MINUTE ITEM
This Calendar Item No. 72 was approved as Minute Item No. 72 by the California State Lands Commission by a vote of 3 to 0 at its 6-14-99 meeting.

CALENDAR ITEM
72

A 73

S 38

06/14/99
W 25004
W 30105
M. Griggs
M. Valentine

CERTIFICATION OF FINAL PROGRAM ENVIRONMENTAL IMPACT REPORT (PEIR) PREPARED FOR CONSIDERATION OF A NEW LEASE FOR THE CONSTRUCTION AND MANAGEMENT OF AN ARTIFICIAL REEF IN THE PACIFIC OCEAN NEAR SAN CLEMENTE, ORANGE COUNTY

APPLICANT:

Southern California Edison
2244 Walnut Grove Avenue
Rosemead, California 91770

AREA, LAND TYPE, AND LOCATION:

State tidelands and submerged lands encompassing 862 acres, more or less, located off the coast of San Clemente, in southern Orange County, California. The lease area is approximately 0.6 miles offshore and extends 2.5 miles from San Mateo Point to just north of the San Clemente Pier. Within the lease area, the proposed experimental reef would occupy a total of 22.4 acres scattered fairly evenly throughout the 355 acres of suitable substrate within the 862 acre lease area.

AUTHORIZED USE:

Construction and maintenance of an artificial kelp reef.

OTHER PERTINENT INFORMATION:

The California Coastal Commission (CCC) issued a permit for the construction and operation of the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3 in 1974. This permit provided for a Marine Review Committee (MRC) to monitor the impact of the operations of SONGS on the marine environment. After 15 years of study, the MRC reported that the operations of SONGS had resulted in significant impacts to fish populations in the Southern California Bight and to the San Onofre Kelp (SOK) community. The CCC adopted permit conditions in 1991 that required a package of mitigation to compensate for these losses which included the construction of a 300-acre artificial reef for kelp. Subsequent studies determined that resource losses at SOK were less than

originally estimated and the CCC amended the permit conditions in May 1997, to require an artificial reef that will sustain 150 acres of medium-to-high density kelp bed and associated biota, along with a mariculture/fish hatchery program. The amended permit called for a first phase 16.8-acre experimental reef project with five years of monitoring and a minimum 133.2-acre second phase to complete the full mitigation reef.

Following the CCC approval of the SONGS Permit amendments in May 1997, the project proponent filed a lease application with the CSLC on June 26, 1997, for a 200-acre lease to construct a 16.8-acre experimental reef. After reviewing the application and the SONGS Permit, it was determined that under the requirements of CEQA (CEQA Guidelines, Section 15168), a Program Environmental Impact Report (PEIR) should be prepared to evaluate both the experimental reef and the subsequent full mitigation reef. The project proponent then filed an amended application with the CSLC on February 27, 1998, for a 355-acre lease to accommodate both phases of the project.

The CSLC filed a Notice of Preparation (NOP) with the State Clearinghouse (SCH #98031027) on March 6, 1998. Verbal comments on the content of the PEIR were provided by members of the public and agency representatives during two public meetings, one in the afternoon and one in the evening, held in San Clemente on March 30, 1998. Written comments were also received. All verbal and written comments were considered in preparing the PEIR. In addition, informal discussions were held with the known interested parties, including local commercial fishing groups, the Surfrider Foundation, the Marine Forests Society and United Anglers. Agencies that have jurisdictional responsibilities over the resources potentially affected by the project were also consulted, including the Department of Fish and Game (CDFG), the California Department of Parks and Recreation (CDPR), the South Coast Air Quality Management District, the San Diego Air Quality District and the City of San Clemente. These discussions were also considered in developing the scope of the PEIR.

The Draft PEIR was issued in November 1998, and public comments, both oral and written, were received by December 28, 1998. The Draft PEIR evaluated the 16.8-acres experimental reef and a range of build out mitigation reefs from 133.2 acres to 283.2 acres.

The major areas analyzed in the Draft PEIR included Water Quality, Marine Biology, Fisheries, Transportation, Air quality, noise, Aesthetics, Land Use/Recreation, and Cultural Resources. A summary of the specific and cumulative impacts and proposed mitigation for each resource category for both the experimental reef and the mitigation reef are described in Exhibit "B".

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The project proponent filed another amendment to its application on March 22, 1999. In response to public comments, the project proponent, CCC staff and CSLC staff agreed to amend the proposed project to include kelp planting treatments as part of the experimental reef. This would add 14 modules to the experiment, increasing the total from 42 to 56 modules and the acreage from 16.8 to 22.4 acres. In addition, the experimental reef modules would now be placed fairly evenly throughout the 356-acre project site, where previously they were located more towards the southern end of the area. None of the changes to the project or analysis have changed the conclusions regarding significant impacts or the required mitigation measures which were presented for the experimental reef in the Draft PEIR.

The proposed project would result in a low-relief artificial reef, supporting a total of 150 acres of sustainable, medium-to-high density kelp beds (defined as having a minimum of 4 plants per $100m^2$) and associated kelp bed biota. It is possible that a greater amount of reef construction would be required. Based on observations of the existing San Mateo kelp bed, CCC scientists feel there is a potential that up to 300 acres of artificial reef, i.e., an additional 277.6 acres of construction in addition to the 22.4 acre experimental reef, might be needed to achieve the required 150 acres of medium-to-high density giant kelp. Should that be necessary, additional environmental work may be necessary.

A Final PEIR, responding to all comments received on the PDEIR, was prepared and mailed to all the individuals, groups and government agencies that received and commented on the PDEIR, pursuant to Title 2, California Code of Regulations, section 2906.

EXHIBITS:

A. Location Map
B. Summary of Impacts

COMPLIANCE DATES:

Certification of the Final EIR Pursuant to the Provisions of the CEQA (PRC Section 21100.2): **March 22, 2000**

Consideration of the Proposed Project Pursuant to the Provisions of AB 884 (Gov. Code Section 65950): **September 19, 2000**

PERMIT STREAMLINING ACT DEADLINE:

September 19, 2000

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RECOMMENDED ACTION:
IT IS RECOMMENDED THAT THE COMMISSION:

CEQA FINDING:

CERTIFY THAT A PEIR NO. 685, STATE CLEARINGHOUSE NO 98031027, WAS PREPARED FOR THIS PROJECT PURSUANT TO THE PROVISIONS OF THE CEQA AND THAT THE COMMISSION HAS REVIEWED AND CONSIDERED THE INFORMATION CONTAINED THEREIN.

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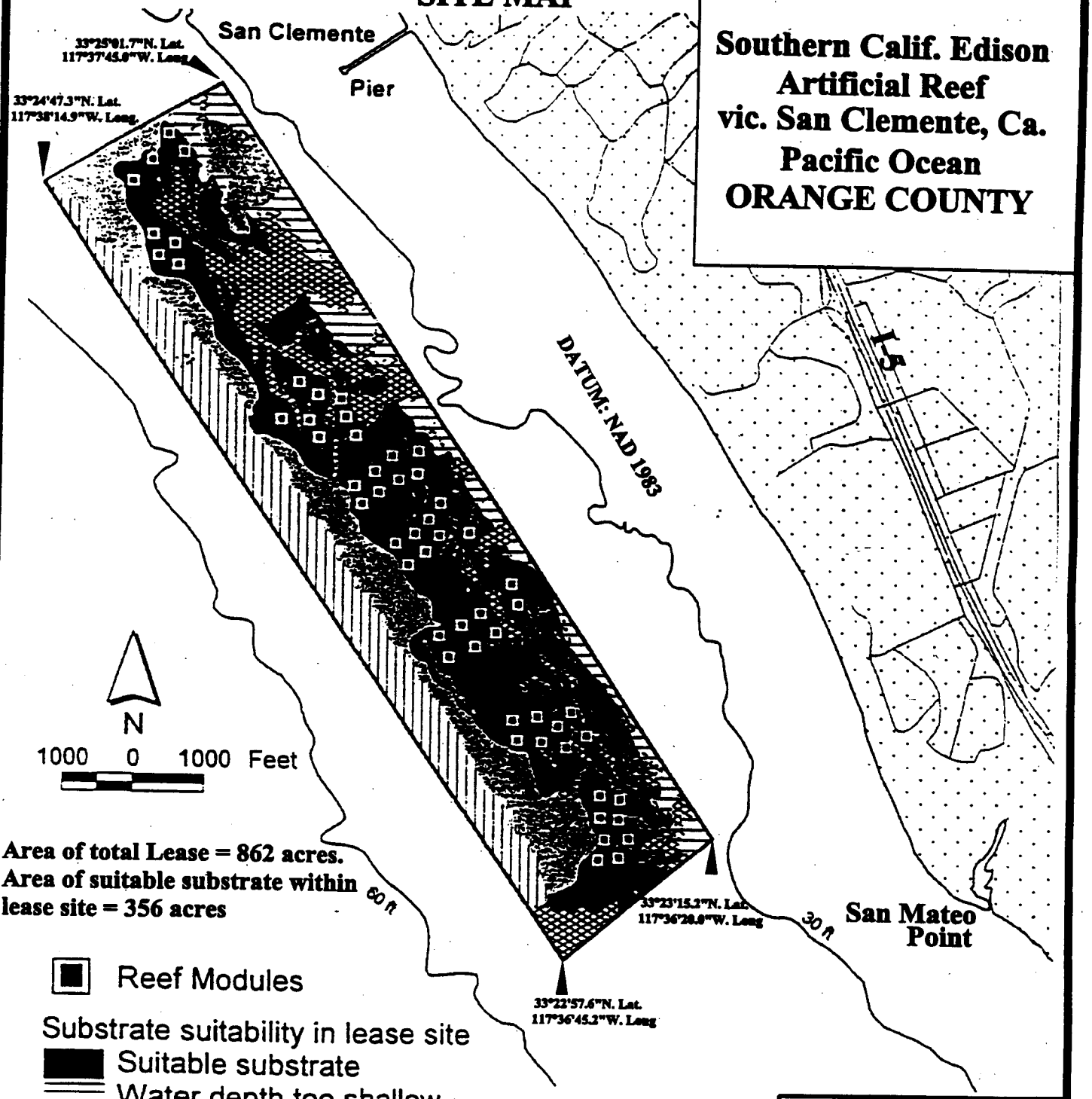
EXHIBIT A

SITE MAP

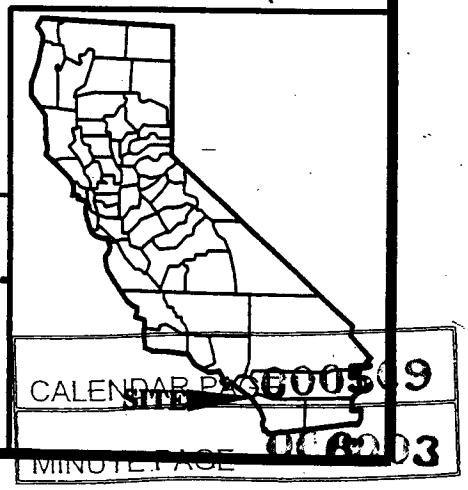


Southern Calif. Edison Artificial Reef vic. San Clemente, Ca. Pacific Ocean ORANGE COUNTY

Area of total Lease = 862 acres.
Area of suitable substrate within lease site = 356 acres

Reef Modules

Substrate suitability in lease site
- Suitable substrate
- Water depth too shallow
- Sand thickness greater than 0.5 m
- Water depth too deep
- Hard substrate



Proposed positions of experimental reef modules and substrate suitability within the SCE lease site offshore of San Clement Ca.

This Exhibit is solely for purposes of generally defining the lease premises, and is not intended to be, nor shall it be construed as, a waiver of limitation of any state interest in the subject or any other property.

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EXHIBIT B

SUMMARY OF IMPACTS

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Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Unavoidable Significant Impacts			
Section 4. Air Quality			
Mitigation Reef Emissions The combined construction activities for either of the mitigation reef build out scenarios (127.6-acre or 277.6-with all concrete or all rock at 67%) would produce daily emissions of NOx and PM_{10} that exceed the thresholds of significance. In addition, the quarterly emissions for NOx and PM_{10} would also exceed the thresholds of significance. Looking at the breakdown of emissions by the type of construction activity helps identify mitigation opportunities: • PM_{10} emissions for the truck loading, hauling, and barge loading activities would be the same on a daily basis as for the experimental reef and would substantially exceed the daily threshold of significance. In addition, the mitigation reef emissions for these activities would also exceed the PM_{10} quarterly threshold for significance due to the longer periods of construction with the different scenarios. • Daily NOx emissions for tugboat shipping would substantially exceed the daily threshold of significance. In addition, the mitigation reef emissions would also exceed the NOx quarterly threshold for significance due to the longer periods of construction. • The barge off-loading element of the mitigation reef would produce daily emissions that are the same as for the experimental reef on a daily basis with significant NOx emissions. In addition, the mitigation reef construction would result in quarterly NOx emissions that exceed the threshold of significance.	S	*Changes in Construction:* • Shipping concrete from the Ports of Los Angeles and Long Beach • Purchasing reef materials closer than 20 miles to the ports • Using concrete instead of quarry rock • Using the lowest possible coverage of material • Taking longer to load barges • Taking more time to construct the project • Finding sources of material closer to the project site • Using the live-boat method to off-load *Standard Mitigation Measures* : *1. Reducing PM_{10} Emissions.* • Apply water sprays to the concrete piles and graveled areas at least twice daily. Water down quarry rock and conveyer belts if soil is visible. Increase the frequency of watering when wind speeds exceed 15 miles per hour.	S

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Unavoidable Significant Impacts			
Mitigation Reef Emissions (continued)		• Extend pavement from roads or access ways to concrete piles to remove at least three-quarters of the gap. Apply quality gravel to the remaining unpaved area so that vehicles and mobile equipment never maneuver on dirt. • Install wheel washers where vehicles enter and exit unpaved roads onto paved roads, or wash off trucks and any equipment leaving the site each trip. • Plan routes and schedules for truck trips that reduce trip times and slowdowns. • Sweep streets manually or with water sweepers at the end of the workday if visible soil material is carried onto private or public paved roads. Reclaimed water shall be used, if available with the water sweepers (35 percent reduction of PM_{10} from paved roads). • Apply quality gravel to unpaved areas between paved roads and recycled concrete piles, so that vehicles and mobile equipment shall never maneuver on dirt; and • Keep traffic speeds on unpaved roads and access ways to 15 mph or slower. Pave a dirt road or lot that is currently generating PM_{10} emissions, which is unrelated to the proposed project but in the vicinity of the truck hauling operations.	

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Unavoidable Significant Impacts			
Mitigation Reef Emissions (continued)		*3. Purchase Emission Offsets* • Purchase or lease NOx emission offset credits for project related emissions for the length of the construction period. *Potential Changes in Construction:* • Finding reef material sources closer to the ports • Obtaining quarry rock from Catalina Island where minimal trucking is required • Taking more time to load barges • Obtaining recycled concrete closer to the project site • Obtaining quarry rock closer to the project site • Using less building material to construct the reef • Using concrete instead of quarry rock to construct the mitigation reef • Taking more time to construct the project • Using less building material to construct the reef • Using concrete instead of quarry rock to construct the mitigation reef • Using the live boating method of off-loading	

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Significant Impacts			
Section 3. Geology			
Movement of Reef Building Materials onto Beaches - Experimental and Mitigation Reefs There is a potential for the reef building materials to be moved during extreme storm events, particularly if attached kelp plants create a degree of buoyancy. The smaller rocks and pieces of concrete associated with the experimental and mitigation reefs could be washed up on the beach adjacent to the lease area during typical storm events. No conclusive evidence precludes the possibility that substantial rock or concrete might be moved ashore during an extreme storm event.	S	• Both the experimental and mitigation reef will be monitored for movement of construction material during storm events. Annual monitoring will be on a biweekly basis from November through March and monthly during the rest of the year, consistent with the program outlined under the public services section. Any recycled concrete or quarry rock from the reefs, which is found on the beaches or in the shallow surf zone will be removed by the project proponent.	LTS
Section 4. Air Quality			
Experimental Reef Construction Emissions The combined construction activities for the 22.4-acre experimental reef would produce daily emissions of NOx and PM_{10} that exceed the thresholds of significance. Quarterly NOx emissions would also exceed the threshold of significance. Looking at the breakdown of emissions by the type of construction activity helps identify mitigation opportunities: • Truck loading, truck hauling and barge loading activities produce daily PM_{10} emissions that exceed the threshold of significance. • Tugboat shipping would produce daily NOx emissions in excess of the threshold.	S	*All of the measures listed above for the mitigation reef, including Standard Mitigation Measures and Purchase of Emission Offsets.*	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Significant Impacts			
Experimental Reef Construction Emissions • Barge offloading to place materials at the project sites would result in daily NOx emissions in excess of the threshold.		*Potential Changes to Construction Assumptions* • Finding reef material sources closer to the ports • Obtaining quarry rock from Catalina Island where minimal trucking is required • Taking more time to load barges • Obtaining recycled concrete closer to the project site • Obtaining quarry rock closer to the project site	
Section 5. Transportation			
Experimental Reef and Mitigation Reef Construction *Intersection Levels of Service –Los Angeles/Long Beach Area.* Project construction traffic during the 4:00 to 6:00 p.m. peak hour would reduce the LOS at two intersections, Ocean Boulevard and Atlantic Avenue, and Ocean Boulevard and Cherry Avenue, to unacceptable levels. *Freeway Operations Los Angeles/Long Beach Area.* The addition of experimental and mitigation reef construction traffic would alter the level of service during the 7:00 to 9:00 a.m. peak hour on southbound I-710 between Pacific Coast Highway and Willow Street from LOS D to LOS E. *Freeway Operations - San Diego Area.* The addition of experimental and mitigation reef construction traffic would alter the level of service during the a.m. peak hour on northbound I-5 between L and J Streets from LOS E to LOS F.	S	• The project proponent and all project contractors shall restrict truck trips to off-peak travel hours (9:00 a.m. to 4:00 p.m.).	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Significant Impacts			
Section 8. Hazards			
Health Hazards – Experimental and Mitigation Reefs The experimental and mitigation reefs have the potential to introduce quarry rock and concrete onto the beaches and into the shallow surf nearest the lease site. In concept, large wave events could result in the transport of some kelp and reef material onshore. Concrete and quarry rocks are not natural components of the beach environment, and the presence of concrete pieces on the shoreline would potentially affect the safety of the beach environment. People walking on the beach could be injured by an unexpected block of concrete or rock. People wading, swimming, or surfing could be injured and become incapacitated in the water, leading to drowning.	S	• Both the experimental and mitigation reef will be monitored for movement of construction material during storm events. The monitoring will be on a biweekly basis from November through March and monthly during the rest of the year, consistent with the program outlined under the public services section. Any recycled concrete or quarry rock from the reefs, which is found on the beaches or in the shallow surf zone will be removed by the project proponent.	LTS
Section 9. Noise			
Construction Noise – Experimental and Mitigation Reefs *Truck Routes.* The use of project trucks in residential areas during the nigh time hours has the potential to violate County of Los Angeles and County of San Diego Noise Ordinances. As noted, the project trucks will produce substantial short duration increases in noise as they pass fixed points along the routes. While allowable during the day, substantial short duration noise increases during the night time are considered potentially significant impacts upon residential uses.	S	• The contractors will be directed to avoid the use of routes having residential uses during the weekday hours of 7 p.m. to 7 a.m., and all day on Sunday.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Significant Impacts			
Section 10. Public Services and Utilities			
Beach Maintenance – Experimental Reef There is a very small chance some small rocks or pieces of concrete used to construct the experimental reef could wash onshore or into the shallow surf because of the added buoyancy from attached kelp plants.	S	• A monitoring program will be initiated upon the construction of the experimental reef and continued for the next five years to determine the amount of kelp wrack washing onto the beaches. Because the City of San Clemente and CDPR do not collect data on the amount of kelp washing onto beaches currently, monitoring would establish a baseline. The monitoring of the experimental reef should observe whether the concrete and quarry rocks were moved toward the beach during strong wave events. This monitoring would make it easier to compare any changes due to the experimental reef or to the subsequent build out of the mitigation reef, as outlined below. • The beach monitoring would be done on a bi-weekly basis throughout the months of November through March and on a monthly basis during the other months. The monitoring visits would be coordinated to occur immediately after any large storm events (by the next day). The beach monitoring would include: (1) observations of the amount of kelp wrack on the beach (cubic yards and/or percentage coverage); (2) tracking beach clean up schedules and costs (including disposal); and (3) tracking the number of	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Significant Impacts			
Kelp and Beach Maintenance (continued) *Experimental Reef*		complaints from beach users or nearby residents and businesses due to kelp or rocks/concrete on the beaches or in the shallow surf zone. The movement of the concrete and quarry rock would be monitored as a component of the larger performance monitoring effort. • The project proponent will remove any rocks or concrete from the reef that wash onshore or into the shallow surf.	
Kelp and Beach Maintenance - Mitigation Reef. If a significant increase in the amount of kelp wrack reaching the beaches occurs, there could be a need for additional public services to clean up the kelp. The full mitigation reef with 150 acres of medium-to-high density kelp bed could increase the amount of kelp washing onshore annually by up to 3,000 yd^3, primarily between the months of November through February. There is a small chance some small rocks or pieces of concrete used to construct the experimental reef could wash onshore or into the shallow surf because of the added buoyancy from attached kelp plants.	S	• Due to uncertainty regarding the amount, frequency and location of increased kelp washing onshore, kelp on the beaches shall be monitored as part of the experimental reef (as discussed above) and the larger mitigation reef. Although rocks and concrete used in constructing the reef are not likely to wash onshore, the monitoring program shall also observe this possibility. Monitoring shall be conducted for five years or as long as needed after construction of the mitigation reef is completed or until a conclusion can be reached regarding the impacts of kelp and other materials washing onto the beaches. • The monitoring would be done on a bi-weekly basis throughout the months of November through March and on a monthly basis during the other months. The monitoring visits would be coordinated to occur immediately after any large storm events (by the next day).	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Significant Impacts			
Kelp and Beach Maintenance (continued)			
Mitigation Reef		The monitoring would include: (1) observations of the amount of kelp wrack on the beach (cubic yards and/or percentage coverage) and of potential rocks/concrete; (2) tracking beach clean up schedules and costs (including disposal); and (3) tracking the number of complaints from beach users or nearby residents and businesses due to kelp and rocks/concrete on the beaches. • Based on the results of the monitoring, it would be determined if additional clean up services are needed as a result of the artificial reef. Mitigation would include the project proponents establishing a trust fund to pay for: (1) leasing or purchasing special equipment for clean up, or possibly to bury kelp in the sand; (2) additional personnel for beach clean up; and/or (3) land fill or other disposal costs for kelp and rocks/concrete removed.	
Section 13. Recreation			
Effects of a Kelp Forest – Mitigation Reef The development of an additional 150 acres of medium-to-high density kelp forest within the lease area has the potential to substantially increase kelp wrack on the adjacent beaches by as much as 3,000 yd^3 per year. The additional kelp wrack on area beaches would adversely affect recreation if it discouraged use by the public.	S	• Due to uncertainty regarding the amount, frequency and location of increased kelp washing onshore, kelp on the beaches shall be monitored as part of the experimental reef and the mitigation reef. Monitoring shall be conducted for five years after construction of the mitigation reef is completed. This would be done on a bi-weekly basis throughout the months of November through March and on a monthly basis during the other months.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Significant Impacts			
Effects of a Kelp Forest (continued)		The monitoring visits would be coordinated to occur immediately after any large storm events (by the next day). The monitoring would include: (1) observations of the amount of kelp wrack on the beach (cubic yards and/or percentage coverage); (2) tracking beach clean up schedules and costs (including disposal); and (3) tracking the number of complaints from beach users or nearby residents and businesses due to kelp on the beaches. • Based on the results of the monitoring, it would be determined whether additional clean up services are needed as a result of the experimental reef and mitigation reef. Mitigation would include the project proponents establishing a trust fund to pay for: (1) leasing or purchasing special equipment for clean up, or possibly to bury kelp in the sand; (2) additional personnel for beach clean up; and/or (3) land fill or other disposal costs for kelp removed.	

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Significant Impacts			
Potential for Concrete and Quarry Rock to Wash Ashore – Experimental and Mitigation Reefs The experimental mitigation reefs have the potential to introduce quarry rock and concrete onto the beaches and into the shallow surf nearest the lease site, which could present a hazard to beach users.	S	• Both the experimental and mitigation reef will be monitored for movement of construction material during storm events. The monitoring will be on a biweekly basis from November through March and monthly during the rest of the year, consistent with the program outlined under the public services section. The monitoring visits would be coordinated to occur immediately after any large storm events (by the next day). Any recycled concrete or quarry rock from the reefs, which is found on the beaches or in the shallow surf will be removed by the project proponent.	LTS
Conflicts with Plans and Policies The creation of kelp wrack and the potential for concrete and quarry rock to be washed up on shore or into the shallow surf are two project effects that could conflict with the general goals and objectives of applicable plans and policies. Both excessive kelp wrack and the presence of concrete and rock could discourage the use of the local beaches for recreation.	S	• The mitigation measures described above for kelp wrack and concrete and quarry rock washing ashore or into the shallow surf are also required to assure consistency with the existing applicable plans and policies. The implementation of the recommended mitigation would reduce the effects to less-than-significant levels.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Potentially Significant			
Section 2. Socioeconomics			
Recreational Fishing Businesses - Experimental and Mitigation Reefs The construction phases for both the experimental reef and the mitigation reef could potentially impact recreational sportfishing operators by restricting use within the project area during construction.	PS	• Recreational fishing businesses that conduct operations in the project area shall be notified of project-related activities two weeks prior to the onset of construction. Notification shall include a map of the project site, hours and duration of operation, and the predicted path of barge travel into and out of the construction site.	LTS
Commercial Fishing Activities - Experimental and Mitigation Reefs The construction of both the experimental reef and mitigation reef in the project lease area is planned to occur between May 1 and September 30, which is outside of the commercial lobster fishing season. However, there could be disruptions to commercial fishing activities for sea urchins and crabs during the construction, as these species are fished year-round.	PS	• Commercial fishermen that conduct operations in the project area shall be notified of project-related activities two weeks prior to the onset of construction. Notification shall include a map of the project site, hours and duration of operation, and the predicted path of barge travel into and out of the construction site.	LTS
Commercial Fishing Sites – Mitigation Reef The SONGS Permit conditions for the mitigation reef state that reef material will be placed to avoid existing hard substrate and kelp beds to the greatest extent possible. However, the placement of material over 127.6 to 277.6 acres increases the possibility of some of these resources being accidentally covered by reef material. Accidental coverage of hard substrate or kelp forest could reduce suitable habitat for target species.	PS	• Commercial fishermen that utilize the project area shall be consulted prior to finalization of the location for the mitigation reef. During consultations, proven fishing grounds shall be identified so that they can be avoided, if possible, during the construction of the mitigation reef.	LTS

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Section 1. Land Use and Planning			
Compatibility with Existing Uses - Experimental and Mitigation Reefs			
Although the presence of construction-related vessels 0.6 mile offshore at the project site would be evident, the associated construction activities would not affect the existing onshore land uses or commercial fishing uses of the project area.	LTS	• None required.	N/A
The monitoring activities associated with the experimental reef and mitigation reef would not affect the continued viability of adjacent or nearby land uses.	LTS	• None required.	N/A
Section 2. Socioeconomics			
Construction Employment – Experimental and Mitigation Reefs			
Given the small number of employees involved in the construction of the experimental and mitigation reefs (maximum of 40 workers), the project would have a minor positive effect on employment, income and economic activity in the study area. It is very unlikely that any new growth would be generated by this project. If there was any related growth, it would be well below the threshold of significance.	LTS	• None required.	N/A
Commercial Fishing Sites – Experimental Reef			
There is concern that proposed project activities would place rock or concrete material on existing hard substrate and kelp bed resources, which could impact known fishing sites. However, the experimental reef would cover only 22.4 acres of the 356-acre project site, allowing flexibility in the choice of module locations, and the use of a crane would allow a fairly high level of precision in placing the material. The SONGS Permit conditions require that placing rock and concrete on existing hard substrate be avoided to the greatest extent possible.	LTS	• None Required. Recommended Mitigation: Commercial fishermen that utilize the project area shall be consulted prior to the location of the 22.4-acre mitigation reef. During consultations, proven fishing grounds shall be identified so that they can be avoided, if possible, during the construction of the mitigation reef.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Monitoring - Experimental Reef There is a slight chance that transect lines could be disturbed by fish traps and lines, but it is unlikely as they would only be present during sampling events.	LTS	• None required.	N/A
Section 3. Geology			
Waves - Experimental and Mitigation Reefs The attenuation of short-period waves by the experimental and mitigation reefs would not result in conflict with an existing standard, nor would it have an indirect effect on beach development and coastal landforms. This would not conflict with the general plan policies.	LTS	• None required.	N/A
Coastal Currents - Experimental and Mitigation Reefs The presence of a kelp forest exerts a measurable attenuation effect on current speed. The reduced current speeds within the interior of kelp forests could result in at least temporary accumulations of fine sediments typical of existing kelp forests in the project vicinity. However, while the mitigation reef could affect coastal currents in the immediate vicinity of the kelp beds, the potential changes in currents would not cause an increase in nearshore sedimentation. Larger waves are expected to keep the kelp beds from silting up, and waves, rather than currents, dominate the suspension of sand.	LTS	• None required.	N/A
Beaches and Beach Width - Experimental and Mitigation Reefs Based on both process-oriented evaluations and statistical evaluations, the proposed experimental and mitigation reefs are not expected to substantially affect either beaches or coastal landforms.	LTS	• None required.	N/A

Key: S = Significant; PS = Potentially Significant; LTS = Less than Significant; N/A = Not Applicable

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Section 5. Transportation			
Intersection Levels of Service - San Diego Area - Experimental and Mitigation Reef Construction Project construction traffic during the p.m. peak hour would not reduce the LOS at any intersections below an acceptable level.	LTS	• None required.	N/A
Traffic Hazards – Experimental and Mitigation Reef Construction Construction of the experimental and mitigation reefs would place numerous slow-moving trucks, typically considered a safety hazard, on project area roadways. However, this hazard would only be apparent in areas presently characterized by ongoing traffic hazards of this sort, such as the driveway of the materials broker's yard and the turns into and within the Ports of Los Angeles, Long Beach and San Diego.	LTS	• None required.	N/A
Impacts to Waterborne Transportation– Experimental and Mitigation Reef Construction Construction of the experimental and mitigation reefs would involve the presence of barges and tugboats both within the project site and traveling primarily within established shipping lanes between the source of the materials source and the project site. Small watercraft would also likely transport workers between Dana Point Harbor and the project site. In addition, the vessels, along with marker buoys, would be temporarily present within the lease area site during materials placement activities. The presence of these vessels is not expected to interfere with existing waterborne traffic in the project study area. Furthermore, construction activities would occur during summer months, to avoid conflicting with commercial fishing uses of the project area.	LTS	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Impacts to Waterborne Transportation– Experimental and Mitigation Reefs The site lies in an area used primarily by small watercraft for recreational boating and commercial fishing activities, and occasionally by emergency response vessels. Neither the presence of the reefs nor successful colonization by a kelp forest community is expected to interfere with the navigation of these vessels.	LTS	• None required.	N/A
Impacts to Waterborne Transportation– Experimental and Mitigation Reef Monitoring Monitoring activities associated with the experimental and mitigation reefs are expected to be comparable to those proposed for the experimental reef, and would therefore likely involve the presence of one to two small watercraft, buoys, and several divers within the project site at various times during the year. These activities would not substantially interfere with navigation in the project study area.	LTS	• None required.	N/A
Section 6. Biology			
Subtidal Sand Bottom Community *Derrick Barge– Experimental and Mitigation Reef Construction:* The derrick barge anchors and chains would drag along the bottom of the lease area, destroying sand bottom habitat and biota and potentially disturbing some existing hard substrate habitat and biota in the immediate construction areas. However, the sand bottom habitat at the lease site is mostly unproductive, and the area affected is very small compared to the area of similar habitat occurring elsewhere in the Southern California Bight.	LTS	• None required. Recommended Mitigation: Buoys will be used to keep the amount of chain length dragging on the ocean bottom to a minimum.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Subtidal Sand Bottom Community (continued)			
Suspended Sediments – Experimental and Mitigation Reef Construction: The construction of the experimental reef and mitigation reef would disturb bottom sediments and increase turbidity of the water near the construction site. The increased levels of suspended sediments and turbidity resulting from the construction of the experimental reef are expected to be localized and to involve relatively minor amounts of sediment.	LTS	• None required.	N/A
Burial by Construction Materials - Experimental and Mitigation Reef Construction:: The placement of concrete and quarry rock on the lease site for construction of the experimental reef modules and the mitigation reef would result in the permanent burial of the existing sand-dwelling biota and their habitat.	LTS	• None required.	N/A
Sediment Characteristics - Experimental and Mitigation Reefs: The experimental reef and mitigation reef would be expected to affect local currents, which could affect the sediment movement and sediment-size composition of the adjacent sand bottom habitat. Sand bottom communities are sensitive to changes in sediment characteristics, and changes related to the experimental reef and mitigation reef could lead to losses beyond those caused by direct burial by concrete or quarry rock.	LTS	• None required.	N/A
Food Resources - Experimental and Mitigation Reefs: Establishment of the experimental reef and mitigation reef would increase the supply of detrital food material available to the sand bottom community remaining within and in the vicinity of the installed concrete and quarry rock.	LTS	• None required.	N/A
Predation - Experimental and Mitigation Reefs: The abundance of predators in the proposed experimental reef and mitigation reef would be expected to be much higher than that in the existing sand bottom community.	LTS	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Experimental and Mitigiation Reef Monitoring: The five-year monitoring program for the experimental reef, and the subsequent longer-term monitoring of the mitigation reef would not include excavation or other bottom-disturbing activities.	LTS	• None required.	N/A
Existing Kelp Forest Community			
Turbidity – Experimental Reef Construction: Construction of the proposed 22.4 acre experimental reef could affect levels of suspended sediments and turbidity of the water at the lease site. It is unlikely that the increased suspended sediments and turbidity due to construction would be extensive enough to affect the San Mateo kelp forest or other kelp forests.	LTS	• None required.	N/A
Turbidity – Mitigation Reef Construction: Construction of the proposed 150-acre mitigation reef could affect levels of suspended sediments and turbidity of the water at the lease site. Increased turbidity could adversely affect the San Mateo kelp community and other nearby existing kelp forests by reducing light levels needed for production and recruitment of kelp and other algae. The levels of suspended sediments and turbidity resulting from the construction of the mitigation reef would be greater than those resulting from construction of the experimental reef, but they would probably remain well below levels that would substantially affect turbidity of water in the existing kelp forest communities.	LTS	• None required.	N/A
Experimental and Mitigation Reefs			
Wave Surge – Experimental and Mitigation Reefs. Kelp growing on the experimental reef could shelter portions of the San Mateo kelp reef from the full force of storms. It seems unlikely that the experimental reef would afford significant protection from storm waves to the San Mateo kelp forest or other kelp forests.	LTS	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Experimental and Mitigation Reefs (continued)			
Kelp Entanglement – Experimental and Mitigation Reefs: Detached kelp from the experimental reef modules and the mitigation reef could entangle kelp in the San Mateo kelp reef and other kelp reefs, aggravating adverse effects of storm waves on these kelp forests. However, any loss of kelp in the San Mateo kelp community resulting from entanglement with kelp from the experimental reef would probably be far less than the increased kelp production of the reef.	LTS	• None required.	N/A
Sedimentation – Experimental Reef: Low relief dune-like deposits of very fine-grained sands lie within and south of existing kelp beds in the project vicinity. If the experimental reef modules were to result in similar patterns of sand deposition, modules lying immediately north of the San Mateo kelp reef and other kelp reefs in the lease area could adversely affect these reefs.	LTS	• None required.	N/A
Sedimentation – Mitigation Reef. Assuming that the mitigation reef were to result in sand deposition, portions of the San Mateo kelp reef and other kelp reefs lying immediately south of the mitigation reef could be adversely affected.	LTS	• None required.	N/A
Nutrients and Plankton Supply – Experimental and Mitigation Reefs: The kelp forests associated with the experimental reef and the mitigation reef could adversely affect the supply of nutrients and plankton to the San Mateo kelp forest community, which could result in damage to the existing kelp forest.	LTS	• None required. Recommended Mitigation: During the experimental reef phase of the project, conduct research to determine effects of the kelp forest perimeter on the supply of nutrients and plankton to, and the rates of nutrient uptake in, the interior portion of the kelp forest. The research shall be conducted in natural kelp forests similar in size and kelp	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Nutrients and Plankton Supply (cont.)		density to the proposed mitigation kelp reef and during periods when nutrient stress of kelp plants would be likely. If the research suggests that the mitigation reef, as currently planned, would adversely affect the San Mateo kelp forest, then the location of the mitigation reef would be shifted north to avoid these effects. If the scientific research results indicate that the mitigation reef would have no adverse effect on the San Mateo kelp forest, no further mitigation would be required.	
Reef Monitoring. The five-year monitoring program for the experimental reef and the longer-term monitoring program for the mitigation reef would be expected to include the monitoring of reference sites in the existing San Mateo and San Onofre kelp forests as well as other possible kelp beds in the region. Drilling into these reefs would be required to set eyebolts for the permanent transects and quadrants, but the drilling would affect little reef area.	LTS	• None required.	N/A
Marine Mammals and Birds *Marine Mammals – Experimental and Mitigation Reef Construction:* The seasonal construction period, May 1 to September 30, is outside of the migratory period for gray whale. The marine mammals that would most likely occur in the area during the construction period are California sea lion, Pacific harbor seal and bottlenose dolphin. The proposed construction actions could affect marine mammals through: collision with water craft, direct injury from falling concrete or quarry rock, injury related to turbidity, and interference with foraging.	LTS	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Marine Birds - Mammals – Experimental and Mitigation Reef Construction: The construction activities associated with the experimental reef and the mitigation reef may prevent several of the avian species from foraging in the lease area for the duration of construction..	LTS	• None required.	N/A
Marine Mammals - Experimental and Mitigation Reef Monitoring: Monitoring activities associated with the experimental reef and mitigation reef have the potential to disturb marine mammals present in the lease area.	LTS	• None required.	N/A
Marine Birds - Experimental and Mitigation Reef Monitoring: Monitoring activities may disturb prey species for marine birds but that disturbance would be localized to lease site and avian species could utilize other areas for foraging.	LTS	• None required.	N/A
The Beach Community *Sedimentation Processes -- Experimental and Mitigation Reef:* The experimental and mitigation reefs have the potential to affect waves and currents and thereby affect littoral zone sedimentation processes and beach habitat.	LTS	• None required.	N/A
Section 7. Energy and Mineral Resources			
Energy Use – Experimental Reef Fuel use associated with both the construction and monitoring of the experimental reef is very small relative to fuel use in the region and California.	LTS	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Energy Use - Mitigation Reef Fuel use related to the construction of the full mitigation reef is small relative to diesel fuel use within the region and California and as such is not a significant impact. The use rock for the full mitigation reef build out increases fuel consumption by about 1.3 times over what would be used for a concrete reef. Obtaining rock from Catalina Island and minimizing the amount of rock hauling would help by reducing fuel use about 30 percent.	LTS	• None required.	N/A
Mitigation Reef Monitoring. The use of fuel for mitigation reef monitoring would be minimal.	LTS	• None required.	N/A
Availability of Quarry Rock in the San Diego and Los Angeles County Regions *Experimental Reef Construction*. The amount of quarry rock required to construct the experimental reef represents about .005 percent of San Diego County's available aggregate reserves and about .002 percent of Los Angeles County's reserves. The 17,640 tons of material that would be utilized for the experimental reef represents about 0.13 percent of the annual consumption in San Diego County and about 0.08 percent of the annual estimated consumption in Los Angeles county.	LTS	• None required.	N/A
Mitigation Reef Construction. The amount of quarry rock required to construct the largest build out scenario for the mitigation reef (277.6 acres at 67 percent coverage = 777,280 tons) represents about 0.2 percent of San Diego County's available aggregate reserves and about 0.1 percent of Los Angeles County's reserves. Construction of the reef would require about 194,320 tons of aggregate a year, or about 1.4 percent of the total demand in the San Diego region and 0.9 percent of the total annual demand in the Los Angeles region.	LTS	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Availability of Recycled Concrete in the San Diego and Los Angeles Regions			
Experimental Reef Construction. The relatively small amount of recycled concrete needed to construct the experimental reef is not expected to substantially effect the availability of recycled concrete in the region. The use of recycled concrete for the experimental reef would not exceed five percent of the total annual consumption of aggregate in either San Diego or Los Angeles Counties.	LTS	• None required.	N/A
Mitigation Reef Construction. The relatively small amount of recycled concrete needed to construct the mitigation reef is not expected to substantially affect the availability of recycled concrete in the region. The 277.6-acre build out would require 610,720 tons of concrete over a three year period. This would be about .2 and .08 percent of the PCC-grade aggregate available in the San Diego and Los Angeles regions respectively.	LTS	• None required.	N/A
Section 8. Hazards			
Release of Hazardous Materials – Experimental and Mitigation Reef Construction. The construction of the experimental and mitigation reefs requires the use of watercraft, vehicles, and equipment powered by fuel and lubricated by oil, and other mechnical fluids, which are considered hazardous substances. Accidents involving these craft, vehicles, and equipment would have the potential to adversely affect the environment through the release of these hazardous substances.	LTS	• None required.	N/A
Release of Hazardous Materials – Experimental and Mitigation Reefs. Recycled concrete used for the experimental reef and mitigation reef would be obtained from sources that meet cleanliness requirements set by the CDFG. No hazardous substances would be expected to be released during the construction of the reefs, nor released from the concrete as it decomposes after placement.	LTS	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Release of Hazardous Materials – Experimental and Mitigation Reef Monitoring Small amounts of fuel would be on board the vessels used in monitoring. If fuel leaked into water, it would be in minimal amounts and would disperse quickly and therefore, present no risk of exposure to the public.	LTS	• None required.	N/A
Section 9. Noise			
Construction Noise - Experimental and Mitigation Reef Construction Lease Area. The concern for noise in the lease area is the effect on City of San Clemente residents and sensitive land uses, approximately 0.6 miles from the proposed construction activities. After traveling 0.6 mile, this construction noise would decrease at the shoreline to approximately 49 dBA. Project noise would be completely masked out by ambient noise during the day and at night.	LTS	• None required.	N/A
Rock Quarries. The rock quarries on Catalina Island and in San Diego County are existing industrial facilities. Quarrying, rock loading, and shipping or trucking are routine operations there and the related equipment noise is part of the existing environment.	LTS	• None required.	N/A
Concrete Brokers/Port Facilities. The concrete staging areas will be subject to the existing County and City noise control ordinances, which limit noise consistent with industrial zoning. The continued compliance with the applicable noise control ordinances would adequately control noise.	LTS	• None required.	N/A
Truck Routes. The use of project trucks within manufacturing, industrial, and agricultural zones would be consistent with the applicable noise control ordinances for these zones, which allow short duration (less than two minutes) increases in noise up to 90 dBA, depending upon the location. The daytime and nighttime thresholds are the same in these zones. The use of project trucks within these zones would create less-than-significant impacts regardless of the time-of-day of use.	LTS	• None required.	N/A

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COASTAL LAND USE PLAN PAGE 000534

Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Section 11. Public Services			
Offshore Emergency Response – Experimental and Mitigation Reef Construction The need for offshore emergency response services could occur during the construction of the experimental reef and mitigation reef. Available Orange County Harbor Patrol emergency response services would be adequate to handle any problems during the construction phase, and the construction would not create any problems for the Harbor Patrol in carrying out their duties. In addition, it is expected that current Coast Guard emergency services would be adequate for any problems that might occur.	LTS	• None required. Recommended Mitigation: The Harbor Patrol requested that they be notified when the construction plans and schedule for the experimental reef are finalized. The Harbor Patrol will be given notification two weeks prior to when construction activities are beginning for both the experimental and mitigation reefs.	N/A
Offshore Emergency Response – Experimental and Mitigation Reef Monitoring The existing available services would be adequate for the reef monitoring activities.	LTS	• None required.	N/A
Kelp and Beach Maintenance - Experimental Reef The 22.4-acre experimental artificial reef could potentially add twice the current amount of persistent kelp bed to the project area. The additional kelp wrack washing on shore from the experimental reef represents a relatively small increase in kelp wrack and is not likely to increase the need for clean up services.	LTS	• None required.	N/A
Section 11. Aesthetics			
Effects on Scenic Vistas or Scenic Highways – Experimental and Mitigation Reef Construction The presence of several barges 0.6 mile and farther offshore at the project site would not substantially alter the area's visual integrity as seen from any designated scenic routes or view corridors.	LTS	• None required. Recommended Mitigation: It is recommended that the project proponent conduct an educational outreach program to inform the public about the project and the construction activities. This would include notifying the media and residents about the type	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Effects on Scenic Vistas or Scenic Highways (continued)			
		and duration of construction activities a month prior to beginning construction. Temporary notices would also be posted along the shore at the San Clemente Pier and near the mouth of San Mateo Creek.	
Effects on Scenic Vistas or Scenic Highways – Experimental and Mitigation Reef. Upon successful colonization of the reef by a giant kelp community, the only project feature that might be visible offshore to sensitive receptors would be darker-looking areas in which the kelp might reach just below the ocean surface. The presence of additional kelp on area beaches during the winter months is not expected to greatly alter the beaches' visual character. Therefore, the presence of the mitigation reef would not substantially degrade views from any designated scenic routes or view corridors.	LTS	• None required.	N/A
Effects on Scenic Vistas or Scenic Highways – Experimental and Mitigation Reef Monitoring.. The presence of one to two small watercraft and several divers within the project site at various times during the year would not affect the area's visual integrity as seen from any designated scenic routes or view corridors.	LTS	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Demonstrable Negative Aesthetic Effects – Experimental and Mitigation Reef Construction The appearance of project-related barges operating approximately 0.6 mile offshore would resemble existing offshore vessel activities, which include commercial fishing and shipping, and U.S. military exercises. Consequently, project construction activities are not expected to diminish the project area's visual quality.	LTS	• None required. Recommended Mitigation: It is recommended that the project proponent conduct an educational outreach program to inform the public about the project and the construction activities. This would include notifying the media and residents about the type and duration of construction activities a month prior to beginning construction. Temporary notices would also be posted along the shore at the San Clemente Pier and near the mouth of San Mateo Creek.	N/A
Demonstrable Negative Aesthetic Effects – Experimental and Mitigation Reefs Dark patches 0.6 mile offshore beneath the ocean surface could be visible to some sensitive receptors upon successful kelp colonization; however, the presence of these areas is not expected to negatively alter the appearance of the project area. In addition, the wintertime presence of kelp wrack on area beaches is not expected to negatively affect the beaches' existing visual character.	LTS	• None required.	N/A
Demonstrable Negative Aesthetic Effects – Experimental and Mitigation Reef Monitoring. The presence of one to two small watercraft and several divers within the project site at various times during the year would not lessen the project area's visual quality.	LTS	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Creation of Light or Glare – Experimental and Mitigation Reef Construction Little additional light or glare is likely to accompany the placement of reef materials within the project site. Although barge travel could take place at all hours, material placement activities would occur during daylight hours, introducing no additional illumination into the project area. The barges would tend to appear darker than the surrounding reflective water, and would be unlikely to bring any new glare into the area.	LTS	• None required.	N/A
Creation of Light or Glare –Experimental and Mitigation Reefs. The experimental reef modules and the mitigation reef would be submerged and would contain no sources of light or glare.	LTS	• None required.	N/A
Creation of Light or Glare – Experimental and Mitigation Reef Monitoring. The monitoring activities associated with the experimental and mitigation reefs are not expected to introduce any new light or glare into the project area.	LTS	• None required.	N/A
Section 12. Cultural Resources - Experimental and Mitigation Reefs			
Paleontological Resources Reef construction would involve the placement of concrete and rock upon unconsolidated Quaternary sediments and/or Upper Miocene - Lower Pliocene age sedimentary bedrock, neither of which is expected to contain important or significant micro- or megafossils. If fossils do exist in sediments and bedrock beneath the site they would not be destroyed or removed, but would be buried. Following construction, neither the presence of the reefs nor the monitoring would disturb sediments or bedrock.	LTS	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Archaeological, Historic, and Ethnographic Resources Although there are no known archaeological resources in the APE, two types of prehistoric remains may occur within the water depths associated with the proposed project lease site. These are: (1) *in situ* prehistoric remains that pre-date the Holocene Transgression and that are situated on relict, submerged landforms, either mantled with unconsolidated marine sediments or exposed on bedrock outcrops; and (2) remains deposited subsequent to the Holocene Transgression and situated on the seafloor or within unconsolidated recent sediments. These remains would consist primarily of isolated prehistoric and historic artifacts (SLC 1986). Although three historic shipwrecks are recorded within the project vicinity, none has been physically located. Potential NRHP eligibility of the wrecks of the Agram, the Stranger, and the Kitty A. has not been determined and cannot be determined on the basis of available data. All three are more than 50 years old, but neither the precise location nor the condition of the wrecks is known, nor is the extent of possible salvage known. Because none of the wrecks has been physically located, and	LTS	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Archaeological, Historic, and Ethnographic Resources (continued) because the project site has been examined by side-scan sonar, and by divers without the identification of potential submerged resource locations, it is likely that remains of the wrecks lie outside of the project site. The likelihood of unrecorded wrecks within the project site is relatively low. The project site is not located on an approach to a major shipping or fishing port, which diminishes the probability of ship or fishing boat wrecks. There is, however, a small boat harbor at Dana Point. Thus, aside from the larger vessels for which records are likely to have been kept, numerous small recreational boats (e.g., sailboats, motorboats) have frequented this stretch of the coast and continue to do so. Sinkings may have occurred but it is likely that most would be less than 50 years old. Underwater surveys conducted by Coastal Resources Associates, which included side-scan sonar, did not identify historic resources in the lease area (Dean 1997). No magnetometer survey has been conducted in the area, and with strong sea surges such as characterize the southern California coast, it is possible that wreck remains could be obscured by sand. This is unlikely due to the shallow sand in the project area, and obvious wreck remains are not present within the project site. The only possible ethnographic resources are archeaological resources deposited subsequent to the Holocene Transgression. As previously noted, these are unlikely to occur *in situ* in the project environment. The proposed experimental reef and mitigation reef would be constructed in areas that are underlain by bedrock and thinly covered by sand. The lease area is a high energy dynamic environment in which the thin cover of sand is readily moved by waves and currents. These physical conditions essentially preclude the presence of *in situ* cultural remains from the Holocene. Furthermore, due to the high energy environment of the project area, isolated prehistoric and historic artifacts potentially found in the			

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Archaeological, Historic, and Ethnographic Resources (continued) project area would not be *in situ*. Restricting the proposed project actions to areas that have these physical conditions is an important element in meeting the biological goals and objectives of the project, and also is important to assuring that archaeological resources are not affected. This key element applies to all phases of the project, including construction, the presence of the reefs, and the monitoring of the reefs. Construction of the proposed reefs would not involve excavation. Thus the subsurface and any isolated artifactual remains, fragmentary shipwreck remains, and archaeological remains of ethnographic significance that might be buried in the shallow sands would not be destroyed or removed.			
Section 13. Recreation			
Proximity of Reef Construction to the Beaches – Experimental and Mitigation Reef The construction of the experimental reef and the mitigation reef would be visible to people using the adjacent beaches, at distances of 0.6 mile or greater. Neither the appearance of construction equipment, nor the noise associated with the construction activities, is expected to discourage recreational use of the project area beaches.	LTS	• None required.	N/A
Effects of Reef Construction on Boaters – Experimental and Mitigation Reef People in boats could view and hear the experimental reef and mitigation reef construction activities at closer distances than 0.6 mile, and the tugboats and barges could be more noticeable than they are from the shore.	LTS	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Less-Than-Significant			
Effects of Excluding Other Uses During Reef Construction – Experimental and Mitigation Reef The use of portions of the lease area will not be available for recreation during the construction of the experimental reef and mitigation reef.	LTS	• None required.	N/A
Potential Effects on Waves and Surfing – Experimental and Mitigation Reef The experimental and mitigation reefs, and the resulting kelp forests, would create no measurable attenuation of height or energy of long-period swell waves, and would not affect the propagation or direction of swell waves. Furthermore, the experimental and mitigation reefs would not substantially affect the distribution and transport of sediment in the littoral zone, nor the width of the beach. However, the presence of a kelp forest would have a damping effect on high frequency sea waves. Any reduction in high frequency sea waves would likely have a beneficial effect on surfing conditions.	LTS	• None required.	N/A
Section 14. Water Quality			
Turbidity - Experimental and Mitigation Reefs During construction, the placement of recycled concrete pieces and quarry rock would momentarily disturb the fine sands and silts of the ocean floor, and would resuspend these particles, causing a local increase in turbidity. In addition, some sediment may be introduced into the water from material on the recycled concrete or quarry rock.	LTS	• None required.	N/A

Key: S = Significant; PS = Potentially Significant; LTS = Less than Significant; N/A = Not Applicable

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
No Effect			
Section 1. Land Use and Planning			
Compliance with General Plan and Zoning Designation - Experimental and Mitigation Reefs The presence of a total of 150 to 300 acres of artificial reef sustaining a giant kelp community within the 356-acre project site would be generally compatible with both the existing offshore uses and the adjacent onshore designations.	No effect.	• None required.	N/A
Compliance with Applicable Environmental Plans and Policies - Experimental and Mitigation Reefs The construction, implementation, and monitoring activities for the proposed 22.4-acre experimental reef and the 127.6-acre to 277.6-acre mitigation reef would support the policy direction of the applicable environmental plans and policies.	No effect.	• None required.	N/A
Compatibility with Existing Uses – Experimental and Mitigation Reefs The apparent use of the site with either the 22.4-acre experimental reef or the full mitigation reef would differ little from present site conditions, and is not expected to influence the continued viability of adjacent land uses in either the city of San Clemente or San Diego County.	No effect.	• None required.	N/A
Section 2. Socioeconomics			
Presence of the Experimental and Mitigation Reefs The presence of the experimental reef and mitigation reef would have no negative socioeconomic impacts. The creation of additional reef and kelp habitat should enhance fishing and create economic benefits over the long term.	No effect.	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
No Effect			
Monitoring – Mitigation Reef			
The 150-acre to 300-acre reef would be monitored at some level over the equivalent of the life of SONGS; this monitoring is yet to be defined by the CCC. It would most likely involve post-construction side-scan sonar and diver surveys, followed by annual diver surveys.	No effect.	• None required.	N/A
Section 6: Biology			
Marine Mammals and Birds			
Experimental and Mitigation Reefs – Marine Mammals. The kelp forest development may increase habitat for some of the prey that dolphins and sea lions would take. Furthermore, grey whales generally do not forage during their migration, but they have been observed skimming kelp beds for food and utilizing kelp forests for escape cover.	No effect.	• None required.	N/A
Experimental and Mitigation Reefs – Marine Birds. The kelp forest would increase foraging and resting habitat for brown pelican, double-crested cormorant, common loon, California least tern and elegant tern. The kelp wrack that washes up on the beaches near kelp forests provides habitat for many of the prey species preferred by western snowy plover.	No effect.	• None required.	N/A
Section 7. Energy and Mineral Resources			
Oil, Gas, and Geothermal Resources – Experimental and Mitigation Reefs			
There are no active or abandoned oil, gas, or geothermal wells or fields underlying the proposed reef site or in the immediate area. Furthermore, there are no active or pending State leases. Upon issuing a permit to construct the reef, the State Lands Commission would retain their rights to all oil, gas, and geothermal resources beneath the site. In the event oil, gas or geothermal resources are discovered beneath the site in the future, the site is small enough that any potential reserves underlying the site could be accessed by nearby wells or using directional drilling techniques.	No effect.	• None required.	N/A

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
No Effect			
Section 8. Hazards			
Interference with Emergency Response/Evacuation Plans - Experimental and Mitigation Reef Construction, Presence and Monitoring. The proposed project would not interfere with implementation of emergency response plans or emergency evacuation plans in the project area.	No effect.	• None required.	N/A
Section 14. Water Quality			
Contaminants - Experimental and Mitigation Reefs The construction of the experimental reef and mitigation reef would use recycled concrete material or quarry rock that comply with the CDFG's "Material Specification Guidelines and Notification Procedure for Augmentation of Artificial Reefs with Surplus Materials."	No effect.	• None required.	N/A
Beneficial Effects			
Section 2. Socioeconomics			
Presence of the Experimental and Mitigation Reefs The creation of additional reef and kelp habitat would enhance local recreational and commercial fishing, which would in turn strengthen the area's tourist and recreational economic base, creating long-term economic benefits.	Beneficial	• None required.	

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Table 2-1 Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (continued)

Environmental Impacts	Level of Significance Without Mitigation	Recommended Mitigation Measures	Level of Significance With Mitigation
Beneficial Effects			
Section 13. Recreation			
Potential Effects on Waves and Surfing			
The presence of a kelp forest would have a damping effect on high frequency sea waves. Any reduction in high frequency sea waves would likely have a beneficial effect on surfing conditions.	Beneficial	• None required.	N/A

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