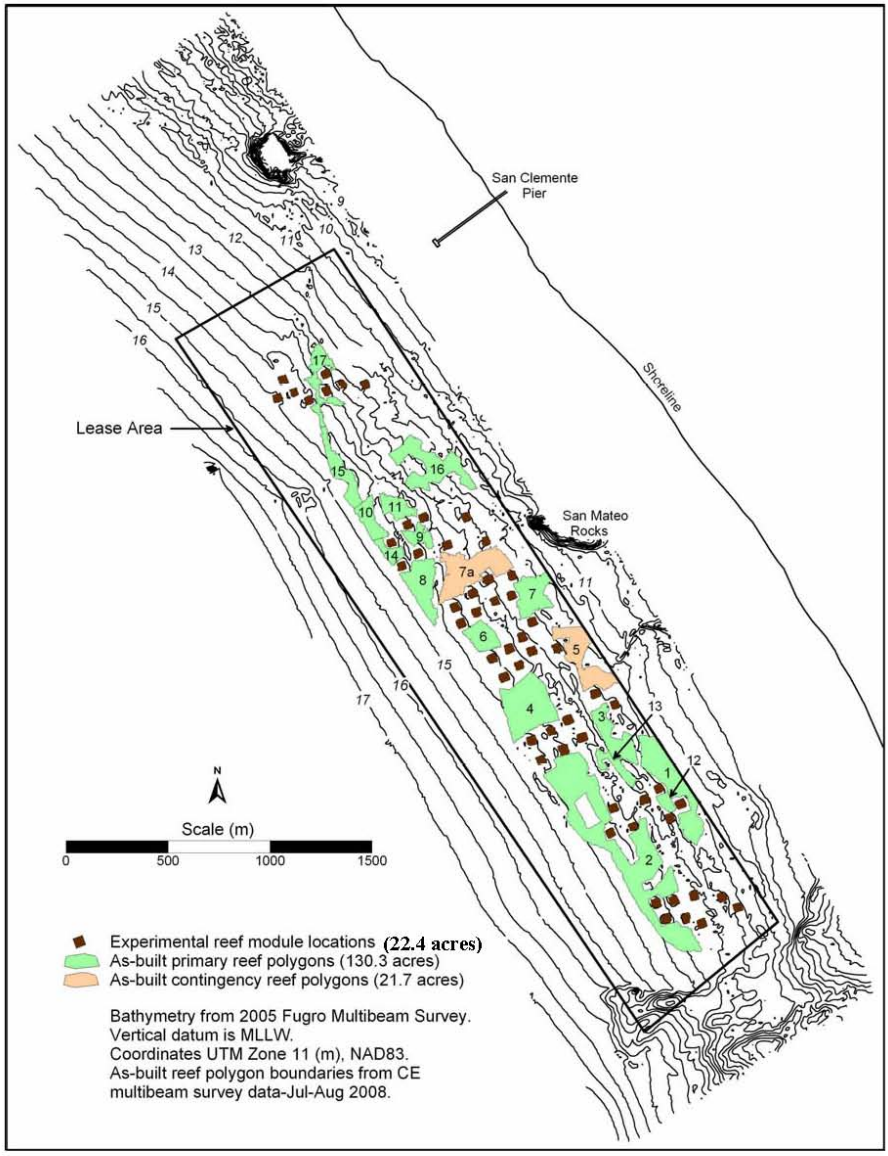


EXHIBIT 3: Mitigation Reef Project Location Map

EXHIBIT 4: Mitigation Reef



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.

ATTACHMENT 1

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

October 5, 2009

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

RECEIVED
OCT 07 2009
CALIFORNIA
COASTAL COMMISSION

Dear Ms. Hansch:

SUBJECT: SONGS Mitigation Program:
2010-11 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 particular, we remained concerned about the potential long-term costs of fish productivity monitoring and analysis, which will cost $424,000 over the next two years, and for which over $300,000 has already been spent on methods development. In total, the proposed work program will cost SCE and the other SONGS owners nearly $4 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) 302-3066 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