

CALIFORNIA COASTAL COMMISSION

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Th13a

Date Filed:	08/22/00
Staff:	AD/EFD-SF
Staff Report:	08/23/00
Hearing Date:	09/12/00
Commission Action/Vote:	Approval 7-0-1
Staff Report (RF):	09/21/00
Hearing Date:	10/12/00
Item No.	Th13a

REVISED FINDINGS

CDP Application No.: E-00-003

Project Applicant: Unocal Corporation

Location: Southeast corner of former Guadalupe oil field adjacent to Santa Maria River estuary and Marsh Pond B, San Luis Obispo County (Exhibit 1).

Project Description: Remove 630 cubic yards of road base material (rock and sand) from the "loop" road and adjacent wetland; add 200 cubic yards of sand to 550 feet of "loop" road to maintain the hydraulic barrier between Marsh Pond B and river estuary; re-vegetate with native vegetation the 550-foot loop road segment (Exhibit 2).

Related Approvals: U.S. Army Corps of Engineers to issue Restoration Order in September 2000.

California Department of Fish and Game Incidental Take Permit No. 2081-1999-018-3 issued April 2000.

Substantive File Documents: Appendix B

Commissioners on Prevailing Side: Estolano, Kruer, Hart, Detloff, Wan, Daniels, Woolley

SYNOPSIS

In March 1998, Unocal Corporation, without benefit of a coastal development permit ("CDP"), placed 630 cubic yards of road base material (400 tons of 1.5-inch rock and 50 tons of sand) on an existing "loop" road at the southwest corner of the former Guadalupe oil field in San Luis Obispo County¹. The loop road runs in a general east to west direction and connects the southern ends of the oil field's "A" and "B" roads. Marsh Pond B, a freshwater marsh, borders the loop road on the north.

The road repair work and subsequent use of the road by heavy construction equipment resulted in an expansion of the road, impacting about 3,300 square feet of wetland habitat. Of the 630 cubic yards of material placed on the loop road, about 130 cubic yards of material sloughed into the wetland. Furthermore, the unpermitted development activity destroyed between 50-100 federally listed as endangered La Graciosa thistle plants.

In March 1998, Coastal Commission staff opened violation case No. V-7-98-001. Unocal has agreed to remedy the violation by (a) applying for a coastal development permit to remove all rock and sand placed on the loop road in 1998 (including that which fell into the wetland); and (b) implement a restoration plan at the project site to restore 200 La Graciosa thistle plants. Implementation of the La Graciosa thistle restoration plan will require separate action by the Coastal Commission in the future.

In this application, Unocal proposes to (a) remove 630 cubic yards of road base material on the loop road and in the adjacent wetland; (b) place 200 cubic yards of sand along a 550-foot segment of loop road in order to maintain the hydraulic barrier between the marsh pond and the river estuary; and (c) plant with native vegetation the 550-foot segment of loop road.

This restoration project has the potential to cause significant adverse impacts to coastal resources due to the site's proximity to the marsh pond and the presence of federal and State-listed endangered and threatened plant and wildlife species. Major Coastal Act issues associated with this project include potential impacts to adjacent wetlands, La Graciosa thistle, California red-legged frog and western snowy plover. Please see Table 1 for a summary of potential impacts, proposed mitigation measures, and proposed conditions of permit approval.

On September 12, 2000, the Commission approved CDP application E-00-003, as conditioned. Staff recommends that the Commission adopt the revised findings in support of the Commission's action on September 12, 2000 to approve CDP E-00-003.

Activities authorized by this permit will partially but not fully correct the violation. Unocal will submit a separate application to restore La Graciosa thistle plants after it completes a La Graciosa thistle research program.

¹ Unocal improved the loop road to support emergency remediation operations to be conducted at a site called the A2A plume. The Executive Director of the Coastal Commission had issued an emergency permit, E-98-03-G, to remove contaminated material from the A2A area but E-98-03-G did not authorize loop road improvement work.

Table 1. Significant Issue Summary: Potential Impacts and Proposed Conditions and Mitigation Measures

Significant Issue Area	PROPOSED SPECIAL CONDITIONS AND MITIGATION MEASURES
Environmentally Sensitive Habitat Areas and Water Quality	<p>Issue: Excavation and backfill activities could result in the release of material into adjoining wetlands and cause injury to or death of federally and state-listed species, including California red-legged frogs, La Graciosa thistle and western snowy plover.</p> <p>Mitigation Measures:</p> <ul style="list-style-type: none"> • Unocal has prepared an environmentally sensitive habitat (“ESHA”) exclusion plan to minimize the construction corridor. During all excavation and backfill activities, Unocal proposes to K-rail barriers and geo-fabric to prevent erosion. Also, laborers will use hand tools to prevent fill from sloughing into wetlands. • Special Condition 4 limits road removal activities to the period September 1 – October 31, thereby avoiding both the western snowy plover and California red-legged frog breeding seasons. • Unocal will conduct pre-disturbance biological surveys of the project area. Within two weeks of project commencement, Unocal will photograph the area for all plant and wildlife surveys (Special Condition 5). • Special Condition 6 requires a survey of all areas within 500 feet of the construction for California red-legged frogs (“CRLF”) 48 hours before commencement of project activities, protective fencing of the construction area, regular nighttime surveys for CRLF, and limits CRLF handling activities to approved biological monitors. • Special Condition 7 requires Unocal to (a) survey the area for La Graciosa thistle; (b) protect, if feasible, any thistle growing through the fill material to be excavated; and (c) record all unavoidable damage to or destruction of thistle. • If project activities result in unavoidable injury to or loss of La Graciosa thistle, Special Condition 8 requires Unocal within 30 days of completing its La Graciosa thistle research program to submit to the Coastal Commission in the form of an amendment to this permit a La Graciosa thistle restoration plan.
	<p>Issue: Project activities could cause turbidity in Marsh Pond B.</p> <p>Mitigation Measures:</p> <ul style="list-style-type: none"> • Special Condition 9 requires that all equipment and materials, particularly those that can cause turbidity and sedimentation, be stored inside bermed areas where runoff can be controlled. • Special Condition 10 requires daily turbidity monitoring of Marsh Pond B and the halting of construction activities if visible or measured turbidity occurs.

1.0 STAFF RECOMMENDATION: ADOPTION OF REVISED FINDINGS

On September 12, 2000, the Commission approved, subject to the conditions set forth in the staff recommendation, Coastal Development Permit Application No. E-00-003 as described in the staff report dated August 23, 2000.

Accordingly, the Commission adopted the following resolution on September 12, 2000:

The Commission hereby approves Coastal Development Permit E-00-003 and adopts the findings set forth below on grounds that the development as conditioned will be in conformity with the policies of Chapter 3 of the Coastal Act and will not prejudice the ability of the local government having jurisdiction over the area to prepare a Local Coastal Program conforming to the provisions of Chapter 3. Approval of the permit complies with the California Environmental Quality Act because either (1) feasible mitigation measures and/or alternatives have been incorporated to substantially lessen any significant adverse effects of the development on the environment, or (2) there are no further feasible mitigation measures or alternatives that would substantially lessen any significant adverse impacts of the development on the environment.

Motion:

I move that the Commission adopt the revised findings set forth below in support of the Commission's action on September 12, 2000, to approve Coastal Development Permit Application E-00-003.

Staff recommends a **YES** vote on the foregoing motion. Pursuant to section 30315.1 of the Coastal Act, adoption of findings requires a majority vote of the members of the prevailing side present at the September 12, 2000 hearing, with at least three of the prevailing members voting. Only those Commissioners on the prevailing side of the Commission's action on the permit are eligible to vote. Approval of the motion will result in the adoption of the following resolution.

Resolution:

The Commission hereby adopts the findings set forth below for Coastal Development Permit No. E-00-003 on the ground that the findings support the Commission's decision made on September 12, 2000 and accurately reflect the reasons for it.

2.0 STANDARD CONDITIONS See Appendix A.

3.0 SPECIAL CONDITIONS

This permit is granted subject to the following special conditions:

General Conditions

1. **Scope of Project Approval.** This permit authorizes those project activities and locations specifically described in Unocal's *Work Plan for the Removal of the Loop Road* (revised August 8, 2000), *Loop Road Site-Specific Restoration Plan* (dated August 22, 2000), and *Environmental Assessment Loop Road* (revised August 7, 2000) except as otherwise modified by the conditions of this permit. Any modifications of or additions to the project, as described in the referenced documentation, shall require an amendment to this permit.
2. **Independent Monitor.** Prior to issuance of this permit, Unocal shall fund the hiring of Arthur D. Little as the independent onsite environmental coordinator ("OEC") for this project. The OEC shall be under contract with the County of San Luis Obispo to act as project monitor and condition compliance inspector.

Mitigation Measures

3. **Construction Zone.** Limits of the construction zone shall be clearly marked and delineated in the field as identified on Unocal's project-specific exclusion plan map (Exhibit 2). No unauthorized personnel or equipment shall be allowed in native habitats outside the construction limits.
4. **Project Timing.** Project operations, except for re-vegetation activities, shall be carried out between September 15 - October 31, 2000. No work authorized by this permit will occur after sunset or before sunrise.
5. **Pre-Disturbance Biological Survey.** Within two weeks before project commencement, Unocal shall photograph the project area for all plant and wildlife species. Prior to commencement of the project, the photographic survey shall be submitted to the Executive Director of the Coastal Commission (hereinafter "Executive Director").
6. **California Red-Legged Frog.** Unless otherwise directed by the U.S. Fish and Wildlife Service ("USFWS"), Unocal shall:
 - install construction barriers in a manner that will not restrict the movement of California red-legged frogs between the river and marsh ponds and along the loop road.
 - within 48-hours before project commencement survey within 500 feet of the construction and staging areas for the presence of California red-legged frogs according to USFWS guidelines.
 - for the duration of the project, conduct daily (morning) and nighttime (at least twice per week) surveys of California red-legged frogs by a biological monitor approved by the USFWS to ensure that California red-legged frogs are not entering the work area. If a California red-legged frog is found within the work area, all work shall cease until a biological monitor approved by the USFWS relocates the frog to a suitable habitat outside of the construction zone.

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- reduce speed limits along the loop road, A road and B road to 5 mph during rain events. During California red-legged frogs breeding season, or within one week following rain events, speed limits along these roads shall be no more than 15 mph.
7. **La Graciosa Thistle.** Unless otherwise directed by the U.S. Fish and Wildlife Service or the California Department of Fish and Game, Unocal shall:
- within one week before project commencement, survey the project area for La Graciosa thistle using a qualified botanist approved by the Executive Director. Occurrences of La Graciosa thistle shall be clearly marked and mapped and the numbers of each individual in each colony shall be recorded. Construction areas and access routes shall be limited, as feasible, to minimize impacts to individuals or colonies of La Graciosa thistle.
 - protect, if feasible, by T-post and aviary wire or overturned buckets (with sufficient allowance for light and air circulation) any La Graciosa thistle growing at the edge of the fill material to be excavated. Fill around these plants shall be carefully removed by hand (shovel), with extreme care taken to avoid damaging the root system; and
 - record all unavoidable damage to or destruction of La Graciosa thistle. The growth stage of each La Graciosa thistle, date, time, location and activity contributing to the damage or destruction shall be recorded on a daily basis. Within one week of project completion, Unocal shall submit a final written report to the Executive Director.
8. **La Graciosa Thistle Restoration Plan.** If project activities result in unavoidable injury to or death of individual La Graciosa thistle plants as recorded pursuant to Special Condition 7, Unocal shall, within 30 days of completing its La Graciosa thistle research program required by Condition 65 of coastal development permit/development plan D890558D, submit to the Coastal Commission in the form of an amendment to this permit a La Graciosa thistle restoration plan.
9. **Equipment Storage.** Equipment and materials, particularly materials that can cause turbidity and sedimentation, shall be stored inside bermed areas where surface runoff can be controlled and kept away from surface water.
10. **Water Turbidity Monitoring.** Prior to ground disturbance, and in consultation with the onsite environmental coordinator, turbidity shall be monitored at two sites of Marsh Pond B closest to the loop road, and at two additional control sites in Marsh Pond B sufficiently removed from road removal influence. Once the project is underway, turbidity data shall be recorded daily and reported to the onsite environmental coordinator every two days. If there is visible turbidity emanating from the loop road removal site or if there is a measured relative increase in turbidity levels of 20 percent or more, activities shall be halted until the onsite environmental coordinator approves additional remedial actions.

11. **Revised Loop Road Restoration Plan.** Prior to issuance of this permit, Unocal shall submit for approval by the Executive Director a revised loop road restoration plan that includes the following elements:

- Three years after the cessation of maintenance activities (other than exotic species removal) there shall be $\geq 60\%$ total vegetative cover of native species, $\geq 40\%$ total cover of native perennials, $\leq 5\%$ cover of exotic species. There shall be at least 80% similarity in native perennial species present at the restoration site and at an adjacent natural site.
- Performance monitoring shall be based on a stratified random sampling plan that can reasonably be expected to provide a 90% confidence interval of $\pm 10\%$ absolute cover about the estimated mean ground cover. The replication proposed will be based upon a statistical power analysis. If, after three years of no maintenance other than exotic species removal, the estimated 90% confidence interval for actual vegetative cover includes the performance value set for cover, the performance standard will be considered achieved. Similarity in native perennial species will be calculated using a Sorenson index based on census of equal areas at the restoration and comparison sites.
- If performance standards have not been met after ten years without maintenance activities (other than exotic species removal), Unocal will submit to the Coastal Commission in the form of an amendment to this permit an alternate plan.

4.0 FINDINGS AND DECLARATIONS

4.1 Background

In March 1998, Unocal Corporation (hereinafter "Unocal"), without benefit of a coastal development permit, placed 630 cubic yards of road base material (400 tons of 1.5-inch rock and 50 tons of sand) on a pre-existing dirt road (the "loop road") located on the southwest corner of the Guadalupe oil field. The loop road has been in place since the 1950s and runs in a general east to west direction connecting the southern ends of the oil field's "A" and "B" roads. Marsh Pond B (Exhibit 2) borders the loop road on the north.

Unocal improved the pre-existing loop road in 1998 to support emergency remediation operations at a site of petroleum hydrocarbon contamination known as the A2A plume. The Executive Director of the Coastal Commission had issued an emergency permit, E-98-03-G², to remove hydrocarbon-contaminated material from the A2A area but the emergency permit did not authorize loop road improvement work.

The road repair work and subsequent use of the road by heavy construction equipment resulted in an expansion of the road, impacting about 3,300 square feet of wetland habitat. Of the 630 cubic yards of material placed on the road, about 130 cubic yards sloughed into the wetland.

² In May 1998, E-98-03-G was modified and superceded by E-98-09-G.

Furthermore, between 50-100 federally listed endangered La Graciosa thistle plants were destroyed by the unpermitted development activity.

In March 1998, Coastal Commission staff opened violation case No. 7-98-001. Unocal has agreed to remedy the violation by (a) applying for a coastal development permit to remove all rock and sand placed on the loop road in 1998 (including that which fell into the wetland); (b) developing and implementing a La Graciosa thistle research program; and (c) restoring at the loop road site approximately 200 La Graciosa thistle plants.

This permit application is to remove the rock and sand placed on the loop road and in the wetland in 1998. Implementation of a La Graciosa thistle restoration plan will require separate action by the Coastal Commission in the future after the research program is complete.

4.2 Project Description

In this application, Unocal specifically proposes to (a) remove 500 cubic yards of rock and sand from the existing Guadalupe oil field loop road; (b) remove 130 cubic yards of rock and sand from the wetland areas immediately north and south of the loop road; (c) place 200 cubic yards of clean sand on a 550-foot segment of loop road to maintain the hydraulic barrier between Marsh Pond B and the Santa Maria River estuary; and (d) plant with native vegetation the 550-foot loop road segment (the segment that borders Marsh Pond B).

The length of the loop road is about 750 feet. About 550 of the 750 feet of loop road borders Marsh Pond B and acts as a hydraulic barrier between the marsh pond and the Santa Maria River estuary.

Rock and sand removal will be undertaken as follows: In the restoration area bordering Marsh Pond B, physical barriers (polyethylene "K" rails filled with ballast water) will be placed along the sides of the roadway to prevent debris from spilling into the adjacent wetland. Once the K-rail is in place, a track excavator will remove the road base material and place the material into a dump truck. Work will be completed in 100-foot segments to allow wildlife and special-status species mobility between Marsh Pond B and the river estuary. The material will be transported to a stockpile area onsite.

Unocal proposes to maintain the dike by adding 200 cubic yards of sand taken from an interior area of the oil field known as the "Q4 borrow site", and planting the area with native vegetation, including wetland plant species. Unocal will maintain a 6-foot width on this section of loop road to allow Regional Water Quality Control Board staff to access water quality monitoring wells located south and adjacent to the loop road using all-terrain vehicles ("ATV's"). However, Unocal will take the loop road out of oil field service (*i.e.*, it will no longer be used by vehicles or heavy equipment for oil field abandonment or remediation activities).

Once construction activities are complete for the 550-foot restoration area, Unocal will use an excavator to remove the road base material from the remaining portion of the loop road (approximately 250-feet long and west of the wetland areas). No backfill is proposed for this part of the loop road.

Rock and sand removal and backfill activities will take two weeks to complete.

Re-vegetating the 550-foot segment of loop road will commence immediately following road base material removal and backfill activities. Unocal has prepared a site-specific loop road restoration plan that proposes to plant the loop road with eight native plant species (Exhibit 3). Following re-vegetation, the restoration area will be stabilized using hydro-mulch.

4.3 Related Approvals

4.3.1 U.S. Army Corps of Engineers ("ACOE")

Unocal undertook loop road improvement activities in 1998 without obtaining from the ACOE a permit under Section 404 of the Clean Water Act ("CWA") (33 U.S.C. 1344). Section 404 of the CWA regulates disposal of dredge and fill materials into waters of the United States. To correct the violation, the ACOE plans to issue a Restoration Order after consulting with the U.S. Fish and Wildlife Service ("USFWS") on the proposed restoration project's potential to impact federally-listed endangered species, namely the California red-legged frog and La Graciosa thistle. The USFWS is currently preparing a Biological Opinion.

4.3.2 California Department of Fish and Game ("CDFG")

The California Department of Fish and Game ("CDFG") has issued to Unocal a California Endangered Species Act ("CESA") Incidental Take Permit³ 2081-1999-018-3 pursuant to Fish and Game Code section 2081(b) and section 2081(c) for oil field remediation and restoration activities. Incidental Take Permit 2081-1999-018-3 covers proposed loop road restoration activities.

4.3.3 Air Pollution Control District ("APCD")

The County of San Luis Obispo APCD ("SLOAPCD") is the local air agency responsible for implementing federal and state air quality standards for activities at the Guadalupe oil field. On October 13, 1999, the SLOAPCD issued to Unocal Permit to Operate 598-1 for Phase 1 oil field remediation and abandonment activities. The proposed loop road project will not require a separate air district permit⁴.

³ The CDFG 2081 Incidental Take Permit covers La Graciosa thistle (*Cirsium loncholepis*), surf thistle (*Cirsium rhotophilum*) and beach spectaclepod (*Dithyrea maritima*). All three are State of California-listed threatened species.

⁴ Letter of July 24, 2000 from Gary E. Willey, County of San Luis Obispo Air Pollution Control District to Gonzalo Garcia, Unocal Corporation.

4.4 Coastal Act Issues

4.4.1 Dredging of Wetlands and Estuaries

Project activities include removal of approximately 130 cubic yards of rock and sand from the wetland area (Marsh Pond B to the north of the loop road and the Santa Maria River estuary to the south) that sloughed into the wetland areas due to unpermitted road improvement work undertaken by Unocal in March 1998.

Coastal Act § 30233(a) states in part:

The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

- (1) *New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities.*
- (2) *Maintaining existing, or restoring previously dredged depths on existing navigational channels, turning basins, vessel berthing and mooring areas, and boat launching ramps.*
- (3) *In wetland areas only, entrance channels for new or expanded boating facilities; and in a degraded wetland, identified by the Department of Fish and Game pursuant to subdivision (b) of Section 30411, for boating facilities if, in conjunction with such boating facilities, a substantial portion of the degraded wetland is restored and maintained as a biologically productive wetland. The size of the wetland area used for boating facilities, including berthing space, turning basins, necessary navigation channels, and any necessary support service facilities, shall not exceed 25 percent of the degraded wetland.*
- (4) *In open coastal waters, other than wetlands, including streams, estuaries, and lakes, new or expanded boating facilities and the placement of structural pilings for public recreational piers that provide public access and recreational opportunities.*
- (5) *Incidental public service purposes, including but not limited to, burying cables and pipes or inspection of piers and maintenance of existing intake and outfall lines.*
- (6) *Mineral extraction, including sand for restoring beaches, except in environmentally sensitive areas.*
- (7) *Restoration purposes.*
- (8) *Nature study, aquaculture, or similar resource dependent activities.*

Coastal Act § 30233(a) restricts the Coastal Commission from authorizing a project that includes dredging of wetlands and estuaries unless it meets three tests. The first test requires that the proposed activity fit into one of eight categories of uses enumerated in Coastal Act § 30233(a). Since the subject permit application proposes to restore the wetland area by removing 130 cubic yards of fill material, the activity is an allowable use under Coastal Act § 30233(a)(7).

The Commission must further find that there is no feasible less environmentally damaging alternative to the proposed project. The purpose of the project is to remove 130 cubic yards of material that was placed within the marsh pond and estuary without benefit of a coastal development permit. Alternative project locations are thus infeasible. The fill material is located directly adjacent to the loop road and will be removed with hand tools and a rubber-tired backhoe. No major dredging operation is required. Unocal will undertake removal operations in 100-foot segments and place temporary fencing along the road to ensure that more fill does not fall into the wetland due to project activities. The Commission thus finds that the proposed project is the least environmentally damaging alternative.

Finally, Coastal Act § 30233(a) allows for dredging of wetlands and estuaries if feasible mitigation measures have been provided to minimize any adverse environmental effects. In other sections of this report, the Commission has identified feasible mitigation measures that will be implemented to minimize the project's adverse environmental effects. With those measures in place and the imposition of the conditions of this permit, the Commission thus finds that the third test of Coastal Act § 30233(a) has been met. The Commission therefore finds that the project is consistent with Coastal Act § 30233(a).

4.4.2 Marine Resources, ESHA and Water Quality

Coastal Act § 30230 states:

Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas of special biological or economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Coastal Act § 30231 states:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Coastal Act § 30240 states:

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

Coastal Act § 30107.5 defines “environmentally sensitive area” to mean:

“...any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed and degraded by human activities and development.”

The express purpose of this application is to “undo” Unocal’s unpermitted road improvement work, namely, the removal of all the road base material placed on the loop road and in the wetland. The road repair activities of 1998 resulted in some fill sloughed into adjacent wetlands and the destruction of rare La Graciosa thistle plants. Unocal proposes to restore the impacted wetland area by (a) removing about 130 cubic yards of rock and sand and (b) re-vegetate the road edges with native wetland plant species. However, the activities involved in excavating the road base material could also result in additional adverse impacts to environmentally sensitive habitat areas (“ESHA”) (*i.e.*, Marsh Pond B) and the sensitive wildlife and plant species they support. Project activities could also adversely impact the water quality of the marsh pond. These potential impacts are discussed below.

4.4.2.1 Marine Resources/ESHA

The former Guadalupe oil field is located in the Nipomo Dunes Complex, an environmentally sensitive ecosystem with significant biological and habitat value. The entire oil field site has been designated in the County of San Luis Obispo’s certified local coastal program (“LCP”) as ESHA. There are four ESHA habitat types – estuarine, fresh emergent wetland, saline emergent wetland, and coastal scrub – in the immediate vicinity of the project area that may be impacted by the loop road removal activities. While the road itself provides poor wildlife habitat, its surrounding habitat is rich and important to wildlife.

The Santa Maria River Estuary

The Santa Maria River estuary is located approximately 150 feet south of the loop road. The river estuary is a dynamic system and tidal conditions, storm events, sand bar formation, and river flow continually modify its form and environmental conditions. In the summer and autumn, the flow of water in the Santa Maria River is low and the mouth of the river is often closed. The impounded water forms a lagoon that can be of reduced salinity and not subject to tidal effects. During the winter, when and river flow is increased and the seasonal sand bar is eroded, more marine conditions exist. The distance that the estuarine conditions extend upstream into the Santa Maria River fluctuates.

Vegetation growing along the margins of the estuary is periodically flooded by water impounded in the inland-most portion of the estuary, especially when the river mouth is closed. La Graciosa thistle is found in the brackish marsh habitat at the mouth of the estuary.

Only a relatively small number of aquatic species exist under the variable environmental conditions of the estuary, and these include the tidewater goby (a federally endangered species and state species of special concern). Additional species of fish may enter the estuary during high tides when the river mouth is open, including the federally endangered southern steelhead trout.

Birds are common in the estuarine habitat, including large concentrations of shorebirds during fall and spring migrations. The western snowy plover (a federally threatened species and state species of special concern) may nest along the perimeter of the estuary and on the exposed, mostly dry island areas, and are regularly observed foraging in the mudflats around the estuary. No federal or state listed mammal species, or species of special concern, are known to use the estuary.

Wetlands

Marsh Pond B contains fresh emergent wetland habitat. Since the loop road functions as a hydraulic barrier, Marsh Pond B is isolated from the influence of the estuary except during extremely high water levels in the estuary. Submerged aquatic vegetation is scattered throughout the open water areas of the ponds and provides suitable habitat for many fish, and aquatic and terrestrial invertebrates. The open water in the pond provides foraging and roosting areas for water birds, including waterfowl that increase dramatically in numbers during late fall and winter. During the breeding season, California least tern (a federally endangered species and a State species of special concern) have been observed foraging in the pond. Adult and tadpole stages of California red-legged frog (a federally threatened species) are found in the pond.

Saline emergent wetlands are located south of the loop road within the Santa Maria River floodplain. It is actually more characteristic of a brackish marsh due to infrequent saltwater intrusion from the river. La Graciosa thistle is found in wetland areas adjacent to slack ponds; iceplant in these areas competes with La Graciosa thistle.

The vegetation in this area provides nesting habitat for resident waterfowl. Various raptors are frequently observed hunting for small mammals, birds, amphibians and reptiles in the area. The two-striped garter snake, a federal candidate category 2 species, has been located in the saline emergent wetlands adjacent to Marsh Pond B and near the estuary.

Coastal Scrub

The main habitat type at the oil field is coastal scrub. Coastal scrub habitat is found at both ends of the loop road. This habitat type supports several other perennials and annual plant species and well as several widespread invasive weed species. The coastal scrub also provides protective cover and nesting habitat for a number of resident birds and small mammals that provide food for predatory raptors, coyotes and bobcat. Mule deer are particularly visible in coastal scrub areas,

as are several species of lizards and snakes. Two federal candidate category 2 species, the California horned lizard and the silvery legless lizard, have also been found in coastal scrub habitat elsewhere in the Guadalupe oil field.

Sensitive Species

The habitats described above exist in the vicinity of the loop road and provide habitat for several listed plant and wildlife species that may potentially be affected by the proposed activity. These include the La Graciosa thistle, California red-legged frog and western snowy plover. These species are discussed in greater detail below due to their abundance, sensitivity, and potential to be impacted by the proposed project.

California Red-Legged Frog

The California red-legged frog (federally listed as threatened and a state species of special concern) is threatened through loss of habitat, human exploitation and the introduction of non-native predators (including bullfrogs, crayfish, sunfish and mosquito fish). This species uses distinct aquatic and upland habitat components. Adults generally prefer deep, still or slow moving water with shrubby or emergent riparian vegetation. However, these frogs have also been found up 100 feet from water in adjacent dense riparian vegetation. In the winter, some individuals of the species aestivate in small mammal borrows and moist leaf litter in well-vegetated terrestrial areas while others may move about within, or within 300 feet of, riparian areas.

Within the Guadalupe oil field, one of two primary frog-breeding populations is located in the freshwater marsh ponds and dune slack ponds adjacent to the Santa Maria River. Due to the proximity of Marsh Pond B, the Santa Maria River estuary and their associated wetland areas that provide breeding habitat for the California red-legged frog, frogs could be injured or killed as a result of proposed excavation and backfill activities.

Western Snowy Plover

The western snowy plover (federally listed as threatened and a state species of special concern) is a small shorebird that breeds and winters along the Pacific Coast. Human use of nesting beaches is considered the greatest factor in the decline of the species, although domestic dogs, feral cats, native and non-native predators and loss of suitable beach strand and dune habitat also contribute to their threatened status.

The coastal population of western showy plover consists of both resident and migratory birds. Some winter in the same areas used for breeding; up to 130 individual western snowy plovers have been observed during the winter around the mouth of the Santa Maria River. The breeding season of the coastal population extends from mid-march through mid-September; preferred coastal nesting habitat includes sand spits, dune-backed beaches, unvegetated beach strands, open areas around estuaries, and beaches at river mouths.

La Graciosa Thistle

The La Graciosa thistle (federally listed as endangered and state listed as threatened) is in danger of extinction because its habitat has been significantly reduced by residential, commercial, oil field and other energy-related development. Remaining habitat has been adversely affected by the invasion of exotic plant species. The limited distribution and small population size of this species make it more vulnerable to extinction from naturally occurring events.

La Graciosa thistle is restricted to back dune and coastal wetland areas of southern San Luis Obispo County and northern Santa Barbara County. The species is now restricted to marshes and the edges of willow thickets in damp swales in the Guadalupe Dune system. Most populations in the dune systems are small and isolated, and show a reduced reproductive vigor. The largest population of the La Graciosa thistle within the Guadalupe oil field is known to occur in the Santa Maria River bottomland; much of this population may have been lost during the flooding of the river in 1998.

As discussed in section 4.1 of this report, between 50-100 La Graciosa thistles were destroyed as a result of the road improvement work undertaken in 1998.

Potential Project-Related Impacts and Mitigation Measures

Although the proposed project is a restoration project, restoration activities themselves could cause additional disturbance to the wetland habitat and injury or mortality to the sensitive species the habitat supports. These potential impacts include:

- The project could result in sediment-laden runoff or the additional release of excavated rock and sand into the adjacent wetland areas.
- The project could result in temporary loss of western snowy plover breeding and foraging habitat and cause injury or death of individual snowy plovers.
- The proximity of the project to Marsh Pond B, breeding habitat for California red-legged frogs, may result in injury or mortality to the frogs.
- La Graciosa thistle is currently present in the saline emergent wetland and coastal scrub habitats bordering the loop road. Proposed activities could result in injury or death of individual thistle plants.

Adverse impacts to the river estuary are not expected to occur since the estuary is currently located about 150 feet to the south of the proposed project. However, the estuarine environment is dynamic and changes in the course of the Santa Maria River could create mudflats in the vicinity of the loop road site.

Unocal is proposing a number of measures to avoid or minimize disturbance to ESHA and the species it supports. Project activities will be limited to a narrow construction corridor. Unocal has identified areas of special biological significance at and near the project site and has prepared an exclusion plan (*i.e.*, those areas to be avoided for all staging, construction and support activities) (Exhibit 2). **Special Condition 3** requires Unocal to clearly mark and delineate in the field limits of the construction zone as shown in Unocal's site-specific exclusion plan map. No

unauthorized personnel or equipment shall be allowed in native habitats outside the construction limits. To clearly document all plant and wildlife species at the project site, **Special Condition 5** requires Unocal within two weeks before project commencement to photograph the project area for all plant and wildlife species and to submit this photographic record to the Executive Director.

Unocal will install temporary barriers, polyethylene K-rails, along the sides of the roadway to prevent material from spilling into the adjacent wetlands. To provide further protection from erosion, seven-foot wide pieces of geo-fabric will be placed on the ground prior to setting the K-rail. After the K-rail has been placed end-to-end to form a 100-foot long section, it will be filled with water and the geo-fabric will be wrapped up and over the top of the rail.

To further ensure that material does not fall from the road into adjoining wetlands, four laborers will be present with hand shovels whenever heavy machinery is removing road material. The bucket of the excavator will be modified with "wings" to prevent spillage. To minimize the possibility of the bucket traveling outside the work area, it will be drawn into the machine prior to spinning and off-loading material onto the truck.

To ensure that disturbances to western snowy plovers are minimized, Unocal proposes to schedule project activities to avoid the plover breeding season from March 1 to September 15. **Special Condition 4** limits project activities to September 15 – October 31, 2000, a window of time after the western snowy plover nesting season but before the California red-legged frog breeding season.

Unocal also proposes to have onsite during construction activities a qualified biologist with western snowy plover experience. The biologist will survey the area for signs of plovers within 200 feet of the work area. The monitor will halt work, if necessary, to avoid injury to individual plovers.

California red-legged frogs could also be injured or killed as a result of the proposed project. As discussed above, the Commission is requiring in Special Condition 4 that project activities be limited to the period September 15 – October 31, 2000, prior to the California red-legged frog-breeding season.

To further minimize adverse impacts to California red-legged frogs, the Commission is requiring Unocal in **Special Condition 6** to:

- install construction barriers in a manner that will not restrict the movement of California red-legged frogs between the river and marsh ponds and along the loop road.
- within 48-hours before project commencement survey within 500 feet of the construction and staging areas for the presence of California red-legged frogs according to USFWS guidelines.
- for the duration of the project, conduct daily (morning) and nighttime (at least twice per week) surveys of California red-legged frogs by a biological monitor approved by the

USFWS to ensure that California red-legged frogs are not entering the work area. If a California red-legged frog is found within the work area, all work shall cease until a biological monitor approved by the USFWS relocates the frog to a suitable habitat outside of the construction zone.

- reduce speed limits along the loop road, A road and B road to 5 mph during rain events. During California red-legged frogs breeding season, or within one week following rain events, speed limits along these roads shall be no more than 15 mph.

With these measures in place, the Commission believes the frogs will be adequately protected.

Several La Graciosa thistle plants are currently growing through the fill material that is to be excavated. Though most of the fill is to be removed by heavy equipment, Unocal proposes to protect any existing thistle plants with T-posts and/or buckets, and remove the fill material around these plants by hand shovel. Special care will be taken to avoid damaging the root system of each plant and to leave each plant in place.

To further minimize impacts to thistle, the Commission is requiring Unocal in **Special Condition 7**, unless otherwise directed by the U.S. Fish and Wildlife Service or the California Department of Fish and Game, to:

- within one week before project commencement, survey the project area for La Graciosa thistle using a qualified botanist approved by the Executive Director. Occurrences of La Graciosa thistle shall be clearly marked and mapped and the numbers of each individual in each colony shall be recorded. Construction areas and access routes shall be limited, as feasible, to minimize impacts to individuals or colonies of La Graciosa thistle.
- protect, if feasible, by T-post and aviary wire or overturned buckets (with sufficient allowance for light and air circulation) any La Graciosa thistle growing at the edge of the fill material to be excavated. Fill around these plants shall be carefully removed by hand (shovel), with extreme care taken to avoid damaging the root system; and
- record all unavoidable damage to or destruction of La Graciosa thistle. The growth stage of each La Graciosa thistle, date, time, location and activity contributing to the damage or destruction shall be recorded on a daily basis. Within one week of project completion, Unocal shall submit a final written report to the Executive Director.

Even with these measures in place, proposed road restoration activities could result in unavoidable injury to or death of individual La Graciosa thistle plants. The loss of individual La Graciosa thistle plants is significant due to their endangered status and sensitivity. In the event that excavation activities cause loss of thistle, the Commission is requiring in **Special Condition 8** that Unocal restore thistle at the project site. However, not much is understood scientifically about the relationship between the thistle and habitat. Consequently, restoration of the plant is uncertain.

Unocal is currently working with federal, State and local resource agencies, including Coastal Commission staff, to develop, prior to a restoration plan, a Guadalupe oil field La Graciosa thistle research program. A La Graciosa thistle research program is required of Unocal by Condition 65 of the County of San Luis Obispo's coastal development permit/development plan D890558D for Guadalupe oil field site-wide remediation and abandonment activities. A research program is needed, prior to restoration efforts, to develop practical techniques to foster the recovery of the thistle for which there are no established, field-proven methods of successful restoration. Moreover, thistle seeds are rare and in short supply. To start restoration efforts now, without a good plan in place, could squander the seed supply without producing a viable population. The research program will be completed within 3-5 years and will be the basis for developing a restoration program.

The Commission is thus requiring in Special Condition 8 that if activities authorized by this permit result in unavoidable injury to or death of individual La Graciosa thistle plants, Unocal shall, within 30 of completing its La Graciosa thistle research program, submit to the Coastal Commission in the form of an amendment to this permit a La Graciosa thistle restoration plan.

After excavation and backfill activities are complete, Unocal proposes to restore the area by establishing native vegetation that is similar to surrounding undisturbed native vegetation (See Exhibit 3 - *Loop Road Site-Specific Restoration Plan* (dated August 22, 2000)). The target species are based on the species composition in the vicinity of the loop road area as well as their likely rate of establishment. Unocal's plan includes planting native wetland species along the edges of the 550-foot segment of loop road that borders Marsh Pond B and the river estuary. Following re-vegetation with seed and pluggings, the restoration area will be stabilized using hydromulch.

Exotic species control is an essential component of a successful restoration/re-vegetation plan. The Commission is requiring in **Special Condition 11** that, prior to issuance of this permit, Unocal submit for approval by the Executive Director a revised loop road restoration plan that includes the following restoration performance standards. Three years after the cessation of maintenance activities (other than exotic species removal) there shall be $\geq 60\%$ total vegetative cover of native species, $\geq 40\%$ total cover of native perennials, $\leq 5\%$ cover of exotic species. There shall be at least 80% similarity in native perennial species present at the restoration site and at an adjacent natural site.

Another essential component of a restoration plan is a method of determining whether performance standards have been met. Special Condition 11 further requires that restoration performance monitoring be based on a stratified random sampling plan that can reasonably be expected to provide a 90% confidence interval of $\pm 10\%$ absolute cover about the estimated mean ground cover. The replication proposed will be based upon a statistical power analysis. If, after three years of no maintenance other than exotic species removal, the estimated 90% confidence interval for actual vegetative cover includes the performance value set for cover, the performance standard will be considered achieved. Similarity in native perennial species will be calculated using a Sorenson index based on census of equal areas at the restoration and comparison sites. If performance standards have not been met after ten years without

maintenance activities (other than exotic species removal), Unocal will submit to the Coastal Commission in the form of an amendment to this permit an alternate plan.

4.4.2.2 Water Quality

Loop road removal activities could release sediment, suspended material, or settable materials into the surface waters of Marsh Pond B, thereby increasing turbidity and reducing water quality. Specific activities that could increase turbidity include grading, excavation activities, backfilling and operation of equipment near the pond edge. As discussed above, Unocal will implement various measures, such as the use of K-rails, to minimize the transfer of sediments from the construction area to Marsh Pond B.

The Commission is also requiring in **Special Condition 9** that equipment and materials, particularly materials that can cause turbidity and sedimentation, be stored inside bermed areas where surface runoff can be controlled and kept away from surface water. **Special Condition 10** requires Unocal to monitor turbidity prior to ground disturbance at two sites in Marsh Pond B closest to the loop road, and at two additional control sites in Marsh Pond B sufficiently removed from road removal influence. Once the project is underway, turbidity data shall be recorded daily and reported to the onsite environmental coordinator every two days. These sites shall be picked in consultation with the onsite environmental coordinator. If there is visible turbidity emanating from the loop road removal site or if there is a measured relative increase in turbidity levels of 20 percent or more, activities shall be halted until the onsite environmental coordinator approves additional remedial actions.

The Commission believes that with these measures in place the biological productivity and quality of Marsh Pond B shall be maintained as required by section 30231 of the Coastal Act.

Conclusion

The project, as strictly conditioned, includes all feasible mitigation measures that minimize impacts to ESHA and the sensitive species it supports. Nevertheless, proposed excavation activities may cause injury or mortality to a federally listed endangered plant species, the La Graciosa thistle. There is no certainty that thistle restoration efforts will succeed. The Commission therefore finds the project inconsistent with Coastal Act §§ 30231 and 30240(a) that require that ESHA and species of special biological significance be protected. Nevertheless, the project can be found consistent with the Coastal Act under the "policy conflict resolution" section of the Coastal Act for the reasons discussed below in section 4.5 of this report.

4.5 Policy Conflict Resolution

Coastal Act § 30007.5 states in relevant part:

The Legislature further finds and recognizes that conflicts may occur between one and more policies of this division. The Legislature further declares that in carrying out the provisions of this division such conflicts be resolved in a manner which on balance is the most protective of significant coastal resources. In this context, the Legislature declares that

broader policies which, for example, serve to concentrate development in close proximity to urban and employment center may be more protective, overall, than specific wildlife habitat and other similar resource policies.

The Commission finds that in applying the policies of Chapter 3 of the Coastal Act to Unocal's proposed loop road restoration project results in conflicts between Coastal Act policies. The Commission found in section 4.4 of this report that excavating road base material from the edges of the loop road (*i.e.*, the transition area between the loop road and wetland) in order to restore wetland habitat may result in unavoidable injury or death to individual La Graciosa thistle plants, a plant listed under the federal Endangered Species Act as endangered. The Commission thus found the project inconsistent with Coastal Act §§ 30230 and 30240(a) that require that ESHA and species of special biological concern be maintained and protected.

However, the express purpose of this project is to restore a wetland area filled in during road improvement activities undertaken by Unocal in 1998 without a coastal permit. Keeping the fill material in place will eliminate a section of wetland and the sensitive species it supports which is in clear conflict with the standards of Coastal Act §§ 30231 and 30240(a) that require wetlands to be maintained and protected and, where feasible, restored. Keeping the wetland fill in place also conflicts with Coastal Act § 30233 which strictly limits the allowable uses of fill in a wetland. Wetland fill is not permissible for the purpose of widening an existing road.

In August 1999, staff of federal and state resource agencies, such as the U.S. Fish and Wildlife Service and the California Department of Fish and Game, met at the loop road site to discuss the environmental tradeoffs of removing the fill material as compared to leaving the fill in place. Agency staff agreed that, on balance, it would be most protective of the ESHA and the plant and wildlife it supports to remove the fill material from the wetland area even if it causes unavoidable loss of some thistle plants. Since then, agency staff have been working with Unocal to develop a La Graciosa thistle research program to study best how to restore thistle as required by Condition 65 of the County of San Luis Obispo's coastal development permit for site-wide remediation and abandonment. The research program will inform the development of a thistle restoration plan.

For these reasons, the Commission finds pursuant to Coastal Act § 30007.5 that, on balance, it is more protective of coastal resources to resolve these conflicts by approving the proposed project. Accordingly, the Commission concludes that the project is consistency with the Coastal Act.

5.0 VIOLATION

Activities authorized by this permit will partially but not fully correct the violation. Another application to restore La Graciosa thistle plants destroyed during the subject unpermitted roadwork will be submitted by Unocal at a future date. In addition, the issue of whether the Commission will seek civil fines and penalties for the subject violation remains outstanding.

6.0 CALIFORNIA ENVIRONMENTAL QUALITY ACT

The Commission's permit process has also been designated by the State Resources Agency as the functional equivalent of the CEQA environmental impact review process. Pursuant to section 21080.5(d)(2)(A) of the CEQA and section 15252(b)(1) of Title 14, California Code of Regulations (CCR), the Commission may not approve a development project "if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment." The Commission finds that there are no feasible less environmentally damaging alternatives or additional feasible mitigation measures, beyond those imposed by this permit, that would substantially lessen any significant adverse impact which the activity may have upon the environment, other than those identified herein. Therefore, the Commission finds that the project as fully conditioned is consistent with the provisions of the CEQA.

APPENDIX A

Standard Conditions

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.
2. **Expiration.** If development has not commenced, the permit will expire two years from the date on which the Commission voted on the application. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.
3. **Interpretation.** Any questions of intent of interpretation of any condition will be resolved by the Executive Director or the Commission.
4. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.
5. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

APPENDIX B

Substantive File Documents

Coastal Development Permit Application Materials

Coastal Development Permit Application E-00-003, with revised Work Plan submitted August 8, 2000.

Agency Permits and Orders

Coastal Development Permit E-99-009.

California Department of Fish and Game, California Endangered Species Act Incidental Take Permit No. 2081-1999-018-3, Unocal/Guadalupe Oil field Remediation and Abandonment Project.

Environmental Reports

Former Guadalupe Oil Field Loop Road Environmental Assessment, prepared for Unocal by Morro Group, Inc. Environmental Services, August 7, 2000.

Loop Road Site-Specific Restoration Plan, August 22, 2000.

Letters

July 24, 2000, letter from Gary E. Willey, County of San Luis Obispo Air Pollution Control District to Gonzalo Garcia, Unocal Corporation.



Pacific Ocean

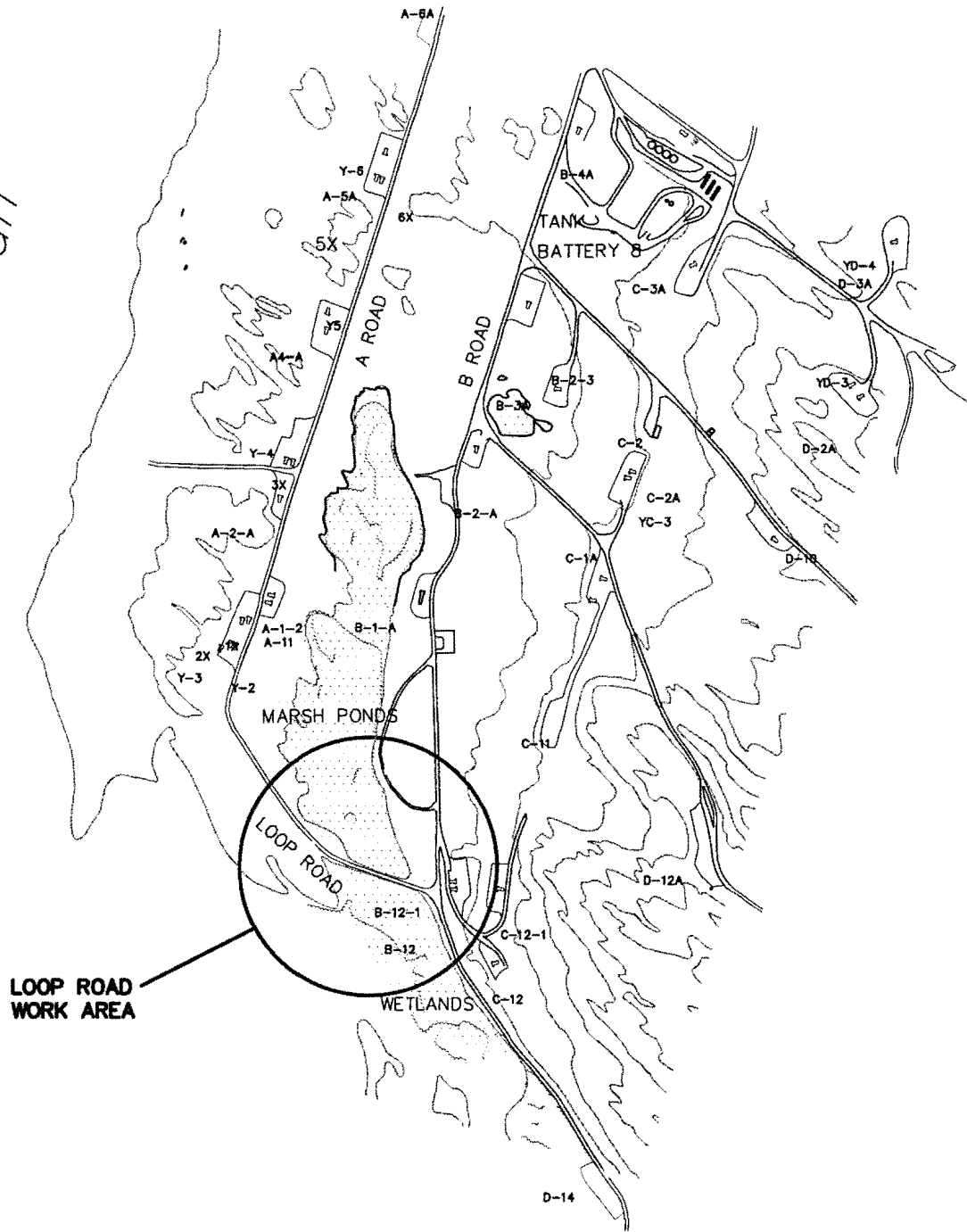



Exhibit 1
E-00-003

 <p>Cannon ASSOCIATES ENGINEERS PLANNERS SURVEYORS</p> <p><small>San Francisco Office San Jose Office, CA 95128 (415) 761-7407</small></p>	<p>LOOP ROAD VICINITY MAP FORMER GUADALUPE OIL FIELD</p>	
	<p>UNOCAL</p>	<p>EXHIBIT</p>

**LOOP ROAD SITE-SPECIFIC
RESTORATION PLAN,
FORMER GUADALUPE OIL FIELD,
SAN LUIS OBISPO COUNTY,
CALIFORNIA**

Final

RECEIVED
AUG 25 2000

CALIFORNIA
COASTAL COMMISSION

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August 22, 2000

E-00-003
Exhibit 3

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PRE-DISTURBANCE BIOLOGICAL SURVEY

1.0 INTRODUCTION

This restoration and revegetation plan was prepared for Unocal Corporation as part of the habitat restoration process to be carried out during the implementation of the former Guadalupe Oil Field remediation and abandonment project. The plan relates specifically to the Loop Road site located in the southwestern part of former oil field in San Luis Obispo County, California. The purpose of the Loop Road Site-Specific Restoration Plan is to satisfy the requirements of Coastal Development Permit/Development Plan D890558D, Condition 64 and Coastal Development Permit E-99-009, Condition 9. The plan is intended to provide the appropriate level of detail necessary to guide the restoration of the Loop Road area upon completion of construction activities and the subsequent monitoring of the status of the restoration.

This restoration plan first defines the goals of restoration, then presents background information regarding the site including its ecological setting, the nature of disturbances, and existing biological resources, followed by site-specific restoration procedures for exotics control, revegetation, and erosion control. Monitoring and maintenance activities for the revegetation area include a discussion of performance criteria, monitoring methods, and suggested contingency actions or remedial measures. Finally, a schedule is provided for all restoration and monitoring tasks. Plant species nomenclature in this document follows Hickman (1993).

2.0 RESTORATION GOALS AND OBJECTIVES

The primary goal of restoration at the Loop Road site is to establish a healthy, self-sustaining plant community at the restoration site that develops the physical and biological characteristics of neighboring natural habitats. Specific objectives related logically to the achievement of the habitat restoration goals are as follows.

- Stabilize the soil effectively and minimize erosion by wind or water.
- Establish native vegetation at the site that is similar to, and over time becomes more similar to, surrounding undisturbed vegetation.
- Ensure that the revegetation area is relatively free of exotic species and does not become a source of weeds that could invade adjacent areas.
- Ensure that the revegetation area provides habitat for La Graciosa thistle (*Cirsium loncholepis*), and that the restoration process preserves habitat for the California red-legged frog (*Rana aurora draytonii*).

Monitoring and maintenance of the restoration area for up to 10 years will track the progress of native vegetation development over time and ensure that these objectives are achieved.

E-00-003
Exhibit 3

3.0 ECOLOGICAL CONSIDERATIONS

3.1 Ecological Setting

The former Guadalupe Oil Field is located in the Nipomo Dunes Complex, about four miles northwest of Guadalupe. The Nipomo Dunes Complex is recognized as an environmentally sensitive ecosystem with high biological and habitat value. Although sections of this region have been fragmented by urban and agricultural development, many relatively undisturbed areas still exist. The oil field site has an area of 3,176 acres, and extends from the Pacific Ocean inland about three miles. The western section of the site is a relatively flat sandy beach which grades into foredunes and backdunes; the eastern part is mostly stabilized dunes bordered by agricultural land. Similar stabilized dunes exist north of the site, and the Santa Maria River skirts the southern boundary. The soil type of the entire former oil field is mapped as Dune land, with sandy soils that have very rapid permeability and very low available water capacity. Surface runoff is slow, and the wind erosion hazard of these soils is very high (U.S. Department of Agriculture, 1984).

Many unique natural habitats are present at the former Guadalupe Oil Field. The main plant communities and habitats include coastal strand and active dunes, Central Coast foredunes, coastal dune scrub, coastal dune swale, coastal freshwater marsh and ponds, and coastal dune riparian woodland (Holland, 1986; Holland, 1994). Several sensitive plant and animal species are found in these habitats at the oil field site.

3.2 Site Description and Background

Loop Road lies in the southwestern part of the former oil field, and connects the southern end of "A" Road to "B" Road (Appendix A, Former Guadalupe Oil Field Map). The road is bordered on the north by a freshwater marsh, Pond B, and on the south by the Santa Maria River estuary. It provides a hydrological barrier between the pond and the estuary.

Historically, Loop Road in its current location has existed as a roadway since at least 1950. In early 1998, approximately 630 cubic yards of gravel and sand were placed on 750 feet of the road during an emergency repair. The resulting expansion of the road on both sides impacted 550 feet of adjacent wetland habitat.

The proposed Loop Road restoration project would remediate impacts to the wetland habitat by removing material from 550 feet of the road to an elevation of 12 feet above mean sea level (MSL), backfilling with sand, contouring, and then restoring with native vegetation.

3.3 Biological Resources at the Loop Road Site

Results of pre-disturbance botanical and wildlife surveys conducted at the Loop Road restoration site are provided in Appendix B. The surface of Loop Road is sparsely vegetated with ruderal species such as bur-clover (*Medicago polymorpha*), bird's foot trefoil (*Lotus corniculatus*), cudweed (*Gnaphalium luteo-*

album), and annual grasses. The exotic species iceplant (*Carpobrotus edulis*) occurs in patches along the edges of the road. Native herbaceous plants also are found near the edges of the road, the most dominant being salt grass (*Distichlis spicata*), coastal silver weed (*Potentilla anserina*), marsh clover (*Trifolium wormskoldii*), and clustered field sedge (*Carex praeegracilis*); less abundant species include creeping rush (*Juncus lesueurii*), dwarf bulrush (*Scirpus cernuus*), and jaumea (*Jaumea carnosa*). Relatively uncommon native species found near the edges of Loop Road include beach evening-primrose (*Camissonia cheiranthifolia*), beach-bur (*Ambrosia chamissonis*), coastal goldenbush (*Isocoma menziesii*), and marsh baccharis (*Baccharis douglasii*).

Wetland vegetation is present to the north and south of Loop Road. The wetland area south of the road lies in the Santa Maria River floodplain, and is dominated by coastal silver weed (*Potentilla anserina*), salt grass (*Distichlis spicata*), and marsh clover (*Trifolium wormskoldii*). The freshwater marsh to the north, Pond B, normally has standing water throughout the year, including open water areas. Marsh vegetation found in this pond includes the species tule (*Scirpus californicus*) and cattail (*Typha latifolia*). The mesic edges of this marsh near Loop Road contains species similar to those found in the wetland habitat south of the road; clustered field sedge (*Carex praeegracilis*) also is abundant.

Many individuals of La Graciosa thistle (*Cirsium loncholepis*) occur near the edges of the Loop Road restoration area (Appendix A, Loop Road Restoration Site Map). This species is federally listed as endangered, and state-listed as threatened. Prior to flooding and the placement of fill material on the road in 1998, up to 100 individual plants were recorded; in April 1998, only one plant remained (Appendix B). Subsequent surveys in 1998 and a recent pre-project survey in March 2000 documented the presence of more than 300 plants of La Graciosa thistle (*Cirsium loncholepis*) in the vicinity of the restoration area.

Pre-project wildlife surveys have documented the presence of many wildlife species in the restoration area (Appendix B). The freshwater marsh habitat provided by Pond B to the north of Loop Road supports a variety of aquatic wildlife species. Upland wildlife species also are attracted to the wetlands for foraging and cover. Bird species observed include American bittern (*Botaurus lentiginosus*), mallard (*Anas platyrhynchos*), ruddy duck (*Oxyura jamaicensis*), American coot (*Fulica americana*), marsh wren (*Cistothorus palustris*), and red-winged blackbird (*Agelaius phoeniceus*). Common wildlife observed in the northern marsh area were amphibians including frogs and toads, reptiles including turtles and snakes, fish, and mammals including raccoon (*Procyon lotor*) and coyote (*Canis latrans*). To the south of Loop Road, the saline emergent wetland provides habitat for many small mammals, including pocket gopher (*Thomomys bottae*).

The sensitive amphibian species California red-legged frog (*Rana aurora draytonii*; federally threatened, state species of special concern) has been found in all life stages at Pond B. Other sensitive species of concern found in this area include the western spadefoot toad (*Scaphiopus hammondi*), southwestern pond turtle (*Clemmys marmorata pallida*) and two-striped garter snake (*Thamnophis hammondi*). The federally threatened western snowy plover (*Charadrius alexandrinus nivosus*) is known to occur in the foredunes and coastal strand habitat to the west of the restoration site. Peregrine falcon (*Falco peregrinus*), a

federally endangered species, has been seen in the vicinity of the site. Other sensitive bird species known to occur or observed in the vicinity of Loop Road include western least bittern (*Ixobrychus exilis hesperis*), white-faced ibis (*Plegadis chihi*), northern harrier (*Circus cyaneus*), and horned lark (*Eremophila alpestris*).

4.0 IMPLEMENTATION PLAN

4.1 General Restoration Planning Approach

Since ecological restoration is a relatively new field and each restoration effort is unique in some ways, restoration planning must, by necessity, be flexible enough to adapt to changing circumstances. The procedures described in this plan are those that have been used in various projects in the region; however, few restoration projects have been monitored carefully over a long enough period of time to provide a complete understanding of the restoration process. All procedures, therefore, are still to some extent experimental. Final revegetation prescriptions and/or changes in restoration procedures will be made in consultation with, and with the concurrence of, the Executive Director of the California Coastal Commission (CCC) or his/her designee.

Competent, qualified personnel possessing experience commensurate with the work responsibilities will conduct all activities described in this plan. The Ecological Coordinator is responsible for all the activities associated with the implementation of this plan, and it is his responsibility to ensure that all work is undertaken in cooperation with the Agency Onsite Environmental Coordinator.

4.2 Site-Specific Restoration Procedures

4.2.1 Initial Exotics Control

Portions of the Loop Road site and the areas surrounding it are covered with the invasive exotic species iceplant (*Carpobrotus edulis*). The first step in the restoration of the site is the eradication of this invasive species, which can rapidly colonize areas and spread to replace native species, such as those to be revegetated. Iceplant (*Carpobrotus edulis*) in the project area was treated with the herbicide Rodeo® on March 14, 2000. Prior to spraying, the U.S. Fish and Wildlife Service (USFWS) was notified, and verbal approval was obtained from Steve Henry. Care was taken to spray herbicide only when wind velocities at the site were low, and not in foggy or rainy conditions when ground moisture was excessive. Non-target species, especially native and sensitive species, were avoided carefully during spraying. In particular, plants of the sensitive species La Graciosa thistle (*Cirsium loncholepis*) were marked clearly to prevent any unnecessary impacts to them. The restoration area will be surveyed again, and exotics will be re-treated if necessary. This additional survey and treatment will be subject to permission from the USFWS, based on access constraints due to the proximity of nesting habitat for the western snowy plover (*Charadrius alexandrinus nivosus*) near the site.

4.2.2 Site Preparation and Grading

The boundaries of the restoration area (Appendix A, Loop Road Restoration Site Map) will be marked clearly with T-posts. The sediment control measures proposed for the Loop Road project include a combination of K-rail and filter fabric (Appendix A, Loop Road Restoration Sections). Filter fabric will be draped over the K-rail to provide a barrier against the inadvertent loss of material into the surrounding wetlands. The use of K-rail was selected to provide a strong, substantial barrier that would prevent material from entering the wetlands. The filter fabric will provide an additional level of protection, particularly in those instances where spaces between the K-rails are required to protect La Graciosa thistle (*Cirsium loncholepis*).

Once these barriers are in place, removal of existing road material will begin at one end of the Loop Road restoration area and proceed in 100-foot increments, using an excavator and dump truck to haul material away from the site. Excavated material will be transported by truck to Tank Battery 8 or to another suitable stockpile location. The site will be backfilled with clean sand from the onsite Q4 borrow site, and the entire project area recontoured to blend in with the surrounding area. Work will be completed in 100-foot sections to allow wildlife and special status species mobility between Marsh Pond B and the estuary throughout construction. The construction work is expected to last approximately two weeks. Restoration of the road will begin immediately following road construction. Restoration will occur only in the 550-foot section of road that passes through wetland habitat.

The soil adjacent to Loop Road is mapped by the Soil Conservation Service as Psamments and Fluvents, wet (U.S. Department of Agriculture, 1984). These soils are described as wind- or water-deposited sands and loamy sands that commonly contain layers of organic material. Areas containing such soils are waterlogged all or most of the year, and vegetation consists of water- and salt-tolerant grasses and forbs. On the other hand, the soil from the Q4 site is identified as Dune Land. This soil is composed of sand-sized particles that shift with the wind. The permeability of dune soil is described as very rapid and the available water capacity is very low (U.S. Department of Agriculture, 1984). Although the soils from the Loop Road and Q4 sites are not identical, both are sands.

The material removed from Loop Road is to be replaced with soil from the Q4 site to maintain the integrity of the dike that retains the water in Pond B. Removal of all the road material was considered, but it was determined that this could seriously jeopardize the diking effect of the road. In addition, Loop Road has been compacted due to years of service, and it is thought that the removal of any of the historical road material below the 12-foot MSL elevation and subsequent backfill with sand also could destabilize the dike in the future.

4.2.3 Revegetation

Revegetation target specifications for the Loop Road restoration site are provided in Table 1. The target species are based upon the species composition in the vicinity of the restoration area, as well as their likely rate of establishment and their erosion control functions. Beach bur (*Ambrosia chamissonis*) and

beach primrose (*Camissonia cheiranthifolia*), although not common on the pre-disturbance biological survey transects, are included in the revegetation specifications because they are present in the area on sandy dune ridges. Since a ridge-like feature will be created as part of the restoration process, these species are proposed to be seeded on the upper slopes of the restoration areas. Flowering periods for the species are provided in the table based on Smith (1998); seed collection should lag behind these periods. The species, collection and planting times, and the quantities to be planted may be adjusted, as necessary, depending on project-specific or environmental constraints.

For the most part, revegetation will involve planting plugs in the ground at the restoration site within the revegetation zone (Appendix A, Loop Road Restoration Site Map). The plugs will be collected from scattered locations in adjacent areas, taking care to minimize the extent of disturbance in the donor sites. Plugs will be collected using a plug-cutter or hand spade, and will be at least 3 inches in diameter, and no larger than 12 inches. The size of the plug must be large enough to include at least one healthy root or rhizome to ensure continued growth, and small enough to prevent adverse impacts to the source areas. Transplanting will occur immediately, or no more than a few hours after collection, and will take place at the onset of winter rains. Plugs of each species will be planted at approximately 3 to 5 foot centers in areas adjacent to their donor sites; this spacing will provide sufficient initial plant cover and will allow for interspersing of species. Proposed plug densities specified in Table 1 are based on proportions of the species in the adjacent areas ("% of area" is the percent of the revegetation area to be planted). For species requiring seeding, the seed will be hand-broadcast after planting of the plugs, and will be raked or chained into the soil between the plugs, or where relatively bare areas exist. In portions of the revegetation area where iceplant (*Carpobrotus edulis*) has been sprayed with herbicide and left in place, bare planting spaces will be created by hand-clearing small areas; propagules then will be planted in these spaces. Care will be taken not to destroy native vegetation, particularly plants of the sensitive La Graciosa thistle (*Cirsium loncholepis*).

Seed from La Graciosa thistle (*Cirsium loncholepis*) plants growing in the project area and its vicinity will be collected from June to September before the start of road removal. A maximum of 5 percent of seed will be collected from individual plants that are not within the direct project impact area. The seed will be stored for future use. No restoration measures will be implemented for La Graciosa thistle (*Cirsium loncholepis*) until further research is conducted, and adequate information is available regarding the habitat requirements, life cycle, and successful methods for propagation and reestablishment of this species.

The monitoring wells adjacent to Loop Road currently are gauged quarterly and sampled annually for the Regional Water Quality Control Board (RWQCB). The frequency of monitoring is subject to change depending upon the requirements of the RWQCB. Annual sampling of the wells requires the use of off-road vehicles (i.e. mules, gators). These vehicles are needed to transport sampling equipment and supplies, including a purge water container to the well locations. Two of these wells can be accessed from B road, but the remainder would require access through the Loop Road restoration area. To provide access to the wells, a 6-foot corridor will be delineated along the top of the restoration site. This

corridor will be planted with plugs of the salt grass (*Distichlis spicata*) and clustered field sedge (*Carex praegracilis*), to provide a strong, turf-like cover most likely to withstand occasional vehicle traffic. Alternatively, Unocal is pursuing with the RWQCB the possibility of abandoning the monitoring wells. This alternative would avoid the need to traverse the restoration area with ORVs to sample the wells.

4.2.4 Erosion Control and Soil Stabilization

Following revegetation with seed and plugs, the restoration area will be stabilized using hydromulching. This soil stabilization technique creates a relatively thin protective cover that would hold the sandy soil in place, while allowing plants to grow through the cover. The mulch cover can last unbroken for several months. If regular monitoring indicates that erosion is becoming an increasing problem, a more permanent treatment such as jute netting may be used to stabilize the soil. This netting would have to be installed around, and not over, existing native plants.

4.2.5 Continuing Exotics Control

After initial herbicide spraying of iceplant (*Carpobrotus edulis*) during site preparation, it is likely that some plants will remain alive or resprout. In addition, the backfill sand spread at the Loop Road site potentially may be a source of introduced or invasive exotic species. Should any of these, or other non-native, species germinate and begin to spread, they should be sprayed with the herbicide Rodeo.^o If only annual introduced grasses germinate, they can be sprayed early in their growth season, before they set seed, with grass-selective herbicides such as Poast^o and Fusilade,^o following label directions. Small amounts of the non-native species also can be hand-weeded, if practical and effective. Disturbance or damage to native species will be avoided during all exotics control activities.

Herbicide spraying will be carried out within the revegetation area defined for the site, as well as on target plants that occur within a 10 to 15 foot buffer zone outside the limits of disturbance of the Loop Road site (Appendix A, Loop Road Restoration Site Map). Spraying and killing the target species in this outer buffer zone will prevent their spread into the immediate revegetation area. The herbicide spraying crew will receive onsite training to identify both target and non-target species; as a further precaution, a biological monitor familiar with the site will be present to supervise spraying activities.

Exotic species control will take place quarterly throughout the restoration period; however, since the site occurs within the western snowy plover (*Charadrius alexandrinus nivosus*) breeding area, access to the site during the second and third quarters will be limited and dependent upon the approval of the USFWS.

4.2.6 Mitigations for Sensitive Species and Wetland Habitats

Due to the presence of sensitive biological and wetland resources present at or in the vicinity of the Loop Road restoration site, the following protective strategies and mitigation measures will be implemented to reduce potential impacts to these resources.

- The construction footprint will be limited to the smallest area feasible.
- Construction activities will be scheduled to avoid the breeding seasons of the California red-legged frog (*Rana aurora draytonii*) and western snowy plover (*Charadrius alexandrinus nivosus*).
- Construction activities will be restricted to daylight (sunrise to sunset) hours only.
- Inadvertent take of sensitive species will be avoided by implementing a worker training and awareness program.
- Biological monitors will be present at the work site throughout construction activities.
- Construction plans and field demarcations such as stakes, fencing, flagging, or clearly posted signage will delineate the limits of construction. The delineation of these boundaries will be approved in the field by the biological monitors.
- Pre-construction surveys will be conducted to identify the presence of La Graciosa thistle (*Cirsium loncholepis*). Where found in or adjacent to the project impact area, these plants will be marked clearly in the field by the biological monitors, and barriers will be installed around them to protect them from disturbance.
- Wildlife clearance surveys will be conducted daily by the biological monitors. Sensitive wildlife species found within the project impact area will be captured and relocated.
- Temporary barriers and silt fencing will be installed around the impact area to prevent material from spilling into adjacent wetlands.
- To further ensure that material does not fall from the road into the surrounding wetland areas, laborers will be present with shovels and other hand tools to contain minor spills whenever heavy machinery is in use.
- Construction equipment and operations will be modified as necessary to prevent material from entering surrounding wetland habitat.
- The integrity of the Loop Road "dike" will be maintained during and after construction.

Specific detailed mitigation measures to be followed for the sensitive species California red-legged frog (*Rana aurora draytonii*), western snowy plover (*Charadrius alexandrinus nivosus*), and La Graciosa thistle (*Cirsium loncholepis*) are presented in the Work Plan for the Loop Road site (Unocal Corporation, 2000a).

5.0 MONITORING AND MAINTENANCE

5.1 Performance Criteria

Restoration programs require the development of performance criteria to evaluate the progress and success of restoration activities, and to guide the implementation of remedial measures or contingency actions when the criteria are not being met. As stated above, the goals of restoration are to control erosion and to establish self-sustaining native plant communities that develop the characteristics of neighboring or reference natural habitats. Specific criteria to be met in this restoration program over a period of five years are outlined below and summarized in Table 2.

Erosion Control and Soil Stabilization. Topsoil at the restoration site should be stable and not subject to water and wind erosion. No gulying or blowouts should persist. All erosion control and soil stabilization treatments should be effective until revegetation results in adequate protective cover.

Revegetation. The restoration site should attain 20 percent or more total vegetation cover in the first year, and increase by 10 percent each year to 60 percent or more cover in the fifth year of the monitoring program. The cover of native perennials should increase from 10 percent or more in the second year by 10 percent each year, to 40 percent or more by the fifth year. By the end of the program, species composition and cover in the revegetation area should be increasingly comparable to adjacent natural areas.

The CCC has requested the following performance criteria and assessment procedures:

There will be at least 80% similarity in native perennial species present at the restoration site and at an adjacent natural site of about the same area. Similarity will be calculated using a Sorenson index ($C_s = 2j/(a+b)$, where j =number of species found at both sites, a =number of species found at restoration site, and b =number of species found at natural site).

The cover of native perennial vegetation at the restoration site and at an adjacent natural site of about the same area shall not be statistically different ($\alpha=0.10$). There will be sufficient replication to insure 80% statistical power to detect a difference in absolute cover of 20%.

Exotics Control. By the end of the program, the cover of exotic plants should be substantially less than that in adjacent natural areas. Weedy species should not threaten the recovery of native species in the restoration area, and should not invade adjacent natural areas. A distinction will be made between exotic species that are invasive and could preclude the development of native vegetation, versus other non-native species that do not pose the same degree of threat to revegetating species. Invasive exotic species at the Loop Road site primarily include iceplant (*Carpobrotus edulis*); another potential invasive is slender-leaved iceplant (*Conicosia pugioniformis*). The combined cover of invasive exotics should remain less than 5 percent during the monitoring period. The combined cover of non-invasive introduced species, including but not limited to, annual grasses, should remain less than 20 percent during the monitoring period.

5.2 Monitoring Activities

The purpose of monitoring is to document the establishment of native vegetation, track the longer-term development of target native habitats, and identify areas that may need maintenance or further revegetation. Monitoring will consist of qualitative and quantitative evaluations of vegetation development at the restoration site over a period of five years. Permanent monitoring stations (photopoints for

qualitative monitoring, and two transects for quantitative monitoring) will be established to document changes consistently over time, and to allow direct comparability of data between years. The same number of quantitative monitoring stations also will be set up in representative reference areas adjacent to or near the site.

Monitoring activities will be concentrated outside the breeding season (spring and summer) of the western snowy plover (*Charadrius alexandrinus nivosus*). The area west of B Road is designated as breeding habitat for this species from March 1 to September 15, and access is limited during this period. Typically, quantitative monitoring would be conducted in the spring when annual plants are flowering. However, because of the potential presence of plovers, surveys cannot be planned for this time of year. It is possible that monitoring may be conducted in the spring if the plovers are not present in this section of their habitat, and permission is granted from the USFWS. However, the plant species proposed for the restoration of Loop Road are perennials; their presence and abundance should be similar in the fall and in the spring. Therefore, monitoring in the fall, after the plover breeding season, should have little effect on the quantitative data.

Qualitative monitoring will take place in the fall and winter, and will include walking the site to observe and document general vegetation development, animal activity, weed infestations, and potential erosion problems. Erosion monitoring will occur monthly during the rainy season and after every major rain event (more than 1 inch in 24 hours). Photographs will be taken from the photopoints once a year, in the fall. In addition, qualitative monitoring will occur to the extent possible (for example, using binoculars) in the spring and summer, as allowable depending on plover access constraints at the site.

Quantitative monitoring will be carried out once a year in the fall. It will include the collection of plant species cover data at the restoration site and in similar nearby reference areas. Following methodology outlined in the Habitat Restoration, Revegetation, and Monitoring Plan (Unocal Corporation, 2000b), the point intercept sampling technique will be used along a line transect in combination with the use of quadrats. The exact number of transects and the size and number of quadrats appropriate for sufficient characterization of the revegetation area will be determined at the time of sampling. The CCC has requested that "a stratified random sampling design will be used to insure that the restoration site is more-or-less uniformly sampled." The point intercept method will be used to obtain both absolute total vegetation cover and absolute cover of herbaceous and shrub species (Unocal Corporation, 2000b). The quadrat technique will be used to obtain frequency estimates of grass and herbaceous species. The quadrats also will be used to obtain the density of sensitive plant species. Each plant species located in the quadrat will be recorded. For sensitive plant species, the number of individuals in the quadrat also will be recorded. The data collected from the quantitative monitoring will be used to evaluate the success of restoration with reference to the revegetation performance criteria.

The CCC has requested the following monitoring procedures:

The performance monitoring may be based on (1) a stratified random sampling plan that can reasonably be expected to provide a 95% confidence interval of $\pm 10\%$ absolute

cover about the estimated mean ground cover. The replication proposed will be based upon a statistical power analysis; or, (2) analysis of vegetative cover from large-scale, high-resolution aerial photographs, with species identification based on field checks or "ground-truthing."

However, depending on site conditions, a different methodology may be used, if deemed necessary. When restoration monitoring is being performed, the Executive Director of the CCC or his/her designee, and other oversight agencies, as appropriate, will be asked to approve any methodology not described in the restoration plan.

With respect to the relative performance criteria, the measures of comparability to be used, and/or methods employed for representation, depend on the nature of the collected data and will be decided when monitoring data are available. The criteria require that the values of these measures increase over time.

At the end of the initial restoration, a report will be prepared to document all activities accomplished. In addition, Quarterly Ecological Monitoring Reports will summarize continuing restoration activities and monitoring results from data collected each succeeding year, and will compare results against the performance criteria specified for the program to evaluate restoration success. The reports will recommend continuing maintenance activities and remedial or corrective measures, if needed, and will specify when such measures should be implemented. These reports also will include the photodocumentation results.

5.3 Maintenance and Remedial Measures

Maintenance of the restoration site will be carried out periodically to repair or replace erosion control and soil stabilization treatments, as well as to control the spread of invasive exotic species. An adaptive management approach will be employed to ensure the establishment of native vegetation, with remedial measures applied during the course of the restoration program whenever performance criteria are not met. These remedial measures may include replanting and restabilization of bare areas. If replanting is not successful, further plant propagation and transplanting may be necessary in later years of the program. Once the performance criteria have been met, no maintenance activities will occur for two years. If the criteria are not met after two full years of no maintenance, remedial actions then will be taken and monitoring will be extended as necessary to meet the performance standards.

6.0 RESTORATION PROGRAM SCHEDULE

The schedule for the restoration program is identified by season (summer, fall, spring, winter) over a period of six years (Table 3). Year 0 (2000-2001) is the start of the program when most construction and restoration activities would be carried out, followed by up to 10 years of monitoring, maintenance, and report preparation. Contingency actions and remedial measures are not specified in the schedule since they would occur at different times, as necessary. Monitoring will continue to assess the stability of the habitat and its potential to develop satisfactorily without human intervention.

Seed collection for restoration activities at all sites requiring active restoration on the former oil field is ongoing. Seed collection began in the first quarter of 1999 and will continue as long as restoration activities require seeding. Initial exotics control targeting iceplant (*Carpobrotus edulis*) has begun and should continue as necessary. Planting and soil stabilization should be completed no later than winter, preferably at the onset of the rainy season.

Monitoring and maintenance activities will be concentrated outside the breeding season (spring and summer) of the western snowy plover (*Charadrius alexandrinus nivosus*). Erosion control monitoring and maintenance will be carried out monthly during the annual rainy season (November through March) and after every major storm event (greater than 1 inch in 24 hours), when erosion problems are likely to occur. Weed control monitoring and maintenance will occur quarterly throughout the restoration period; however, because the site occurs within the plover breeding area, access to the site during the second and third quarters will be limited and dependent upon the approval of the USFWS. Herbicide spraying would be most effective before the weeds set seed. Quantitative revegetation monitoring will be conducted once a year in fall. The timing of all monitoring and maintenance activities may vary from year to year depending on seasonal and environmental conditions. Ecological monitoring reports will be prepared quarterly.

Performance monitoring shall commence one year following the completion of habitat restoration and revegetation and continue until all performance criteria have been met for two consecutive years after the end of maintenance activities or for 10 years, whichever is shorter.

Within 30 days of Unocal's determination that restoration performance criteria have been satisfied, Unocal shall submit to the Executive Director of the CCC a final report describing how the standards have been met. If there is disagreement between Unocal and the Executive Director as to whether performance criteria have been satisfied, Unocal agrees to fund an independent biologist who will report to the Executive Director to evaluate the performance criteria with a field survey.

If performance criteria are not met within 10 years, or if prior to that time Unocal concludes that restoration and revegetation efforts will not meet the performance standards, Unocal shall within 180 days apply to the County Department of Planning and Building for an amendment to the Coastal Development Permit that will include alternative mitigation.

7.0 REFERENCES

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Table 1
Revegetation Prescription for the Loop Road Site

Species	Plant Material	Approximate Quantity Required	Flowering Period/ Approximate Seed Collection Period
<i>Ambrosia chamissonis</i>	Seed	2 lbs/acre	April-September
<i>Camissonia cheiranthifolia</i>	Seed	1 lb/acre	April-August
<i>Carex praegracilis</i>	Plugs	15% of area, about 130 plugs	
<i>Distichlis spicata</i>	Plugs	25% of area, about 250 plugs	
<i>Isocoma menziesii</i>	Seed	0.25 lb/acre	March-September
<i>Juncus lesueurii</i>	Seed or Plugs	2 lbs/acre or 5% of area, about 50 plugs	April-September
<i>Potentilla anserina</i>	Plugs	25% of area, about 250 plugs	
<i>Trifolium wormskioldii</i>	Seed or Plugs	0.50 lb/acre or 15% of area, about 130 plugs	March-September

Table 2
Performance Criteria and Evaluation of Restoration for the Loop Road Site

Task	Performance Criteria	Monitoring Frequency	Monitoring Findings	Actions		
Erosion control and soil stabilization	Topsoil stable; no gullyng or blowouts; soil stabilization treatment effective until adequate vegetation develops	Monthly; rainy season (Nov.-Mar.) After every major storm (> 1"/24 hrs.)	Criteria met	Continue monitoring		
			Erosion; destabilization of soils or treatments	Repair as necessary; replant and restabilize		
Revegetation of restoration areas	<p>≥60% total vegetation cover and ≥40% cover of native perennial vegetation after 5 years of monitoring; revegetation area to be increasingly comparable to adjacent natural areas in terms of species composition and cover of native perennial vegetation</p> <p>Performance criteria requested by the CCC: At least 80% similarity in native perennial species present at the restoration site and at an adjacent natural site; cover of native perennial vegetation at the restoration site and at an adjacent natural site not statistically different (alpha=0.10)</p>	Year 1: Annual; fall	≥20% total cover	Continue monitoring		
			≤20% total cover	Replant and restabilize		
		Year 2: Annual; fall	≥30% total cover, ≥10% native perennials	Continue monitoring		
			≤30% total cover, ≤10% native perennials	Replant and restabilize		
		Year 3: Annual; fall	≥40% total cover, ≥20% native perennials	Continue monitoring		
			≤40% total cover, ≤20% native perennials	Replant and restabilize		
		Year 4: Annual; fall	≥50% total cover, ≥30% native perennials	Continue monitoring		
			≤50% total cover, ≤30% native perennials	Replant and restabilize		
		Year 5: Annual; fall	≥60% total cover, ≥40% native perennials	Discontinue monitoring program		
			≤60% total cover, ≤40% native perennials	Restart revegetation program or plan other alternatives		
		Exotics control	Cover of invasive weeds substantially less than that in adjacent native vegetation; cover of weeds should not threaten continued recovery of restoration area; no concentration of weeds that threaten to invade adjoining native habitats; combined cover of invasive exotic species ≤5%; combined cover of non-invasive introduced species ≤20%	Quarterly	Criteria met	Continue monitoring
					Criteria not met	Implement exotics control measures

**Table 3
Restoration, Monitoring, and Maintenance Schedule for the Loop Road Site**

Task	Year 0				Year 1				Year 2				Year 3				Year 4				Year 5			
	2000		2001		2002		2003		2004		2005		2006											
	U	F	W	S	U	F	W	S	U	F	W	S	U	F	W	S	U	F	W	S	U	F	W	S
Restoration planning finalization	✓																							
Initial exotics control	✓																							
Site preparation and grading	✓																							
Seed collection, including La Graciosa thistle	✓	✓																						
Seeding and plug planting		✓	✓																					
Erosion control and soil stabilization			✓																					
Qualitative revegetation monitoring			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Monitoring station establishment		✓																						
Photodocumentation		✓				✓				✓				✓				✓					✓	
Quantitative revegetation monitoring						✓				✓				✓				✓					✓	
Exotics control monitoring and maintenance		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Erosion control monitoring and maintenance			✓			✓	✓			✓	✓			✓	✓			✓	✓			✓	✓	
Report summarizing restoration activities				✓																				
Ecological monitoring reports			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

NOTES

U = Summer; F = Fall; W = Winter; S = Spring