Appendix G

Substantial Conformity Review for Selected CAO Sites

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1.0 Introduction

This appendix of the SEIR presents a substantial conformity review for a number of Cleanup or Abatement Order (CAO 98-38) sites where Unocal has developed detailed excavation plans. The sites covered in this section were included in the CAO issued by the Regional Water Quality Control Board (RWQCB) for the Guadalupe Field. These sites were also covered in the Coastal Development Permit/Development Plan (CDP/DP D890558D) issued by San Luis Obispo County for the Guadalupe Field. This CDP/DP authorized Unocal to conduct remediation and site characterization activities at the Guadalupe Field consistent with the RWQCB CAO 98-38 adopted by the RWQCB on April 3, 1998 and as amended on July 13, 1998 and November 6, 1998 (CDP/DP D890558D Condition F.1).

Condition F.34 of SLO CDP/DP D890558D requires that Unocal conduct additional assessment at each of the sites and prepares final excavation drawings. These final excavation drawings need to be submitted to SLO County for review and approval. If the final areas to be excavated are larger than the initial excavation drawings then SLO County, pursuant to Condition F.20 of CDP/DP D890558D, must determine if the changes are substantial enough to require additional environmental review and coastal land use permitting.

In order to comply with CDP/DP D890558D Condition F.34 and F.20 San Luis Obispo County has been conducting substantial conformity reviews for all of the excavations at the Guadalupe site based upon the final excavation drawings developed by Unocal to determine if additional environmental review and permitting is required. These substantial conformity reviews involve the following steps.

- Assessing the impacts associated with the final excavation areas.
- Comparing the impacts of the final excavation areas with the impacts identified in the Original EIR.
- Reviewing the SLO CDP/DP D890558D permit conditions to assure that they adequately address the impacts associated with the final excavation areas.

If the impacts identified for the final excavation areas are found to have been addressed in the Original EIR and of the same severity (i.e., classification), and the permit conditions in CDP/DP D890558D are found to adequately address the impacts, then no further environmental review or permitting would be required.

Section I.F.2 of CAO 98-38 required that final cleanup plans for the sites B5A N, C7 N, C7 SE, and P13 areas be submitted to the RWQCB by October 1, 1999. The cleanup plans for these areas were then postponed until the outcomes from the site-wide risk assessment and the Pilot Test Panel (PTP) were known. In a letter dated May 14, 2003, the RWQCB also requested that a corrective action plan for the A6/TB2 area be submitted by July 16, 2003. This was followed by a letter dated July 9, 2003 in which the RWQCB extended the due date for this deliverable so that the A6/TB2 action plan could be submitted in conjunction with the B5A N, C7 N, C7 SE, and P13 action plans.

Multiple action plan options were submitted in a report prepared by LFR Levine-Fricke (Levine-Fricke 2003). The RWQCB provided comments on the action plan options in a letter dated August 13, 2004, and requested that Unocal submit an addendum with final corrective action

options and the proposed actions for each site. LFR Levine-Fricke prepared the *Revised Corrective Action Plan Options for Hydrocarbon-Affected Soils at the A6/TB2, B5A North, C7 North, C7 Southeast, and P13 Areas of the Former Guadalupe Oil Field* dated October 29, 2004, including updated design plans for the full excavation scenario at each site, and Unocal submitted it to the RWQCB on November 1, 2004. These final excavation drawings were also submitted to SLO County for review to determine if the proposed excavations were in substantial conformity with CDP/DP D890558D, or would require additional environmental review and permitting. This Appendix of the SEIR presents the substantial conformity review for the above referenced sites. Given that an SEIR was being prepared for the Guadalupe Restoration Project, it was decided by SLO County that the substantial conformity review of these CAO sites should be included as an appendix to the SEIR.

All of the NHIS from full excavation of these CAO sites (approximately 44,063 cubic yards) are within the contingency included in the excavation volumes discussed in Chapter 2 of the SEIR and are considered part of the remaining CAO excavation sites as it relates to the transportation and disposal of the NHIS.

The remainder of this section is divided into two major parts. The first part provides a detailed description of the excavation sites. The second part presents the substantial conformity analysis.

2.0 Descriptions of the Sites

Surface features, including topography, sensitive resources, and infrastructure, vary throughout the Guadalupe Field, as does the distribution of hydrocarbons. To better understand the site-specific conditions, brief descriptions of the site conditions and the distribution of hydrocarbons in each of the five sites are provided in the following sections. Figure 1 shows the location of each of the excavation sites. Detailed drawings for each site are included in Attachment 1, which is at the end of the Appendix.

2.1 A6/Tank Battery 2 Area

Description

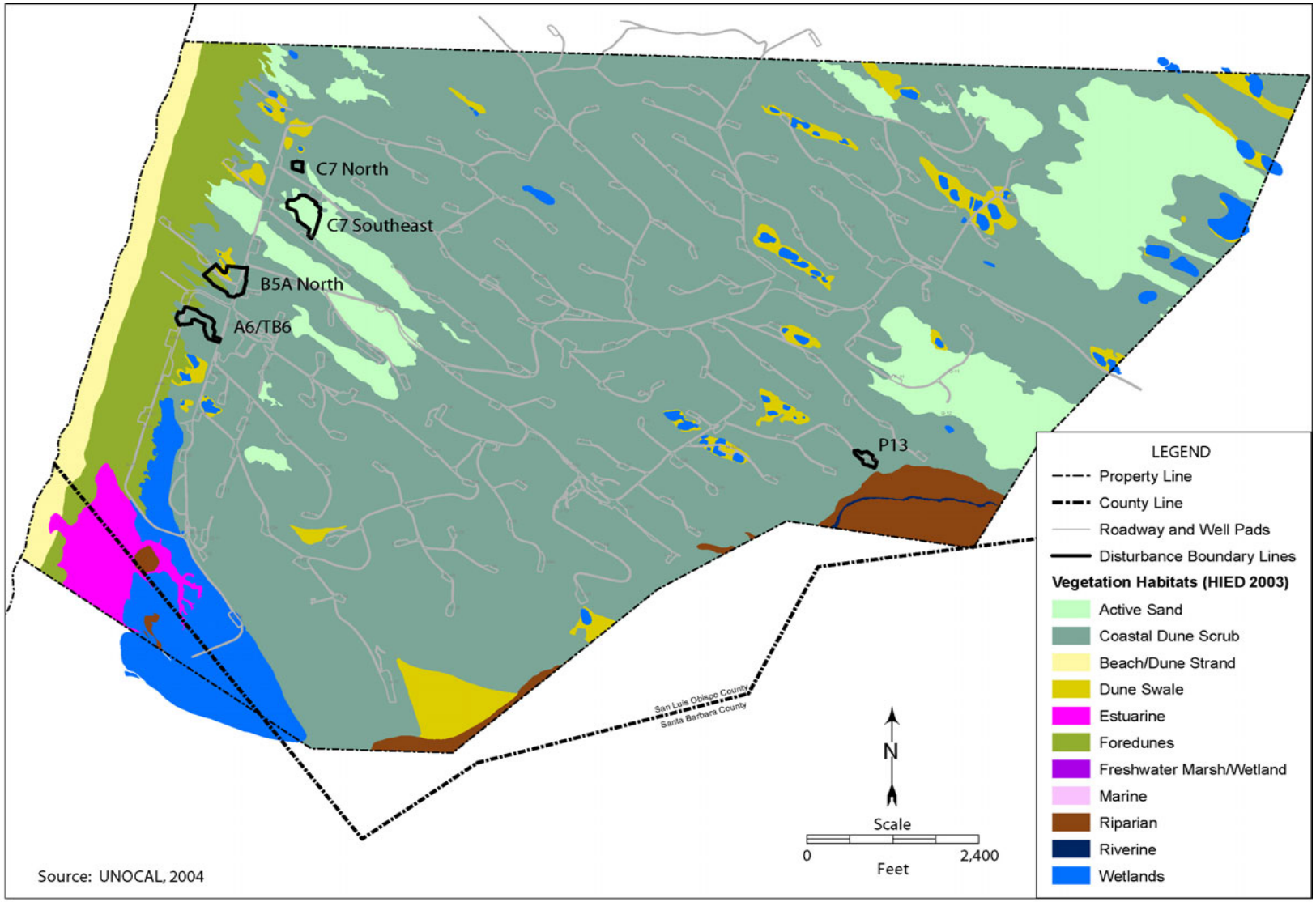
The A6/TB2 area is located in the southwestern portion of the Guadalupe Field, along the “A” Road. The A6/TB2 separate-phase diluent source area and the adjacent Tank Battery 2 (TB2) Sump lie between the former A6 oil well pad and the former A5A/Y6 well pad.

Thirty-eight soil borings and six hand-auger borings have been completed to characterize the A6/TB2 separate-phase diluent source area and the adjacent TB2 Sump.

There are no existing monitoring wells within the footprint of the A6/TB2 source area to monitor for the presence of floating diluent. Dissolved Total Petroleum Hydrocarbons (TPH) has been detected in downgradient monitoring well TB2-1 at a concentration of 0.53 milligrams per Liter (mg/L).

The A6 separate-phase diluent source area covers approximately 3,320 feet^2, with approximately 1,900 feet^2 greater than 1,000 mg/kg TPH. The depth to the top of the source area ranges from approximately 2 to 9 feet below ground surface (bgs).

Figure 1 Disturbance Boundary Lines of Potential Excavations with Vegetation Habitats



The overall source area thickness is approximately 12 feet, and the thickness of the source area more than 1,000 mg/kg TPH is approximately 10 feet. The maximum TPH concentration in the separate-phase diluent source area is approximately 15,200 mg/kg.

The source area is generally located from approximately 8 feet above the current ground water table to as much as 3.5 feet below the current ground water table. The ground surface elevation in the vicinity of the A6/TB2 separate-phase diluent source area ranges from approximately 15 feet above mean sea level (msl) to 21 feet msl.

The TB2 Sump covers an area of approximately 47,000 feet^2, with approximately 45,000 feet^2 greater than 1,000 mg/kg TPH. The top of the TB2 Sump ranges from ground surface to approximately 2 feet bgs. The TB2 Sump thickness ranges from approximately 1 foot to as much as 5 feet. The thickness of the TB2 Sump more than 1,000 mg/kg TPH is approximately 4.5 feet, and the maximum TPH concentration is approximately 66,300 mg/kg. Based on available data, the western end of this sump is interpreted to be just above the current ground water table.

Approximately 2,500 cy of diluent-affected soil is anticipated from the A6 separate-phase diluent source area. Excavation of the adjacent TB2 Sump would involve approximately 4,000 cy of sump material. Excavated materials will be removed and temporarily stockpiled for eventual disposal. Approximately 1,860 cy of vegetated and clean overburden soil would be removed to excavate these soils. The total disturbed area is estimated to be 2.6 acres.

Based on surveys conducted in 2004, three beach spectacle-pod populations (a listed plant species) are located just outside the disturbance boundary. The southern portion of the site lies within a 500-foot radius California red legged frog (CRLF) boundary. In addition, the westerly portion of the site is located within snowy plover nesting habitat. A Federal and State jurisdictional wetland area (B2W2) is located approximately 450 feet southwest of the separate-phase diluent source area.

Native American archeological features from the Chumash tribe may be present in the subsurface at this location. Archeological sites have been identified to the north (C8 area and south of the A8 area), and to the south (B3A area). Factors that these areas have in common include their position relative to the foredunes (east of the foredunes) and their relatively low topographic elevations. Generally, the entire region adjacent to the “B” Road (referenced as the “Spanne Valley”) potentially has culturally significant features in the subsurface.

Remedial Actions

This review evaluates the worst-case scenario, full excavation of the A6 separate-phase diluent source area and the excavation/surface removal of the TB2 Sump. The deeper portions of the excavation, the A6 separate-phase diluent plume and the western portion of the TB2 Sump, will be excavated using sheetpiling. The majority of the TB2 Sump (the shallow portion to the east) will be excavated using sloped sidewalls, as described below. A conceptual design of the proposed limits of excavation/surface removal and the location of sheetpile is shown in Appendix D.

Prior to remediation activities, any former oil field pipelines remaining in this area will be decommissioned and, if needed, a temporary access road will be built from the "B" Road north to the excavation site, at the approximate location of the former TB2 access road.

Sheetpile will be installed using a crane or other appropriate equipment to a sufficient depth below the ground water table to allow removal of affected soils within the sheetpile limits. Following the installation of the sheetpile walls, three or more temporary dewatering wells will be installed within the sheetpile wall. Submersible pumps will begin extracting fluids, which will be piped to TB8, where they will be re-injected to the subsurface via the existing water-handling system. Once ground water levels have dropped approximately 2 feet inside the sheetpile wall, the soil will be excavated using a track-mounted backhoe and/or other equipment, as appropriate.

Significant floating diluent is not anticipated to be encountered in the excavation due to dewatering. However, a skimming device and/or a vacuum truck will be available to remove any floating diluent present in the excavation.

The LFR report indicates that floating diluent is not anticipated to be encountered outside of the sheetpile excavation because, based on interpretation of available data, diluent is not present and the excavation will not extend into ground water. A finger of the TB2 Sump to the north approximately six feet in depth will be removed using a 2:1 or 3:1 slope for the excavation sidewalls, as needed. Remediation of the shallow eastern portion of the TB2 Sump, which averages approximately two feet in depth, will consist of surface removal using a track-mounted backhoe and/or other equipment, as appropriate. Surface removal of the TB2 Sump oil layers will be conducted in areas where the resultant ecological disturbance is minimal.

In accordance with excavation criteria specified in Item I.2 of CAO 98-38, bottom confirmation soil samples will be collected using a regular grid pattern with a maximum spacing of 25 feet, depending on field conditions. The excavation operation will continue until the average diluent concentration is less than or equal to 700 mg/kg. Soil samples will be analyzed on a quick-turnaround basis by a laboratory certified by the State of California.

When confirmation soil samples indicate that the excavation has reached the approved cleanup level, nutrients may be added to portions of the open excavation located at or below the natural water table to enhance biodegradation of residual hydrocarbons in sediments and dissolved-phase hydrocarbons. Following nutrient addition, the excavated area will be backfilled with clean soil. The backfill material may consist of soil from previously identified borrow areas of the Guadalupe Field, currently stockpiled soil with diluent concentrations below cleanup thresholds, and/or the overburden materials removed prior to encountering subsurface NHISs at other locations. Following backfill operations, sheetpile will be removed, the temporary access road will be removed, and the area restored per the agency-approved Site-Specific Restoration Plan (SSRP).

2.2 B5A North Area (B5A N)

Description

The B5A N area is located in the western portion of the Guadalupe Field, just south of the intersection of the Main Road and the "B" Road. Existing infrastructure includes a decontamination facility in the eastern portion of the area.

Thirty-eight soil borings, three monitoring wells, one hand-auger boring, and six cone penetrometer tests have been completed to characterize the B5A N separate-phase diluent source area.

Ground water monitoring well B5A-1, installed in 1993, has historically shown a measurable thickness of floating diluent (up to 0.9 foot). Product from this well has been purged on a routine basis since July 1998, as part of the passive free-product recovery program. Dissolved TPH concentrations in downgradient well B5A-4 have historically been detected up to 11 mg/l in 1995 and were less than 1 mg/l when last sampled in 1997.

The separate-phase diluent source area at B5A N covers approximately 65,000 feet^2, with an approximately 54,250 feet^2 area where concentration is greater than 1,000 mg/kg TPH. The depth to the top of the source area ranges from approximately 3 to 26 feet bgs. The northernmost half of the source area is 10 feet bgs or less. The overall source area thickness ranges from approximately 5 to 8 feet. The thickness of the source area with concentrations more than 1,000 mg/kg TPH ranges from approximately 2.5 to 5 feet. The source area is generally located from a point just above the current ground water table to as much as 5 feet or more below the current ground water table.

The ground surface elevation in the vicinity of the B5A N separate-phase diluent source area varies from approximately 19 to 50 feet above msl. A large dune encroaches into this area along the 8X access road and west of the “B” Road, overlying approximately one fifth of the separate-phase diluent source area west of the “B” Road.

Approximately 27,750 cy of diluent-affected soil is anticipated from the diluent source area. Excavated materials will be removed and temporarily stockpiled for eventual disposal. Approximately 70,350 cy of vegetated and clean overburden soil would be removed to excavate these soils. The total disturbed area would be 4.2 acres.

Based on surveys conducted in 2004, a beach spectacle-pod population (a listed plant species) is located approximately 100 feet south of the B5A N separate-phase diluent source area, and a population of surf thistle (a listed plant species) is located nearby, approximately 150 feet south. A Federal and State jurisdictional wetland area (B6Wl) is located adjacent to the separate-phase diluent source area, immediately to the northwest. Chumash archeological features may be present in the subsurface at this location. Archeological sites have been identified to the north (C8 area and south of the A8 area), and to the south (B3A area). Factors that these areas have in common include their position relative to the foredunes (east of the foredunes) and their relatively low topographic elevations. Generally, the entire region adjacent to the “B” Road (referenced as the “Spanne Valley”) potentially has culturally significant features in the subsurface.

Remedial Actions

This review evaluates the worst-case scenario, full excavation of the B5A N separate-phase diluent source using temporary sheetpile. Although full excavation will require the removal and restoration of a large portion of the dune to the southwest, it will allow for complete removal of the separate-phase diluent source area.

As required in Item I.2.b. of the CAO, the sheetpile will be installed a minimum of 15 feet outside the 1,000 mg/kg TPH contour, as interpreted using data collected from soil borings. A

conceptual design of the proposed limits of excavation and the location of sheetpile is shown in Appendix D.

Prior to remediation activities, any former oil field pipelines remaining in the area will be decommissioned.

Due to the depth restrictions for effectively using sheetpile at the site, a 2:1 slope will be cut down along the adjacent dunes, and a 15-foot-wide bench will be constructed from which the sheetpile will be installed and excavation activities will be conducted. Adjacent to the wetland area, the width of the bench will be reduced to 10 feet in order to maximize source removal and minimize impacts to the wetland area.

Portions of the “B” Road and 8X access road will be temporarily removed during excavation activities. The “B” Road will be temporarily re-routed to the west of the excavation along the 15-foot bench.

Sheetpile will then be installed, using a crane or other appropriate equipment, to a sufficient depth below the ground water table to allow removal of affected soils within the sheetpile limits. Following the installation of the sheetpile walls, approximately 13 temporary dewatering wells will be installed within the sheetpile wall. Submersible pumps will begin extracting fluids, which will be piped to TB8, where they will be re-injected to the subsurface via the existing water-handling system.

Once ground water levels have dropped approximately 2 feet inside the sheetpile wall, the B5A N separate-phase diluent source area will be excavated using a track-mounted backhoe and/or other equipment, as appropriate. Clean overburden soils will be stockpiled at a designated area for later use as backfill. Affected soil will be removed and temporarily stockpiled for eventual treatment, disposal, or reuse.

Significant floating diluent is not anticipated to be encountered in the excavation due to dewatering. However, a skimming device and/or a vacuum truck will be available to remove any floating diluent present in the excavation.

In accordance with excavation criteria specified in Item I.2 of CAO 98-38, confirmation soil samples will be collected prior to backfilling using a regular grid pattern with 25-foot spacing. The excavation operation will continue until the average diluent concentration is less than or equal to 700 mg/kg. Soil samples will be analyzed on a quick-turnaround basis by a laboratory certified by the State of California.

When confirmation soil samples indicate that the excavation has reached the approved cleanup level, nutrients may be added to the open excavation to enhance biodegradation of residual hydrocarbons in sediments and dissolved-phase hydrocarbons. Following nutrient addition, the excavation will be backfilled with clean soil. The backfill material may consist of soil from previously identified borrow areas throughout the Guadalupe Field, currently stockpiled soil with diluent concentrations below cleanup thresholds, and/or the overburden materials removed prior to encountering subsurface NHISs. Following backfill operations, sheetpile will be removed, the decontamination area, 8X access road and the “B” Road will be restored, and the B5A N area restored per the agency-approved Site-Specific Restoration Plan (SSRP).

2.3 C7 North Area (C7 N)

Description

The C7 N area is located in the northwestern portion of the Guadalupe Field, northeast of the intersection of the "B" Road and the C7 access road. Nine soil borings, one hand-auger boring, and one monitoring well have been completed to characterize the C7 N separate-phase diluent source area.

Ground water monitoring well C7-3, installed in February 1995, has historically shown a measurable thickness of floating diluent (up to 0.18 foot). Product from this well has been purged on a routine basis since May 2002, as part of the passive free-product recovery program. Dissolved TPH concentrations in this well have ranged from 9.2 mg/1 in 1995 to 1.8 mg/1 in 1997.

The separate-phase diluent source area at C7 N covers an area of approximately 1,300 feet^2, with approximately 430 feet^2 greater than 1,000 mg/kg TPH. The depth to the top of the source area is approximately 8 feet bgs. The overall source area thickness is approximately 3 feet. The thickness of the source area more than 1,000 mg/kg TPH is approximately 1 foot. The source area is generally located as much as 2 feet or more below the current ground water table. The ground surface elevation in the vicinity of the C7 N separate-phase diluent source area is approximately 22 feet above msl.

Approximately 450 cy of diluent-affected soil is anticipated from the diluent source area. Excavated materials will be removed and temporarily stockpiled for eventual disposal. Approximately 3,410 cy of vegetated and clean overburden soil would be removed to excavate these soils. The total disturbed area would be 0.4 acres.

Based on surveys conducted in 2004, no listed plant species are located in the immediate vicinity of the C7 N separate-phase diluent source area. A Federal and State jurisdictional wetland (C8W1) area is located approximately 250 feet north of the separate-phase diluent source area. Chumash archeological features may be present in the subsurface at this location, as it is located within a designated cultural site and buffer zone, SLO-851.

Remedial Actions

This review evaluates the worst-case scenario, full excavation of the C7 N separate-phase diluent source area using sheetpiling. This option will provide complete removal of the hydrocarbon source area with minimal disturbance. However, appropriate measures will also be taken to ensure that sensitive resources in the area, particularly cultural resources, are protected to the extent possible.

As required in Item I.2.b. of the CAO, the sheetpile will be installed a minimum of 15 feet outside the 1,000 mg/kg TPH contour, as interpreted using data collected from soil borings. The C7 N site is immediately adjacent to the C7 S excavation, and it is anticipated that both excavations will be conducted concurrently using connected sheetpile. A conceptual design for full excavation and the location of sheetpile is shown in Appendix D.

Prior to remediation activities, any former oil field pipelines remaining in this area will be decommissioned. Due to the depth restrictions for effectively using sheetpile at the Guadalupe Field, a 2:1 slope will be cut down around the excavation limit to an appropriate elevation and a

15-foot-wide bench will be constructed, from which the sheetpile will be installed and excavation activities will be conducted. Sheetpile will then be installed, using a crane or other appropriate equipment, to a sufficient depth below the ground water table to allow removal of affected soils within the sheetpile limits.

Following the installation of the sheetpile walls, temporary dewatering wells will be installed within the sheetpile wall. Submersible pumps will begin extracting fluids, which will be piped to TB8, where they will be re-injected to the subsurface via the existing water-handling system. Once ground water levels have dropped approximately 2 feet inside the sheetpile wall, the C7 N separate-phase diluent source area will be excavated concurrently with C7 S using a track-mounted backhoe and/or other equipment, as appropriate.

It is anticipated that there will be a section of clean soils within the sheetpile between the C7 N and C7 S separate-phase diluent source areas, and the excavation will be conducted to salvage as much of this clean soil as possible. Clean overburden soils will be stockpiled at a designated area for later use as backfill. Affected soil will be removed and temporarily stockpiled for eventual treatment, disposal, or reuse.

Significant floating diluent is not anticipated to be encountered in the excavation due to dewatering. However, a skimming device and/or a vacuum truck will be available to remove any floating diluent present in the excavation. Diluent and/or mixtures of diluent and ground water will be stored at TB8 for separation. Diluent will be held for recycling, and ground water will be re-injected to the subsurface via the existing water-handling system.

In accordance with excavation criteria specified in Item I.2 of CAO 98-38, confirmation soil samples will be collected prior to backfilling using a regular grid pattern with 25-foot spacing. The excavation operation will continue until the average diluent concentration is less than or equal to 700 mg/kg. Soil samples will be analyzed on a quick-turnaround basis by a laboratory certified by the State of California.

When confirmation soil samples indicate that the excavation has reached the approved cleanup level, nutrients may be added to the open excavation to enhance biodegradation of residual hydrocarbons in sediments and dissolved-phase hydrocarbons. Following nutrient addition, the excavation will be backfilled with clean soil. The backfill material may consist of soil from previously identified borrow areas throughout the Guadalupe Field, currently stockpiled soil with diluent concentrations below cleanup thresholds, and/or the overburden materials removed prior to encountering subsurface NHISs.

Following backfill operations, sheetpile will be removed, and the C7 N area will be restored concurrently with the C7S area per the agency-approved Site-Specific Restoration Plan (SSRP).

2.4 C7 South East Area (C7 SE)

Description

The C7 SE area is located in the northwestern portion of the Guadalupe Field, southeast of the intersection of the “B” Road and the C7 access road. There are three distinct separate-phase diluent source areas in the C7 SE area: one at the surface to the west, one at the capillary fringe, and one that generally extends from the ground surface to the capillary fringe (see Appendix D).

For discussion purposes, the existing source area segments are referred to as the west surface stain, middle source area, and south source areas, respectively.

Forty-four soil borings, one monitoring well, two geoprobe borings and 15 hand-auger borings have been completed to characterize the C7 SE separate-phase diluent source areas.

There are no existing monitoring wells within the footprint of the C7 SE separate-phase diluent source areas to monitor for the presence of floating diluent. Dissolved TPH concentrations have historically been detected in downgradient monitoring wells C7-7 and B7-1 at concentrations ranging from nondetectable to 2.6 mg/l.

The west surface stain source area covers an area of approximately 150 feet^2. The stain extends from the ground surface to an estimated depth just above the ground water table (approximately 4 feet). The actual depth of this source is not known, as the surface stain is located within a Beach spectacle pod population and assessment activities were minimized to avoid impact to this listed plant species

The middle source area covers an area of approximately 19,000 feet^2, with approximately 14,000 feet^2 greater than 1,000 mg/kg TPH. With the exception of a small area where affected soils extend from the ground surface, the depth to the top of the source area ranges from approximately 10 to 18 feet bgs. The overall source area thickness ranges from approximately 3 to 7 feet. The thickness of the source area more than 1,000 mg/kg TPH is approximately 2 to 4 feet. The source area generally extends from a point just above the current ground water table to as much as 5 feet or more below the current ground water table.

The south source area covers an area of approximately 470 feet^2, with approximately 350 feet^2 greater than 1,000 mg/kg TPH. The source area extends from just below the ground surface to approximately 37 feet bgs. The thickness of the source area more than 1,000 mg/kg TPH is approximately 23 feet, and the source area extends from approximately 17 feet above the current ground water table to approximately 6 feet below the current ground water table.

The ground surface elevation in the vicinity of the C7 SE separate-phase diluent source areas varies from approximately 21 feet to 47 feet above msl. Unocal utilizes the area as a permitted clean soil storage location, with the stockpile footprint located in the eastern portion of the source area.

Approximately 8,653 cy of diluent-affected soil is anticipated from the diluent source area. Excavated materials will be removed and temporarily stockpiled for eventual disposal. Approximately 61,533 cy of vegetated and clean overburden soil would be removed to excavate these soils. The total disturbed area would be 3.6 acres.

Based on surveys conducted in 2004, a large beach spectacle-pod (a listed plant) population, overlies the footprint of the west surface stain area and a small portion of the middle source area. An additional smaller beach spectacle pod population is located south of the potential C7SE excavation area boundary. Due to the variability in plant populations through time, the locations of these populations will be resurveyed as part of the final remedial design process.

No Federal or State jurisdictional wetland areas are located within 500 feet of the C7 SE separate-phase diluent source areas.

Chumash archeological features are expected in the subsurface at this location, as it is located within a designated cultural site and buffer zone, SLO-851.

Remedial Actions

This review evaluates the worst-case scenario, full excavation of the two C7 SE separate-phase diluent source areas using sheetpiling and removal of the surface diluent stain without sheetpile. Full excavation, if conducted, would completely remove the hydrocarbon source, but result in a large disturbance area. Appropriate measures will be taken to ensure that sensitive resources in the area, particularly beach spectacle-pod and cultural resources are protected to the extent possible. However, a significant portion of the beach spectacle-pod populations in this area will be impacted with full excavation.

As required in Item I.2.b. of the CAO, the sheetpile will be installed a minimum of 15 feet outside the 1,000 mg/kg TPH contour, as interpreted using data collected from soil borings. A conceptual design of the proposed limits of excavation and the location of sheetpile is shown in Appendix D.

Prior to remediation activities, any former oil field pipelines remaining in this area will be decommissioned. Due to the depth restrictions for effectively using sheetpile at the Guadalupe Field, a 2:1 slope will be cut down around the excavation limit to an appropriate elevation, and a 15-foot-wide bench will be constructed, from which the sheetpile will be installed and excavation activities will be conducted. Sheetpile will then be installed, using a crane or other appropriate equipment, to a sufficient depth below the ground water table to allow removal of affected soils within the sheetpile limits.

Following the installation of the sheetpile walls, approximately three temporary dewatering wells will be installed within the sheetpile wall of the south separate-phase diluent source area, and approximately six dewatering wells will be installed within the sheetpile wall of the middle separate-phase diluent source area. Fluids extracted from submersible pumps will be piped to TB8, where they will be re-injected to the subsurface via the existing water-handling system. Once ground water levels have dropped approximately 2 feet inside the sheetpile wall, the C7 SE separate-phase diluent source areas will be excavated using a track-mounted backhoe and/or other equipment, as appropriate.

Significant floating diluent is not anticipated to be encountered in the excavation due to dewatering. However, a skimming device and/or a vacuum truck will be available to remove any floating diluent present in the excavation.

Clean overburden soils will be stockpiled at a designated area for later use as backfill. Affected soil will be removed and temporarily stockpiled for eventual treatment, disposal, or reuse.

In accordance with excavation Criteria specified in Item I.2 of CAO 98-38, bottom confirmation soil samples will be collected using a regular grid pattern with a maximum spacing of 25 feet, depending on field conditions. The excavation operation will continue until the average diluent concentration is less than or equal to 700 mg/kg. Soil samples will be analyzed on a quick-turnaround basis by a laboratory certified by the State of California.

When confirmation soil samples indicate that the excavation has reached the approved cleanup level, nutrients may be added to portions of the open excavation located at or below the natural

water table to enhance biodegradation of residual hydrocarbons in sediments and dissolved-phase hydrocarbons. Following nutrient addition, the open excavation will be backfilled with clean soil.

The backfill material may consist of soil from previously identified borrow areas of the Guadalupe Field, currently stockpiled soil with diluent concentrations below cleanup thresholds, and/or the overburden materials removed prior to encountering subsurface NHISs at other locations. Following backfill operations, sheetpile will be removed, and the C7 SE area will be brought back up to a grade similar to the original. After the area is no longer needed for a clean material stockpile site, it will be restored per the agency-approved Site-Specific Restoration Plan (SSRP).

2.5 P13 Area

Description

The P13 area is located in the southeastern portion of the Guadalupe Field, at the end of the P13 access road near the Santa Maria River. Two separate-phase diluent source areas (associated with surface stains) and one crude oil related source area are located on or near the P13 oil well pad (see Appendix D).

For discussion purposes, these source areas will be referred to as the southwest separate-phase diluent source (surface stain) area, the northeast separate-phase diluent source area, and the crude oil source. The southwest separate-phase diluent source area lies just southwest of and adjacent to the access road, near the P13 oil well pad. The northeast separate-phase diluent source area lies just northeast of the former P13 oil well location. The crude oil source lies below the center of the pad where the former P13 oil well was located.

Sixteen soil borings, two monitoring wells, three hand-auger borings, two geophysical transects, and one cone penetrometer test have been completed to characterize the P13 crude oil and separate-phase diluent source areas.

There are no existing monitoring wells within the footprint of the P13 source areas to monitor for the presence of floating product. Dissolved TPH has historically been at concentrations less than 1 mg/l in nearby well P13-1 (approximately 75 feet downgradient of the source areas), in the recently installed well P13-7 (approximately 50 feet south/downgradient of the source areas) and in farther downgradient wells P13-2 and P13-3 (in the vicinity of the former Santa Maria River channel).

The northeast separate-phase diluent source area at P13 covers an area of approximately 250 feet^2. The source area extends from the ground surface to approximately 22.5 feet bgs, just above the current ground water table in the area sampled. The maximum TPH concentration in the northeast separate-phase diluent source area is less than 1,000 mg/kg, which is less than the concentration threshold typically required for remediation at the Guadalupe Field.

The crude oil source at P13 covers an area of approximately 900 feet^2, with approximately 290 feet^2 greater than 1,000 mg/kg TPH. The top of the source area is approximately 23 feet bgs. The overall source area thickness is approximately 6 feet, and the thickness of the source area more than 1,000 mg/kg TPH is approximately 4 feet. The maximum TPH concentration in the crude

oil source is approximately 34,000 mg/kg. The source area is generally located from a point just above the current ground water table to as much as 5 feet or more below the current ground water table.

The southwest separate-phase diluent source (surface stain) area at P13 covers an area of approximately 340 $feet^2$, with approximately 110 $feet^2$ greater than 1,000 mg/kg TPH. The source area extends from the ground surface to approximately 6 feet bgs. The depth of the source area more than 1,000 mg/kg TPH is approximately 2 feet. Based on available data, this source area is interpreted to be more than 18 feet above the current ground water table.

The ground surface elevation in the vicinity of the P13 separate-phase diluent and crude oil source areas is approximately 66 feet above msl. A large, steeply sloped dune lies immediately southwest of the access road near the P13 oil well pad. Approximately 51 cy of hydrocarbon-affected soil above 1,000 mg/kg TPH is present in the P13 area.

Approximately 710 cy of affected soil is anticipated from the source areas. Excavated materials will be removed and temporarily stockpiled for eventual disposal. Approximately 4,190 cy clean overburden soil would be removed to excavate these soils. The total disturbed area would be 0.9 acres.

No listed plant species are located in the source area. No Federal or State jurisdictional wetland areas are located within 300 feet of the diluent source area (DSA). The former Santa Maria River channel is located approximately 500 feet southeast of the P13 area. Across most of the Guadalupe Field, the direction of ground water flow in the DSA is generally toward the west; however, at P13, the local ground water gradient is more southerly, toward the Santa Maria River.

The probability that Chumash archeological features may be present in the subsurface at this location is assumed to be low; the majority of the known archeological features that have been discovered at the Guadalupe Field are closer to the ocean.

Remedial Actions

This review evaluates the worst case scenario. If active remediation of the northeast separate-phase diluent source area is warranted, the worst-case scenario is full excavation of the three source areas.

The surface stain to the southwest will be excavated using sloped sidewalls. The crude oil source and the northeast separate-phase diluent source area will also be excavated using sheetpile, with sloped sidewalls on the inside of the excavation. A conceptual design of the full excavation scenario is shown in Appendix D. Full excavation, if conducted, would completely remove the hydrocarbon source area.

Prior to remediation activities, any former oil field pipelines remaining in this area will be decommissioned. Sheetpile will be installed at approximately the current ground surface elevation using a crane or other appropriate equipment. As required in Item I.2.b. of the CAO, the sheetpile will be installed a minimum of 15 feet outside the 1,000 mg/kg TPH contour, as interpreted using data collected from soil borings. The top of a 2:1 slope will start inside the sheetpiled area and extend approximately 12 feet down the inside of the sheetpile, to the crude

oil source located at the capillary fringe. The northeast separate-phase diluent source area will be removed during excavation of the internal 2:1 slope.

Soils will likely be excavated using a crane with a clamshell bucket and/or other equipment, if appropriate. Clean overburden soils will be stockpiled at a designated area for later use. Affected soil will be removed and stockpiled for later disposal.

It is not anticipated that product recovery or dewatering wells will be required at P13. However, a skimming device and/or a vacuum truck will be available to remove any floating diluent or crude oil present in the excavation. Diluent/oil or mixtures of diluent/oil and ground water will be stored at TB8 for separation. Diluent will be held for recycling, and ground water will be re-injected to the subsurface via the existing water-handling system.

In accordance with excavation criteria specified in Item I.2 of CAO 98-38, confirmation soil samples will be collected prior to backfilling using a regular grid pattern with a maximum of 25-foot spacing. The excavation operation will continue until the average TPH concentration is less than or equal to 700 mg/kg. Soil samples will be analyzed on a quick-turnaround basis by a laboratory certified by the State of California.

When confirmation soil samples indicate that the excavation has reached the approved cleanup level, nutrients may be added to the open excavation (if it is located at or below the natural water table) to enhance biodegradation of residual hydrocarbons in sediments and dissolved-phase hydrocarbons.

Following nutrient addition, the excavation will be backfilled with clean soil. The backfill material may consist of soil from previously identified borrow areas throughout the Guadalupe Field, currently stockpiled soil with diluent concentrations below cleanup thresholds, and/or the overburden materials removed prior to encountering subsurface NHISs. Following backfill operations, sheetpile will be removed, and the P13 well pad will be restored per the agency-approved Site-Specific Restoration Plan (SSRP).

3.0 Summary of Remedial Actions

Below is a summary table (Table 1) of the remedial actions associated with the Corrective Action Plan. Area specifics, such as overburden and NHIS volumes, as well as the estimated schedule to complete each site, are listed in Table 1. Schedules are based on those estimated for similar sized areas in the *Remaining CAO Projects, Excavation Activities Work Plan* dated April 25, 2001 by Unocal.

Table 1 Summary of Remedial Action Considerations

Site and Remedial Action Location	Action	Estimated Schedule, weeks[b]	Vegetated and Clean Over-burden (cy)[b]	NHIS Excavated (cy)	Disturbed Area acres	Depth to Plume Top, Feet (bgs)[b]	Source Area Thickness (feet)	Max. TPH (mg/kg)	In Ground Water Table? (Yes/No)	Sensitive Factors
A6/TB2: – Diluent – Sump	Excavate (Westerly Portion with Sheetpile)	5	1,860	2,500 4,000	2.6	2–9 0-2	12 1–5	15,200 66,300	Yes No	Beach Spectacle pod populations nearby Surf thistle population nearby Westerly portion within snowy plover nesting habitat Southerly portion within 500-foot CRLF boundary Cultural resource area
B5A N – Full excavation	Excavate with Sheetpile	16	70,350	27,750	4.2	3–26	5–8	11 mg/l[a] (1995) <1.0 mg/l[a] (1997)	Yes	Beach spectacle pod population within disturbed area Surf thistle population nearby Westerly portion is within snowy plover nesting habitat Adjacent to a wetland Cultural resource area
C7 N - Full excavation	Excavate with Sheetpile (tie into C7S sheetpile)	9 (includes C7S excavation)	3,410	450	0.4	8	3	9.2 mg/l (1995) 1.8 mg/l (1997)	Yes	Beach spectacle pod populations nearby Surf thistle populations nearby Within 500-foot CRLF boundary Cultural resource area
C7 SE: – West Surface Stain –Middle –East	Excavate with Sheetpile (Surface Stain w/o Sheetpile)	10	61,533	8,653[b]	3.6	0 10–18 0	4 3–7 23	ND to 2.6 mg/l[a]	No[c] Yes Yes	Beach spectacle pod population within excavation area Surf thistle populations nearby Cultural resource area
P13: –SW –NE –Crude	Excavate with Sheetpile (Surface Stain w/o Sheetpile)	3	4,190	710[b]	0.9	0 0 23	6 23 6	<1.0mg/l[a] – 34,000	No No Yes	500-foot CRLF boundary (Santa Maria River channel)

Notes: [a] Downgradient concentrations; [b] bgs – below ground surface; [c] Actual depth unknown due to limited access to conduct assessment.

4.0 Substantial Conformity Analysis

This section discusses the impacts associated with excavating these CAO sites, and determines if the excavations are in substantial conformity with the Original EIR and CDP/DP D890558D issued by the County of San Luis Obispo for the remediation and abandonment activities at the Guadalupe Field.

The first step in the substantial conformity analysis is to assess the impacts associated with the excavations. The second step is to determine if the identified impacts were addressed in the Original EIR and that the severity of the impact has not increased. The third step is to determine if the conditions in CDP/DP D890558D are adequate to mitigate the identified impacts.

A review of the impacts identified in the Original EIR for these sites showed that impacts were identified in the following issue areas.

- Surficial Geology and Coastal Geomorphology,
- Surface and Ground Water Quality,
- Onshore Biological Resources,
- Air Quality,
- Noise, and
- Visual Resources.

Each of these issue areas are discussed below.

4.1 Surficial Geology and Coastal Geomorphology

This section provides a substantial conformance review for proposed cleanup activities of contaminated soils at five corrective action sites within the Field: A6/TB2; B5A North (B5A N); C7 North (C7 N; C7 Southeast (C7 SE); and P13. The existing contaminant distribution patterns at these five areas, along with Corrective Action Plan options, are discussed in LFR (2004) and summarized in Section 2 of this Appendix. The Regulatory Setting, Significance Criteria and Impact Assessment Methodology are discussed in the Original EIR, Chapter 5.1.

The remainder of this section discusses the surficial geology and coastal geomorphology impacts identified for five corrective action sites, and associated substantial conformity analysis. Each impact starts with an impact summary box that provides the impact number, a description of the impact, and the related impact number from the Original EIR. The impact summary box also indicates whether or not the impact is in substantial conformity with the Original EIR and CDP/DP D890558D. This is followed by an impact discussion that details the basis for the impact, and a summary of the substantial conformity analysis for the impact.

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
GEO.G.1	Project activities could result in increased exposure to hazards associated with seismic activity	5.1-8	Yes	Yes

Impact Discussion

Excavation work would occur at all five sites. Natural and cut slopes associated with excavation activities would be subject to failure as a result of seismically induced ground shaking. Failure on slopes less than 20 degrees would likely be local and minimal. Failure on slopes greater than 20 degrees could result in more substantial slides, and would increase risk to equipment and personnel. Failure on natural slopes adjacent to or associated with project activities would also be susceptible to seismically induced ground shaking, and failure potential would be the same as slopes within excavation areas and therefore would likely be local and minimal.

The A6/TB2 and B5A excavations are west of the B Road and may be subject to CDP/DP D890558D Condition F.27 in the event of a tsunami warning. No other proposed sites are located in beach areas or would be subject to tsunami activity. Liquefaction hazards were reviewed but are not expected to be a significant hazard for soils at the Field. CDP County Condition F25 requires Unocal to design all sheetpile walls with appropriate safety factors to account for earth pressures, hydraulic head, earthquake loading, equipment loading, and other design features, as appropriate. Based on compliance with existing laws and regulations, and standard engineering practices, potential project impacts would be *less than significant* (Class III), which is the same as from the Original EIR.

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. Condition F25 in CDP/DP D890558D serves to reduce the severity of this insignificant impact.

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
GEO.G.2	Landslide or slope failure could result from project equipment and/or activities	5.1-6	Yes	Yes

Impact Discussion

Heavy construction equipment and ground vibrations associated with excavation activities (sheet-pile driving) could trigger local surface landslides on slope faces. Impacts would most likely occur at the crest or near the foot of active unvegetated slopes greater than 20 degrees. More substantial failure could occur within unsupported excavation pits on cut slope faces exceeding 20 degrees. The potential for slides would increase on more shallow and vegetated slopes. Specifically, dune excavation at the B5A site has the potential to undercut existing steep slope faces. Adjacent steep slopes near P13 would also be susceptible to failure; however, this area is generally vegetated and excavation would occur on flat disturbed areas.

Surface slope failure would most likely be minimal and localized; however, sudden slides of large amounts of dune sand could bury downslope vegetation and habitats and would increase risk to equipment and personnel. Based on compliance with existing laws and regulations, and standard engineering practices, potential project impacts would be *less than significant* (Class III), which is the same as from the Original EIR.

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. Condition F25 in CDP/DP D890558D serves to reduce the severity of this insignificant impact.

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
GEO.G.3	Excavations may modify erosion/sedimentation patterns as a result of loss of topsoil and vegetation.	5.1-2 5.1-3	Yes	Yes

Impact Discussion

Excavations at the five sites would result in the loss of native topsoil and the associated vegetation at these sites. Contaminated material generally occurs at depth below clean, native topsoil which will be removed as part of the project. Loss of this vegetation could lead to modified erosion /sedimentation patterns at the sites. Open exposed unvegetated sites could be eroded by wind processes, and sediments could be distributed to other areas, thus adversely affecting sedimentation. CDP County Condition F64.c requires Unocal to salvage for reuse all topsoil where soil and/or vegetation are to be removed. In addition, Unocal is required to develop and implement restoration plans at each of the sites (Condition F.65). Based on compliance with existing laws and regulations, and standard engineering practices, potential project impacts would be *less than significant* (Class III). On a site wide basis the Original EIR found this impact to be *significant but mitigable* (Class II).

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. Conditions F9, F63, F64, and F65 in CDP/DP D890558D serve to reduce the severity of this insignificant impact.

4.2 Surface and Ground Water Quality

This section provides a substantial conformance review for proposed cleanup activities of contaminated soils at five corrective action sites within the Field: A6/TB2; B5A North (B5A N); C7 North (C7 N; C7 Southeast (C7 SE); and P13. The existing contaminant distribution patterns at these five areas, along with Corrective Action Plan options, are discussed in LFR (2004) and summarized in Section 2 of this Appendix. The Regulatory Setting, Significance Criteria, and Impact Assessment Methodology are discussed in the Original EIR, Chapter 5.2.

The reminder of this section discusses the surface and groundwater impacts identified for five corrective action sites, and associated substantial conformity analysis. Each impact starts with an impact summary box that provides the impact number, a description of the impact, and the related impact number from the Original EIR. The impact summary box also indicates whether or not the impact is in substantial conformity with the Original EIR and CDP/DP D890558D. This is followed by an impact discussion that details the basis for the impact, and a summary of the substantial conformity analysis for the impact.

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
W.G.1	Remedial activities can result in inadvertent hydrocarbon spills.	5.2-4	Yes	Yes

Impact Discussion

Potential impacts to water resources could occur in the event of a spill during refueling of construction equipment. These spills, although relatively small, are common at construction sites. Prevention and response measures have been detailed in an oil and fuel spill contingency plan for the Guadalupe Field. In addition, significant quantities of contaminated ground water and recovered product would be stored and transported throughout the site. Spillage of these materials could directly impact surface or ground water quality. However, the oil and fuel spill contingency plan that exists at the Guadalupe Field would make this impact *less than significant* (Class III). On a site-wide basis, the Original EIR found this impact to be *significant but mitigable* (Class II).

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. Condition F38 in CDP/DP D890558D serves to reduce the severity of this insignificant impact.

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
W.G.2	Installation of sheetpile walls can alter ground water flow directions towards presently uncontaminated areas.	5.2-6	Yes	Yes

Impact Discussion

Natural ground water flows through the contaminated soils from east to west throughout most of the Field. Sheetpile walls are proposed to be installed at a number of these CAO excavation sites. Unocal has proposed to remove the walls once excavation is complete. However, while in place they would act as semi-impermeable barriers that will impede, but not eliminate, the movement of separate-phase diluent or ground water down gradient. This could result in the progressive re-contamination of excavated areas with separate-phase diluent.

In addition, the use of sheetpile walls may create ground water mounding upgradient of the walls. This would potentially divert the direction of ground water flow and may increase a downward vertical gradient. Given that all of the sheet pile walls that would be installed for these

excavations would be temporary, the impact is considered *less than significant* (Class III). On a site-wide basis, the Original EIR found this impact to be *significant* (Class I). The Class I impact in the Original EIR was driven by the fact that a number of the proposed sheetpile walls would have been in place for a number of years.

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. This impact was found to be Class I in the Original EIR, but the proposed mitigation measures have been incorporated into the project as part of the CDP/DP conditions, and the Class I was for sheet pile walls that would remain in place for a long period of time. Conditions F32 and F42, in CDP/DP D890558D, serve to reduce the severity of this insignificant impact.

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
W.G.3	Deep-well injection of extracted water/diluent mixtures could contaminate aquifer.	5.2-12	Yes	Yes

Impact Discussion

With these additional excavation sites, liquids treated by gravity separation generated by remedial activities would be pumped down EPA-permitted injection wells into the oil-bearing formation approximately 3,000 feet underground. Liquids generated by pumping throughout the site have been deep well injected under the U.S. EPA underground injection control program as Class I fluids in this manner. Unocal currently has permits from the U.S. EPA to do this on a regular basis for four wells on the site.

Breaks or leaking seals in the injection wells and/or its delivery system could result in contaminated ground water being released. The releases could occur to the dune sand aquifer, causing further contamination or re-contamination of remediated areas, or to the regional aquifer. The regional aquifer is used for agricultural water supply. For the past six years, Unocal has been injecting liquids treated by gravity separation into deep wells. To date, there has been no indication of any contamination of the regional aquifer. All of the injection activities are conducted in conformance with the U.S. EPA and CDP/DP permit conditions. With these mitigation measures in place, the impact is considered *less than significant* (Class III). On a site-wide basis, the Original EIR found this impact to be *significant* (Class I). The Class I impact in the Original EIR was driven by the fact that the field had not been practicing deep well injection at the site, and there was not proven history as effectiveness of the injection system.

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. This impact was found to be Class I in the 1998 Guadalupe EIR, but the proposed mitigation measures have been incorporated into the project as part of the U.S. EPA and CDP/DP conditions, and the volume of water to be injected

from these excavations is small relative to the amount of water that has already be injected. Condition F13 in CDP/DP D890558D serves to reduce the severity of this insignificant impact.

4.3 Onshore Biological Resources

This section provides a substantial conformance review for proposed cleanup activities of contaminated soils at five corrective action sites within the Field: A6/TB2; B5A North (B5A N); C7 North (C7 N; C7 Southeast (C7 SE); and P13. The existing contaminant distribution patterns at these five areas, along with Corrective Action Plan options, are discussed in LFR (2004) and summarized in Section 2 of this Appendix. The Regulatory Setting, Significance Criteria, and Impact Assessment Methodology are discussed in the Original EIR, Chapter 5.3.

The first part of this section presents an updated description of the vegetation and wildlife at these excavation sites (A6/TB2, B5A, C7 North, C7 Southeast, and P13). The section focuses on the areas affected by the specific activities addressed in the site descriptions in Section 2.0 of this Appendix. Figure 1 in Section 2.0 shows the five project areas and distribution of habitats near the proposed remediation activities. The Original EIR includes the descriptions of all biological resources known to be present or expected on the former Guadalupe Oil Field (see Section 5.3). Table 2, below, is a list of sensitive species potentially affected by the proposed excavations. Appendix B provides a comprehensive list of scientific and common names of the plants discussed in this section.

Site Specific Project Areas

This section provides a discussion of the biological resources at each of the excavations sites covered by the substantial conformity review.

A6/TB2 Area

The A6/Tank Battery 2 (A6/TB2) site (Figure 2) is located in the southwestern portion of the Field along the A road, between the former A6 and A5A/Y6 well pads (Figure 2). Excavation at this site is expected to occur mostly in and along the east side of the A Road. The biological resources that may be affected by full excavation of the A6/Tank Battery 2 area include botanical and wildlife resources associated with stabilized backdune and habitats transitional between foredune and backdune habitats. The vegetation at the site includes dune scrub, transitional and some disturbed areas (such as roadside and areas with oil layers). For a description of dune scrub see Section 5.3 of the FSEIR. Vegetation in the areas that are transitional between foredunes and backdunes exhibit a mix of pioneer dune plant species found on the coast, such as beachbur (Ambrosia chamissonis), sea rocket (*Cakile maritima*), dune saltbush (*Atriplex leucophylla*), yellow sand-verbena (*Abronia latifolia*), and beach evening primrose (*Camissonia chairanthifolia*) as well as scattered shrubs commonly found in the backdunes such as mock heather (*Ericameria ericoides)* and Blochman's groundsel (*Senecio blochmaniae)*. Non-native iceplant (*Carpobrotus spp*.) is also common in the project area. The project site is located approximately1000 feet north of the Marsh Ponds (Pete's Ponds). There is a dune swale wetland (identified as B2W2), which has been delineated as a Federal and State jurisdictional wetland area approximately 450 feet south of A6/TB2 project area.

The wetland habitat south of the A6/TB2 site (Pete's Ponds and the B2W2 Wetland) is part of a series of marsh ponds associated with the Santa Maria Floodplain that support large stands of

emergent marsh vegetation and is surrounded by low-growing wetland vegetation typically found in the dune swale habitats within the Guadalupe Oil Field. The bulrush-dominated marshes and ponds provide valuable habitat for several species of amphibians, reptiles and birds. These wetlands contain deep water and vegetative cover even during drought conditions and act as a refuge for these species during times when other wetlands on the Guadalupe Field are dry.

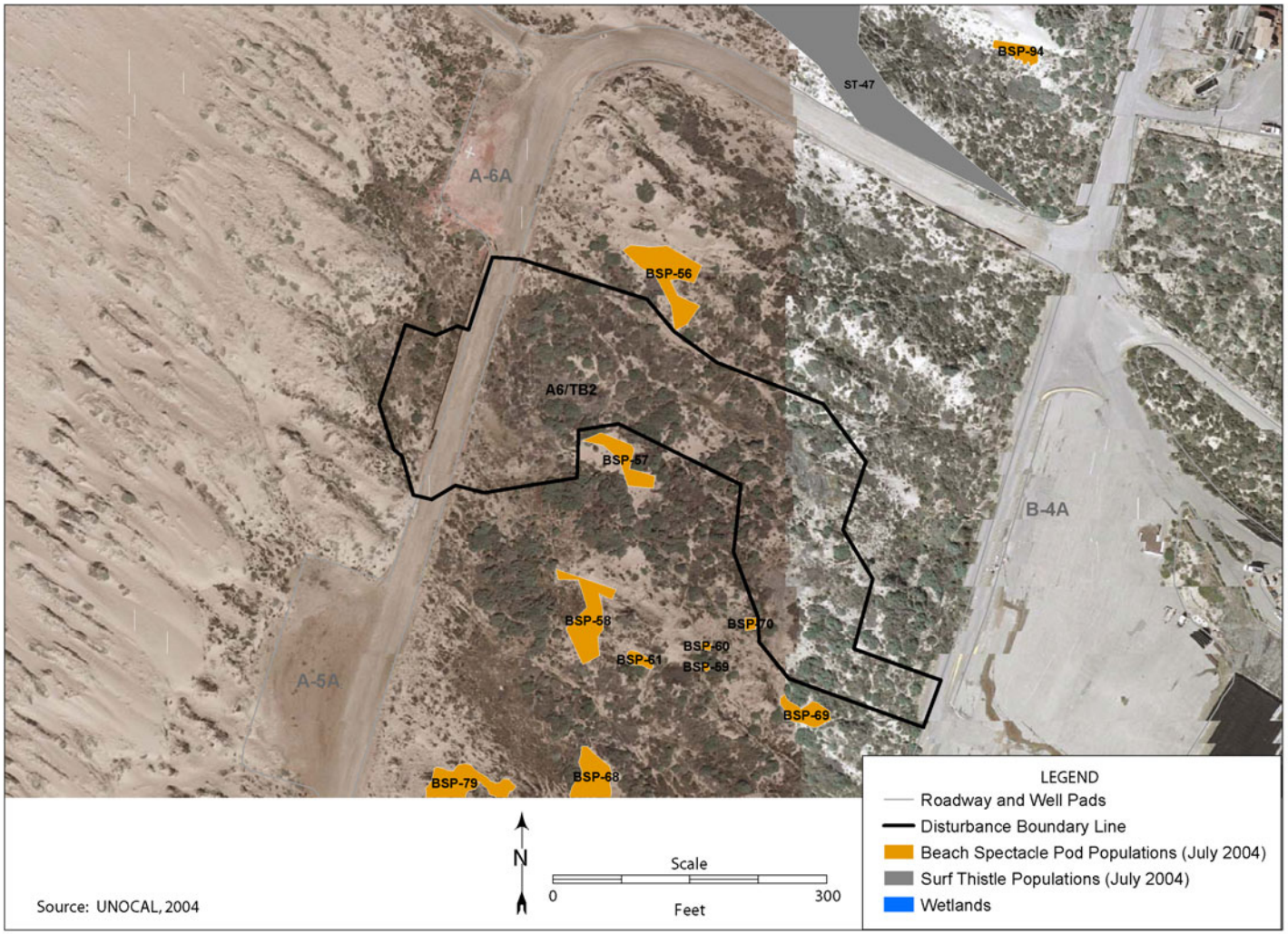
Southwestern pond turtles have been recorded in these deep pools (Scott 1996). Western terrestrial, California red-sided, and two-striped garter snakes forage along the banks. Western toads, Pacific tree frogs and California red-legged frogs all breed in this habitat (Scott 1996), and breeding activity of western spadefoot toads has been identified here (SAIC field notes, unpublished data). Because these pools persist throughout the year, they provide valuable summer habitat for these amphibians and other wildlife species as well.

Table 2 Sensitive Species Potentially Affected by the Proposed Corrective Actions

Common Name	Scientific Name	Status Fed/State/Other
Federally and State-Listed Species		
Wildlife		
Western snowy plover	*Charadrius alexandrinus*	FT/CSC
California red-legged frog	*Rana aurora draytonii*	T/CSC
Plants		
Surf thistle	*Cirsium rhothophilum*	FSC/T/CNPS 1B
Beach spectacle-pod	*Dithyrea maritima*	FSC/T/CNPS 1B
Other Sensitive Species		
Wildlife		
Two-striped garter snake	*Thamnophis hammondii*	—/CSC
Western spadefoot toad	*Spea (=Scaphiopus) hammondii*	-/CSC
Silvery legless lizard	Anniella pulchra pulchra	—/CSC
California horned lizard	Phrynosoma coronatum frontale	—/CSC
Loggerhead shrike	Lanius ludovicianus	—/CSC
Plants		
Blochman's leafy daisy	*Erigeron blochmaniae*	—/—/CNPS 1B
Dune mint	*Monardella crispa*	—/—/CNPS 1B
Nuttall's milk-vetch	*Astragalus nuttallii* var. *nuttallii*	—/— /CNPS 4
Suffrutescent wallflower	*Erysimum insulare ssp. suffrutescens*	—/— /CNPS 4
Dunedelion	*Malacothrix incana*	—/— /CNPS 4
California spineflower	*Mucronea californica*	—/— /CNPS 4
Blochman's groundsel	*Senecio blochmaniae*	—/— /CNPS 4

Notes:
Federal Status (U. S. Fish and Wildlife Service):
E Endangered. In danger of extinction throughout all or a significant portion of its range.
T Threatened. Likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.
FSC Federal Species of Concern (USFWS 2004)
State Status (California Department of Fish and Game):
E State listed as Endangered
T State listed as Threatened
CSC California Species of Special Concern
California Native Plant Society List (CNPS) List:
1B Plants considered rare or endangered in California and elsewhere
4 Plants of limited distribution – a watch list

Figure 2 A6/TB2 Excavation Area



Beach spectacle-pod (*Dithyrea maritima*), a State-listed threatened species and Federal species of concern, is present in the vicinity (Figure 2) and may potentially occur within the proposed project area.

Unocal surveys conducted in 2003 recorded colonies of beach spectacle-pod approximately 25 feet north and 35 feet south of the proposed disturbance area. The aerial extent of the beach spectacle-pod colonies may change from year to year (expand or contract), depending on environmental conditions, and there is potential for individuals of this species to occur within the disturbance area. Blochman's leafy daisy (*Erigeron blochmaniae*) and Blochman's groundsel (see Table 2 for status of non-listed species) are among the more common shrubs in the dune scrub habitat within and adjacent to the project area.

Dunedelion (*Malacothrix incana*) is a common component of the vegetated foredunes and dune scrub transition habitats in this area and is present in the dune scrub habitat adjacent to the A Road.

The foredune and disturbed habitat near the A6/TB2 site has regularly supported western snowy plover (a federally listed threatened species) nesting in recent years and the site is located within designated western snowy plover critical habitat (USFWS 2003).

Due to the A6/TB2's proximity to the marsh ponds and other wetland habitat known to support California red-legged frogs (a federally listed threatened species), this species may be present in the project area or surrounding habitat during its overland migration period (which is concentrated during the rainy season). California red-legged frogs have historically been abundant in the marsh ponds and have been observed in the B2W2 Wetland during wet years. This species uses the deep-water habitat for foraging, breeding, and summer refuge habitat.

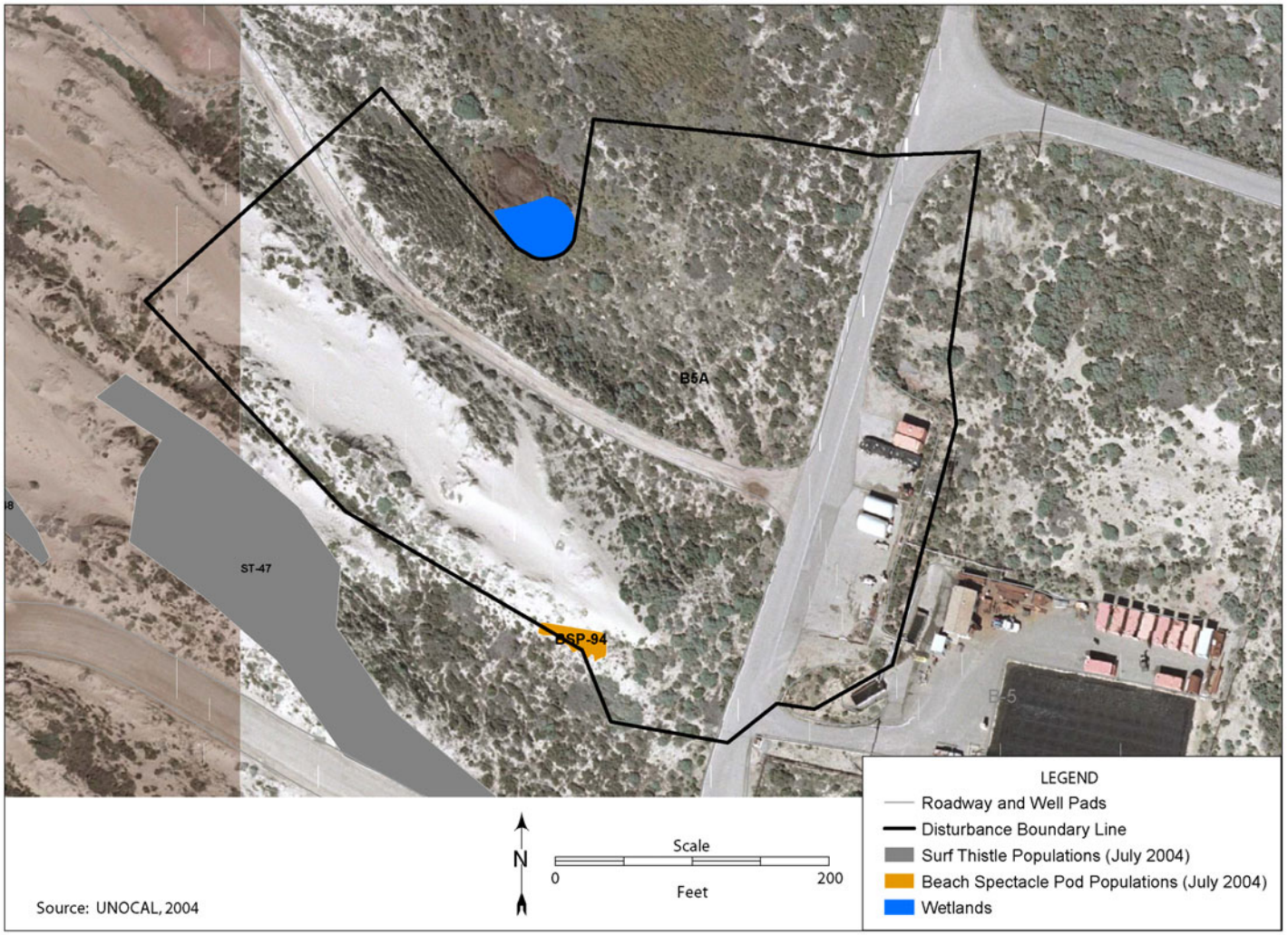
The dune scrub habitat supports numerous wildlife species including California Species of Special Concern (CSC): California legless lizard and coast horned lizard.

B5A North Area

The B5A North (B5A) site is located at the intersection of the B Road with the access road to the 8X pad, predominantly west of the B Road, and just south of the intersection of the B-road and the Main Road (Figure 1). The biological resources that may be affected at the B5A north site include botanical and wildlife resources associated with backdune and dune swale habitats (Figure 3).

The vegetation at this location includes dune scrub, transitional between foredune and stabilized backdune, disturbed areas including the road and roadside vegetation, and "drier" dune swale habitat in areas of low elevation immediately northwest of the site. The transition habitat at this location consists of very high dunes along both sides of the 8X road with scattered native shrubs and low-growing foredune species and non-native iceplant common. Dominant plant species include mock heather, seacliff buckwheat (*Eriogonum parvifolium*), dune lupine (*Lupinus chamissonis*), rambling phacelia (*Phacelia ramosissima*), and beachbur. Dune scrub habitat also occurs in the lower portions of the dunes, along the roads and interspersed with the swale habitat. The swale habitat, a Federal and State jurisdictional wetland (identified as B6W1), is immediately northwest of the site boundary. The dune swale supports herbaceous wetland habitat that may include scattered shrubs, especially on the slopes that transition to upland.

Figure 3 B-5A Excavation Area (Full Excavation)



The extent of the wetland habitat is highly variable depending on the rainfall and height of the water table. This site has not supported open water habitat in recent history.

Colonies of Surf thistle (*Cirsium rhothophilum*) and beach spectacle-pod, both State-listed threatened species and Federal species of concern, are present in the dunes along the 8X access road, just outside of the boundaries of disturbance (Figure 3). Blochman's groundsel and Blochman's leafy daisy (Table 2) are among the more common shrubs in the dune scrub habitat within and adjacent to the project area. Dune mint (*Monardella crispa*) and suffrutescent wallflower (*Erysimum insulare ssp. suffrutescens)* may also be present in the project area as a few scattered individuals. Dunedelion, CNPS List 4, is also expected to occur in the transition habitat at this location.

There are no federally or State listed wildlife species expected to be present within the boundaries of the B5A site. However, the coastal dune scrub habitat supports numerous wildlife species including CSC species, coast horned lizard and California legless lizard.

C7 North Area

The C7 North (C7 N) site is located northeast of the intersection of the B Road and the access road to the C7 pad (Figure 1). The biological resources that may be affected by activities in the C7 North area include botanical and wildlife resources associated with backdune habitat (Figure 4). This area is south of the C8 site, which is currently in the process of revegetation.

The vegetation at this location is dune scrub with a mix of common shrubs and low growing perennial species found in transition habitats, including dune lupine, mock heather, and deer weed (*Lotus scoparius*). Non-native iceplant and veldt grass (*Ehrhata calycina*) are also present in the dune scrub at this location. Dune rush (*Juncus lesueurii*), common in herbaceous swale habitats, is present along the access route to the proposed excavation site but is within an understory of upland shrubs. A dune swale wetland, meeting Federal and State jurisdictional wetland definitions, is located approximately 250 feet north of the C7 North site.

No federally or State-listed plant species occur within the disturbance areas (Figure 4). Other non-listed sensitive plant species present at this site include Blochman's leafy daisy and suffrutescent wallflower, which are common shrubs in the dune scrub habitat within and adjacent to the project area.

There are no federally or State-listed wildlife species expected to be present within the boundaries of the C7 North site. However, the coastal dune scrub habitat supports numerous wildlife species including CSC species, coast horned lizard, and California legless lizard.

C7 Southeast Area

The C7 Southeast (C7 SE) site is located southeast of the intersection of the B Road and the access road to the C7 pad (Figure 1). The biological resources that may be affected by activities in the C7 north area include botanical and wildlife resources associated with backdunes, primarily open sand habitat.

This site is predominantly dune scrub and open sand (Figure 5). The dune scrub habitat is dominated by mock heather with dune lupine and Blochman's groundsel common.

Figure 4 C-7 North Excavation Area

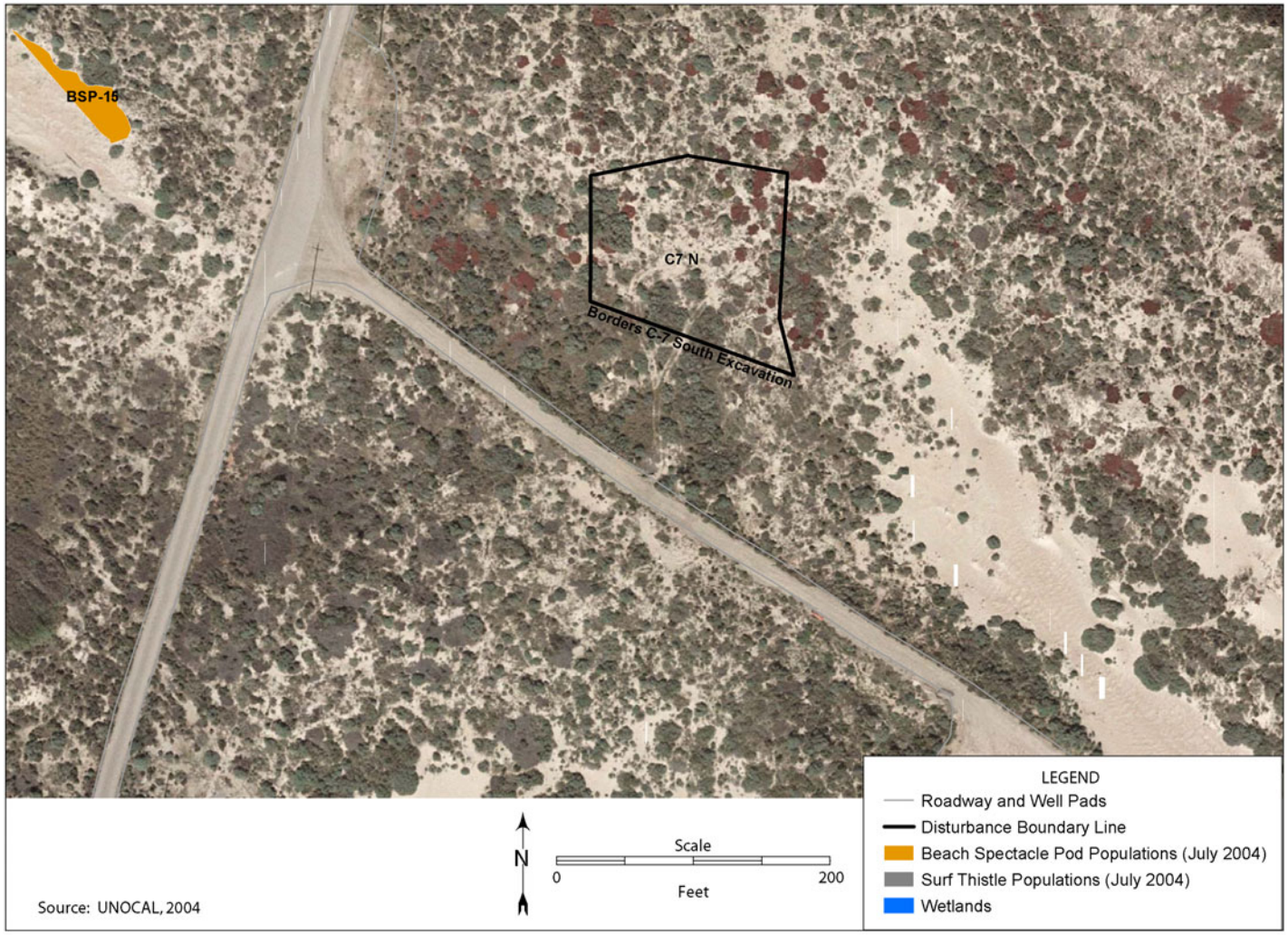
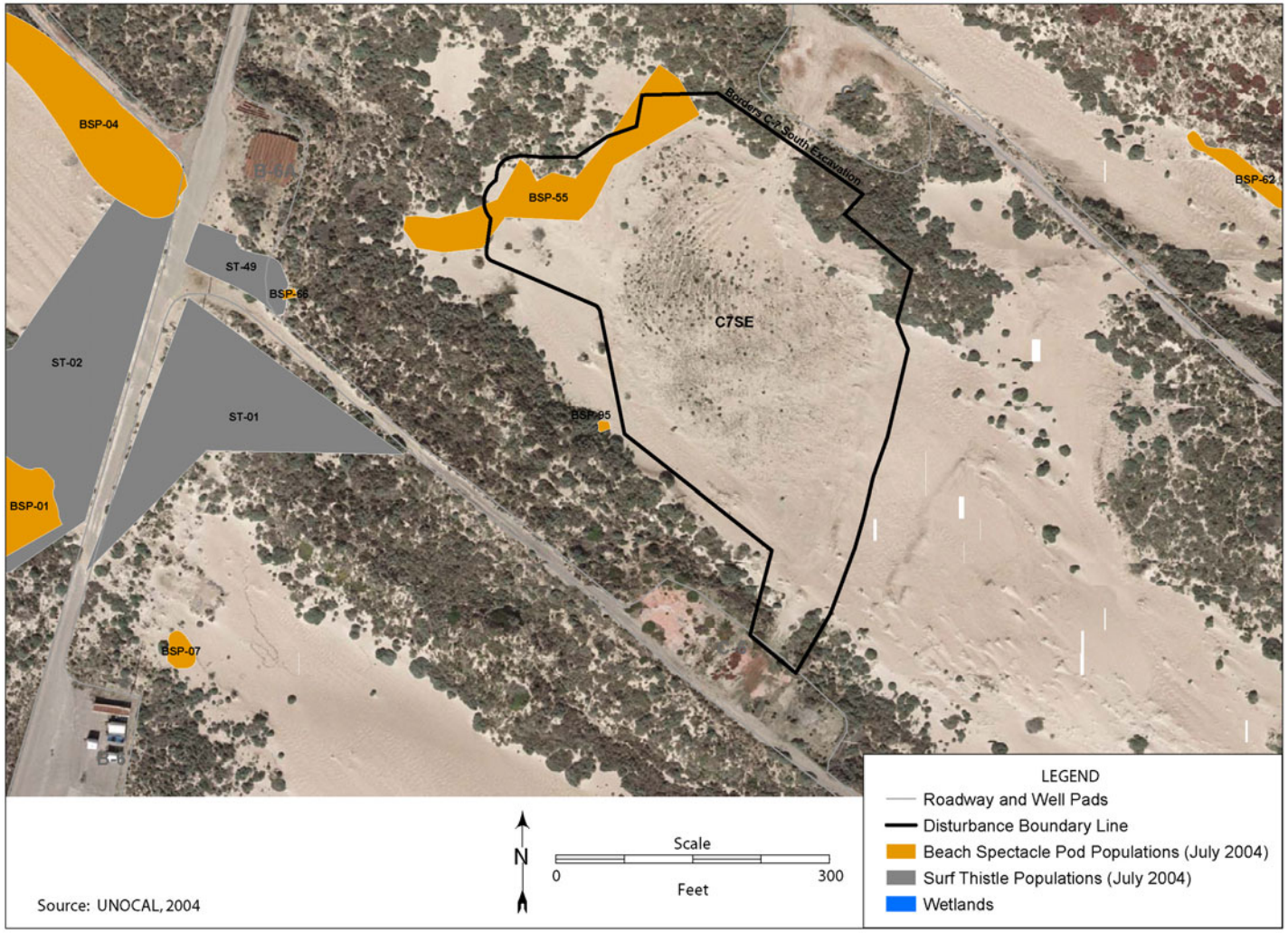


Figure 5 C-7 Southeast Excavation Area



Most of the site is located within open sand habitat, part of which was used as a temporary stockpile site for clean topsoil during previous excavations (at the C8 North and South excavations). Within the area previously used for the stockpile, both native and non-native plant species have become established including sea rocket, beachbur, yellow sand-verbena, and beach evening primrose (a common pioneer species).

Beach spectacle-pod is present in the C7 Southeast project vicinity (Figure 5) and within the proposed project area. Surf thistle is present along the B Road (approximately 200 feet from the project site), but is not likely to be affected by project activities. Blochman's leafy daisy is also present in the dune scrub habitat within and adjacent to the project area. Scattered individuals of dune mint, dunedelion and Blochman's groundsel have become established in portions of the area formerly used as a stockpile and dune mint is common along the edges of the open sand at this location.

P13 Area

The P13 site is located in the southeast area of the oil field and surrounds the P13 pad (Figure 1). The former Santa Maria River channel is approximately 300 feet south of this site. The biological resources that may be affected by activities in the P13 area include botanical and wildlife resources associated with backdune habitat.

The vegetation at this location includes dune scrub, disturbed dune scrub (associated with the P13 pad and road), and degraded dune scrub (Figure 6). The dune scrub habitat is dominated by mock heather with dune lupine and deer weed common. Non-native iceplant and veldt grass are also common in the dune scrub at this location. The former Santa Maria Rive channel (a Federal or State jurisdictional wetland area) is located approximately 300 feet southeast of this site.

No federally or State-listed plant species occur in the vicinity of the P13 site. Other sensitive plant species such as Blochman's groundsel, Nuttall's milk vetch (*Astragalus nuttallii* var. *nuttallii)*, and suffrutescent wallflower (Table 2) are all common in the dune scrub habitat within and adjacent to the project area.

Rare, Threatened, or Endangered Species

Table 2 includes a list of rare threatened and endangered plant species as well as other sensitive plant species that could potentially be affected by activities at the proposed excavation sites. Other unlisted sensitive plant species are discussed above in the habitat descriptions for each of the sites. Beach spectacle-pod and Surf thistle are both State-listed threatened species and Federal Species of Concern that occur within or adjacent to the proposed excavation sites and are described below.

Surf Thistle (*Cirsium rhothophilum*)

Surf thistle was listed in 1990 by the CDFG as threatened and is also listed as a Federal Species of Concern (USFWS 2004) and included on CNPS List 1B. Although State and Federal resource protection agencies, as well as the CNPS, recognize the sensitivity of this species, critical habitat has neither been proposed nor designated. Surf thistle is a short lived perennial, with white felt-like foliage and whitish flowers, flowering from May to September. Surf thistle is sparsely scattered on crests and in valleys of stabilized, and sometimes active foredunes along the ocean at Point Conception, Point Arguello, Surf Beach, Casmalia Beach, at the mouth of the Santa Maria River, the Guadalupe Dunes, Nipomo Mesa, and Pismo Beach (Smith 1998).

Figure 6 P13 Excavation Area

Associated species include beach spectacle-pod (*Dithyrea maritime*, discussed below), sand-verbena (*Abronia* spp.), sea rocket (*Cakile maritima*), and beachbur (*Ambrosia chamissonis*). Suitable habitat for Surf thistle is present and this species is known to occur in the Field in proximity to the B5A and A6/TB6 sites. Populations are threatened by off-road vehicles, human and animal foot traffic, and competition from non-native plants including iceplant (CNPS 2001).

Beach Spectacle-Pod (*Dithyrea maritima*)

Beach spectacle-pod was listed in 1990 by the CDFG as threatened, is also listed as a Federal Species of Concern (USFWS 2004), and is included on the CNPS List 1B. This species is a perennial with fruit that looks like a pair of spectacles. The leaves are fleshy with white to cream colored (sometimes purple) flowers, and blooms from April to July (Smith 1998). Although State and Federal resource protection agencies, as well as the CNPS recognize the sensitivity of this species, critical habitat has neither been proposed nor designated. Beach spectacle-pod is found on coastal dunes at Surf beach, Purisima Point to west of Casmalia, Guadalupe Dunes, Point Sal, Oso Flaco Lake, and Morro Bay (Smith 1998), and often in association with Surf thistle. Other species associated with beach spectacle-pod include sea rocket (*Cakile maritima*), beachbur (*Ambrosia chamissonis*), dune mint (*Monardella crispa*), and sand-verbena (*Abronia* spp.). Suitable habitat for beach spectacle-pod is present and it is known to occur in the Field in proximity to the C7 South, C7 North, B5A, and A6/TB6 sites. In various portions of its range populations are threatened by off-road vehicles, human and animal foot traffic, and competition from non-native plants including iceplant (CNPS 2004).

Both Surf thistle and beach spectacle-pod are included in an annual census conducted by Unocal botanists to determine the numbers and distribution for listed sensitive plant species within the Field.

California red-legged Frog (Rana aurora draytonii)

The California red-legged frog was proposed for listing as endangered on February 2, 1994 (59 FR 4888). The species was listed as threatened on May 23, 1996, and the final rule became effective on June 24, 1996 (USFWS 1996). Adult red-legged frogs prefer dense, shrubby or emergent riparian vegetation closely associated with deep (more than 2.3 feet in depth), still or slowly moving water. Well-vegetated terrestrial areas near the aquatic habitat may provide important sheltering habitat during winter, foraging areas, and dispersal corridors. The frogs disperse from breeding habitat to forage and seek resting habitat. They take cover in small mammal burrows and moist leaf litter (up to 100 feet from water) in dense vegetation and will use other cover sites when traveling overland. Adults can typically be found up to several hundred feet from aquatic habitat and at least one individual has been recorded on the Field to move over 1.5 miles to reach known breeding habitat. After winter rains begin, red-legged frogs move away from summer habitat, primarily at night, and can travel one mile from those habitats. Juveniles may also disperse locally, shortly after metamorphosis in July-September and away from their natal habitats during warm rain events. On the Field, this species has regularly been observed in the entire wetland habitat associated with Pete's Ponds along the Santa Maria River floodplain.

Western snowy plover (Charadrius alexandrinus)
The western snowy plover is federally listed as threatened and is a California Species of Special Concern. This species nests at isolated sandy beaches along the California coast. It is a year-round resident along the beaches bordering the Field. Numerous pairs have been recorded in recent years as breeding in foredunes near the project area. This species has also been observed on numerous occasions foraging in large numbers (over 100 individuals in winter) along the shoreline and Santa Maria River estuary. The nest sites at Guadalupe range from the flat areas of foredunes to gravelly areas such as abandoned drilling pads or roads within the foredunes. A few nests may also occur farther inland in the less vegetated parts of dunes, although this is generally considered marginal habitat.

Impact/Substantial Conformity Discussion
The reminder of this section discusses the biological resource impacts identified for five corrective action sites, and associated substantial conformity analysis. Each impact starts with an impact summary box that provides the impact number, a description of the impact, and the related impact number from the Original EIR. The impact summary box also indicates whether or not the impact is in substantial conformity with the Original EIR and CDP/DP D890558D. This is followed by an impact discussion that details the basis for the impact, and a summary of the substantial conformity analysis for the impact.

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
BIO.G.1	Excavation activities at the A6/TB2, B5A, C7 N, C7 SE, and P13 sites will result in the removal or degradation of vegetation and wildlife habitat and removal of sensitive plant species.	OBV-2	Yes	Yes

Impact Discussion
Excavation activities associated with the removal of contamination will result in the removal of 15.3 acres of vegetation and wildlife habitat as follows:

- 2.6 acres at the A6/TB2 site.
- 4.2 acres at the B5A North site.
- 0.4 acre at the C7 North site.
- 7.2 acre at the C7SE site.
- 0.9 acre at the P13 site.

The affected habitats are primarily backdune scrub and habitat transitional between backdune and foredune. Previous remediation projects have resulted in disturbance of about 28.8 acres, or 1.4 percent, of the total dune scrub vegetation on the Field. Most of the previously disturbed areas are currently undergoing active revegetation. These previously disturbed areas include remediation sites and sites disturbed by pipeline removal or other remediation and abandonment activities. Most of the pipeline removal and abandonment activities have been completed; however, not all of the sites originally proposed for excavation in the Original EIR have undergone remediation. The Original EIR estimated that approximately 20 acres of backdune habitat would be disturbed by proposed remediation activities. For the purpose of this analysis, it is estimated that a maximum total of 48.8 acres (28.8 acres previously disturbed, plus the

additional 20 acres yet to be disturbed as described in the Original EIR) of backdune habitat would be disturbed during remediation activities. This amount of disturbance represents approximately two percent of the dune scrub and transition habitat on the Field.

Most of the dunescrub habitat that had been previously disturbed is now undergoing active revegetation. While the revegetation has not been completed, dune scrub species, including non-listed sensitive plant species appear to be successfully establishing and wildlife are utilizing these revegetated areas. The additional disturbance, as currently proposed, represents a small portion of the overall dune scrub habitat on the site. In addition, once remediation is complete, these sites would be incorporated into the approved Habitat Restoration, Revegetation, and Monitoring Plan. Therefore, impacts to dune scrub would be temporary, the length of time dependent upon completion of revegetation (estimated 5 to 10 years).

All of the proposed project sites support habitat for sensitive plant species. Impacts to Federal or State-listed plant species are discussed below under Impact BIO.G.3. Blochman's groundsel, suffrutescent wallflower, and Nuttall's milk-vetch, all CNPS List 4 species are fairly widespread and common in the dune scrub on the project site. Blochman's leafy daisy and dune mint, CNPS List 1B, are not as widespread but are found in the coastal dune scrub habitats and are present or expected to occur in several of the project sites. Habitat for California spineflower (*Mucronea californica*), an annual species included on the CNPS List 4, is present in the vicinity of the B5A and C7 sites. Most of these species are incorporated into Unocal's Habitat Restoration, Revegetation, and Monitoring Plan for revegetation in dune scrub habitats and are planted at revegetation sites either by seed or as container plants. Successful establishment of non-listed sensitive plant species has occurred at many of the restoration sites.

The distribution of dunedelion, CNPS List 4, on the Guadalupe Oil Field is limited to foredunes and transition areas and it is estimated that this species occupies approximately 231 acres within the Field boundaries (LFR 2003). Previous disturbances have resulted in impacts to 21.2 acres (9.2 percent) of habitat for this species with 13.1 acres in active revegetation that includes planting of dunedelion. This species' habitat includes the areas potentially impacted by the A6/TB2, B5A, and C7 N and C7 SE sites (a total of 10.8 acres). Disturbance to additional 10.8 acres of dunedelion habitat represents an increase of 4 percent and a total of approximately 13 percent of the total dunedelion habitat present on the oil field. Although 13.1 acres (approximately 5 percent) of dunedelion habitat is currently being revegetated (including planting and seeding with dunedelion), the successful establishment of this species has been slow (LFR et al. 2004).

In addition to direct removal of vegetation, degradation of foredune vegetation and wildlife habitats may occur in areas where invasive exotic species (e.g., iceplant) are allowed to move into the disturbed area. Project activities in areas that are currently vegetated with exotic species, such as iceplant, may offer an opportunity to remove the non-natives and replant with native species.

The amount of backdune vegetation and wildlife habitats that may be potentially impacted by the proposed corrective actions represent an incremental increase in disturbance to backdune habitats present on the Field, and is identified as a significant but mitigable impact (Class II) in the Original EIR (ADL 1998).

The following Conditions and measures would be implemented to protect biological resources in accordance with the Coastal Development Permit (CDP) County Conditions of Approval:

- Disturbance to native habitats would be minimized (CDP County Condition F68):
  - Construction activities and equipment would be restricted to existing roads, pads, or otherwise disturbed areas as much as possible.
  - Where access to sites must be through native habitats, a qualified biologist would be consulted to determine the most suitable and least environmentally damaging access route to the site. This access route would be clearly marked and would be considered part of the construction zone.
  - Limits of the construction zone would be clearly marked and delineated in the field. No unauthorized personnel or equipment would be allowed in native habitats outside the construction limits.
  - Biologically sensitive areas would be clearly marked on grading plans and on site and avoided by personnel and equipment.

- Unocal's approved Habitat Revegetation, Restoration, and Monitoring Plan would be implemented for any areas temporarily affected by project activities or that are designated for revegetation once construction is complete (CDP County Condition F64).

- For sites where large numbers of individuals of non-listed sensitive species occur and impacts are unavoidable, individual plants and/or seed would be salvaged, propagated as necessary, and incorporated into the onsite restoration after remediation activities have been completed (CDP County Condition F64.b.ii).

The removal of a small number of individuals and the temporary disturbance to non-listed sensitive species habitat would not be considered a significant impact on these species since this impact is not likely to affect the populations of these species on the Field, especially since these species would be incorporated into the revegetation on the site. The exception is the additional loss of dunedelion individuals and habitat. However, since much of the dunedelion habitat that has previously been disturbed is currently in active revegetation (13.1 acres in restoration compared with 21.2 acres disturbed), and restoration includes planting and seeding with dunedelion, the additional impacts to this species are likely to be considered *less than significant* (Class III). The Original EIR found this impact to be significant but mitigable (Class II).

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. This impact was found to be Class II in the Original EIR, but the proposed mitigation measures have been incorporated into the project as part of the CDP/DP conditions, and the additional area that would be impacted is small relative to what was evaluated in the Original EIR. Implementation of CDP/DP D890558D conditions designed to avoid or reduce impacts on biological resources and restore habitats once remediation is complete (Conditions F68 and F64) will mitigate impacts to backdunes habitat, dune scrub vegetation, wildlife habitat, and non-listed sensitive plant species.

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
BIO.G.2	Excavation activities at the A6/TB2, B5A, C7 SE, C7 N, and P13 sites could result in disturbance and mortality to wildlife.	OBW-3	Yes	Yes

Impact Discussion

Excavation activities at the A6/TB2, B5A, C7 SE, C7 N, and P13 sites would result in the potential loss of individuals of common wildlife species and species of Federal or State concern. Impacts would be associated with ground disturbances, vegetation removal, noise, and increased human presence. Sensitive wildlife species occurring in the backdune habitat at these sites and potentially affected by activities include California horned lizard (CSC) and silvery legless lizard (CSC).

Only a small portion of the total backdune habitat is expected to be affected by remediation activities at these sites. CDP/DP D890558D Condition F64.b.iii requires Unocal to conduct wildlife surveys prior to any activity that would impact wildlife or wildlife habitat. CDP/DP D890558D Condition F68 requires Unocal to adjust or limit the area of disturbance as feasible to avoid impacts to individuals or populations of sensitive species. Therefore, this would be considered a *less than significant* (Class III) impact. The Original EIR found this impact to be significant but mitigable (Class II).

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. This impact was found to be Class II in the Original EIR, but the proposed mitigation measures have been incorporated into the project as part of the CDP/DP conditions, and the additional area that would be impacted is small relative to what was evaluated in the Original EIR. Implementation of CDP/DP D890558D Condition F64, which requires Unocal to produce a Habitat Restoration, Revegetation, and Monitoring Plan for all activities resulting in habitat loss, will ensure no net loss of wildlife habitat.

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
BIO.G.3	Excavation activities at the B5A and C7 SE sites will remove individuals of beach spectacle-pod, a State-listed threatened plant species. Excavation activities in the A6/TB2 and B5A N sites have the potential to affect surf thistle and beach spectacle-pod, State-listed threatened plant species, present in the vicinity of these project sites.	OBR-4	Yes	Yes

Impact Discussion

Beach spectacle-pod is present within the excavation areas at both the B5A and C7 SE sites. Based on the 2004 census conducted by Unocal (unpublished data), approximately 500 individuals of beach spectacle-pod would be removed during the full excavation of the C7 SE site (about three quarters of the colony present at this site based on results from the 2004 census).

Approximately 61 individuals of beach spectacle-pod would be removed during the full excavation of the B5A SE site. In accordance with the CDFG 2081 agreement (CDFG 2000), this exceeds the allowable take for individuals of this species (allowable take is 44 rosettes (individuals) or 4 clusters). This allowable take represented 5 percent of the population of this species at the Field, based on 1998 and 1999 surveys. Based on 2004 surveys, 561 individuals represent approximately 5.7 percent of the total population of beach spectacle-pod counted at the Field (561 out of 9870, Unocal unpublished data).

In addition, both beach spectacle-pod and surf thistle may be indirectly impacted in the C7 SE, A6/TB2 and B5A N sites if project activities affect areas outside of the designated construction boundaries by equipment or personnel access, destabilization of dune slopes, or establishment of invasive plant species in disturbed areas.

The loss of individuals of State-listed threatened plant species would be considered a significant impact.

The following measures would be implemented to protect biological resources in accordance with CDP County Conditions:

- Prior to construction, a qualified botanist shall survey all areas that have the potential to be impacted by project activities to determine the presence of beach spectacle-pod and surf thistle. Colonies shall be mapped and clearly marked, and numbers of individuals in each colony and their conditions determined and recorded. The construction areas and access routes would be adjusted or limited, as needed, to avoid impacts to individuals of State-listed threatened plant species (CDP County Condition F68).
- Where impacts to sensitive species are unavoidable, a salvage, propagation, and replanting program would be developed and implemented that would utilize both seed and salvaged (excavated) plants constituting an ample and representative sample of each colony of the species that would be impacted. The program plan would include measures to perpetuate, to the greatest extent possible, the genetic lines represented on the impacted sites by obtaining an adequate sample prior to construction, propagating them and using them in the restoration of that site (Condition F64.b). The program plan would be done in accordance with the requirements of the current 2081 agreement issued to Unocal by the California Department of Fish and Game.
- Develop a Habitat Restoration and Revegetation Research Program to foster the recovery of particular sensitive species impacted by site characterization, oil spill remediation, oil field abandonment, and infrastructure removal activities in consultation with the U.S. Fish and Wildlife Service, California Department of Fish and Game, and technical specialists, and submitted for review and approval by the County Department of Planning and Building and the Executive Director of the Coastal Commission (Condition F65). This condition is also applicable to the requirements of the 2081 agreement if 25 percent (one cluster or 11 individuals) of the allowable take for beach spectacle-pod occurs.

CDP/DP D890558D Condition F68 requires Unocal to conduct surveys prior to any activity that would impact beach spectacle-pod and surf thistle. This condition also requires Unocal to adjust or limit the area of disturbance as feasible to avoid impacts to individuals or populations of sensitive species. Therefore, this would be considered a *less than significant* (Class III) impact. The Original EIR found this impact to be significant but mitigable (Class II).

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. This impact was found to be Class II in the Original EIR, but the proposed mitigation measures have been incorporated into the project as part of the CDP/DP conditions, and the additional area that would be impacted is small relative to what was evaluated in the Original EIR.

CDP/DP D890558D Condition F.64.b.i requires construction areas to be adjusted or limited to avoid impact to sensitive species; where impacts to sensitive plant species are unavoidable, Condition F.64.b.ii requires a salvage, propagation and replanting program for that plant species. If unavoidable significant impacts have occurred or are likely to occur, Condition F.65 requires a Habitat Restoration and Revegetative Research Program for the impacted sensitive species. If the excavation and remediation activities at the B5A N and C7 SE sites can be conducted to avoid impacts to beach spectacle-pod while meeting the criteria set by the RWQCB for remediation of those sites, then the impact would be avoided per Condition F.64.b.i. If impacts to state-listed threatened species cannot be completely avoided, then implementation of the CDP/DP D890558D conditions designed to protect sensitive resources and minimize impacts to these species (Condition F64.b.ii) and promote the recovery of listed sensitive species (Condition F65) as well as measures described in Unocal's 2081 agreement with the CDFG would ensure impacts to these species are *less than significant* (Class III).

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
BIO.G.4	Excavation activities at the A6/TB2 Site could result in disturbance and mortality of the federally listed as threatened California red-legged frog.	OBR-6	Yes	Yes

Impact Discussion

California red-legged frogs (federally listed as threatened) are known to be present in Pete's Ponds and all of the associated wetlands in the vicinity of the A6/TB2 site. California red-legged frogs are known to move between different wetlands on the Field and large-scale movements most often occur on rainy winter and spring nights, when frogs are expected to appear almost anywhere on the Field. Vegetation removal or crushing during remediation activities at this site would substantially increase the potential for habitat destruction and mortalities of this species. Incidental mortality of this species resulting from increased traffic near suitable habitat would be significant because of the vulnerability of this species to local extirpation and the threatened status of this species.

At sites where California red-legged frog habitat is present, CDP/DP D890558D Condition F75 requires Unocal to implement the following requirements (unless specifically directed otherwise by the U.S. Fish and Wildlife Service):

a. No site characterization, oil spill remediation, oil field abandonment or infrastructure removal activities would occur within 200 feet of suitable California red-legged frog breeding habitat from January 1 to September 15 or as determined by USFWS.

b. Pre-project surveys of California red-legged frogs would be conducted by an independent qualified biologist. The survey would be conducted according to USFWS guidelines, throughout the proposed area of disturbance and within suitable habitat up to 500 feet away from the remediation area.

c. Unocal would fence remediation sites within 500 feet of California red-legged frog habitat to exclude California red-legged frogs from the disturbance zone and the provisions of Condition 64 (which requires a Habitat Restoration, Revegetation, and Monitoring Plan for every disturbed site) would be implemented. Captured red-legged frogs would be relocated to predetermined suitable habitat outside of the construction zone. All non-native predators to the red-legged frog, including crayfish and bullfrogs captured during the relocation efforts, would be destroyed.

d. Nighttime surveys for California red-legged frogs would be conducted at least twice per week or as directed by USFWS for the duration of construction activities in the vicinity of California red-legged frog habitat to ensure that red-legged frogs are not entering the work area.

CDP/DP D890558D Condition F75 requires Unocal to conduct activities at the site in such a manner as to avoid impacts to California red-legged frogs. As such this would be considered a *less than significant* (Class III) impact. The Original EIR found this impact to be significant but mitigable (Class II).

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. This impact was found to be Class II in the Original EIR, but the proposed mitigation measures have been incorporated into the project as part of the CDP/DP conditions, and the additional area that would be impacted is small relative to what was evaluated in the Original EIR.

The excavation and remediation activities at the A6/TB2 site would have to be conducted consistent with the requirements of CDP/DP D890558D Condition F68. This would ensure that impact to California red-legged frogs would be *less than significant* (Class III).

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
BIO.G.5	Remediation activities at the A6/TB6 proposed excavation site could result in a temporary habitat loss and mortality of federally threatened wildlife species including the western snowy plover. Habitat that would be affected includes potential western snowy plover nesting habitat.	OBR-3	Yes	Yes

Impact Discussion

Remediation of the A6/TB6 site may result in the potential short-term loss of snowy plover breeding habitat. This species has been recorded in recent years to nest on portions of the A Road in the vicinity of the site. Disturbances to this species include noise and increased human

presence during remediation activities. Disturbances that affect the breeding success of snowy plovers or the loss of sensitive species habitat would be considered significant. CDP/DP D890558D Condition F69 requires Unocal to exclude all activities including vehicle and pedestrian use from all existing snowy plover breeding habitat on the Field during the breeding and nesting season (March 1 – September 15). Additional conditions require a Habitat Restoration, Revegetation, and Monitoring Plan (Condition F64) for all disturbed sites that will detail the restoration of the temporary disturbance to the plover habitat, and a Habitat Restoration and Revegetation Research Program (Condition F65) which would require a specific research plan to offset any unmitigable impacts resulting from remediation activities. In addition Unocal is required under CDP/DP D890558D Condition F71 to regularly monitor western snowy plover breeding activities by a qualified biologist to determine breeding and fledgling success during the remediation and abandonment activities. All of these CDP/DP D890558D conditions, which are considered part of the project, would serve to minimize impacts to the snowy plover. As such, the impact would be considered *less than significant* (Class III). The Original EIR found this impact to be significant (Class I) since a number of the excavation sites were in prime snow-plover breeding habitat.

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. This impact was found to be Class I in the Original EIR, but the proposed mitigation measures have been incorporated into the project as part of the CDP/DP conditions, and the area that would be impacted is not considered prime snow plover habitat.

Impacts to western snowy plover breeding habitat would be temporary and scheduled to avoid the breeding season (CDP/DP D890558D Condition F69). The disturbances to the road (the portion of the A6/TB2 Site which snowy plovers are most likely to nest upon) would be quickly restored and therefore, impacts to western snowy plovers would be *less than significant* (Class III).

4.4 Air Quality

This section provides a substantial conformance review for proposed cleanup activities of contaminated soils at five corrective action sites within the Field: A6/TB2; B5A North (B5A N); C7 North (C7 N; C7 Southeast (C7 SE); and P13. The existing contaminant distribution patterns at these five areas, along with Corrective Action Plan options, are discussed in LFR (2004) and summarized in Section 2 of this Appendix. The Regulatory Setting, Significance Criteria, and Impact Assessment Methodology are discussed in the Original EIR, Chapter 5.8.

The reminder of this section discusses the air quality impacts identified for five corrective action sites, and associated substantial conformity analysis. Each impact starts with an impact summary box that provides the impact number, a description of the impact, and the related impact number from the Original EIR. The impact summary box also indicates whether or not the impact is in substantial conformity with the Original EIR and CDP/DP D890558D. This is followed by an impact discussion that details the basis for the impact, and a summary of the substantial conformity analysis for the impact.

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
AQ.G.1	Air emissions would result from construction activities.	5.8-1	Yes	Yes

Impact Discussion

Emissions of ROG, NOx, SO_2, CO and PM_{10} are shown in Table 3 for all the selected CAO sites. Details of the emission calculation are shown in Appendix K of the Original EIR. Emission sources include onsite and off-site construction equipment, excavation activities, and fugitive dust sources.

Table 3 Construction Emissions Associated with the Selected CAO Excavation Sites

Activity	Daily Emission (lbs/day)					Annual Emissions (tons/yr)				
	CO	ROC	NOx	SO_2	PM_{10}	CO	ROG	NOx	SO_2	PM_{10}
Onsite Emissions	155	**22**	**247**	**33**	**76**	15	2	23	3	8
Offsite Emissions	42	9	**29**	0.2	**663**	1	0.3	0.2	0.0	30
Total	198	**31**	**276**	**34**	**738**	17	2	23	3	38
Significance Criteria	**550**	**10**	**10**	**10**	**10**	**25**	**25**	**25**	**25**	**-**
Significant?	**No**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**	**No**	**No**	**-**
Total Emissions from the Original EIR (Full Excavation)	228	97	294	56	1,488	1,567	2,464	2,468	605	1,266

During construction, NOx, ROC, SO_2 and CO emissions would result primarily from onsite emissions due to excavators, dozers, loaders, off-highway trucks and other on-site equipment. These construction emissions are considered significant. The majority of PM_{10} emissions would be due to fugitive dust emissions. Estimated emissions of ROC, NOx, SO_2 and PM_{10} are above the significance criteria, thus air quality impacts associated with excavation of the selected CAO excavation sites would be considered significant (Class I). The Original EIR found this impact to be significant (Class I). Table 3 shows Original EIR construction emissions for full excavation. In all cases, the emissions associated with the selected CAO excavation site would be less than the construction emissions evaluated in the Original EIR.

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. This impact was found to be Class I in the 1998 Guadalupe EIR and would remain Class I with these changes in the selected CAO sites.

The CDP/DP D890558D conditions F83 and F84 as well as the SLOAPCD permit to operate have reduced the emissions associated with the excavation of the CAO sites to the maximum

extent feasible. While permit conditions have reduced the emissions associated with the excavation and remediation, the reduction would not be sufficient to ensure that the emissions are below the significance thresholds for all pollutants. This is consistent with the Original EIR and the findings in CDP/DP D890558D.

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
AQ.G.2	Remedial activities could expose workers and the public to emissions of toxic vapors resulting in adverse health effects.	5.8-4	Yes	Yes

Impact Discussion

Remedial activities would result in the emissions of several known toxic air contaminants, including BTEX (benzene, toluene, ethylbenzene and xylene), polycyclic aromatic hydrocarbons (PAHs), and other volatile and semi-volatile hydrocarbons. The screening level health risk assessment prepared for the Original EIR showed a worst-case cancer risk of 1 in one million which is less than the SLOAPCD significance threshold of 10 in one million. (See Appendix K of the Original EIR for details on the toxic compounds emissions.) This screening level health risk assessment included the excavation of over 50 sites with a total disturbed area of over 19 million square feet. The five CAO excavation sites covered in this substantial conformity analysis have a total disturbed area of approximately 500,000 square feet. As such, the cancer risk associated with excavating these sites would be well below 1 in one million (See Appendix K of the Original EIR for details on the toxic compounds emissions.) Therefore, potential health impacts associated with excavation of these CAO sites would be *less than significant* (Class III), which is the same as the Original EIR.

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. Condition F84 in CDP/DP D890558D serves to reduce the severity of this insignificant impact.

4.5 Noise

This section provides a substantial conformance review for proposed cleanup activities of contaminated soils at five corrective action sites within the Field: A6/TB2; B5A North (B5A N); C7 North (C7 N; C7 Southeast (C7 SE); and P13. The existing contaminant distribution patterns at these five areas, along with Corrective Action Plan options, are discussed in LFR (2004) and summarized in Section 2 of this Appendix. The Regulatory Setting, Significance Criteria, and Impact Assessment Methodology are discussed in the Original EIR, Chapter 5.10.

The reminder of this section discusses the noise impacts identified for five corrective action sites, and associated substantial conformity analysis. Each impact starts with an impact summary box that provides the impact number, a description of the impact, and the related impact number from the Original EIR. The impact summary box also indicates whether or not the impact is in substantial conformity with the Original EIR and CDP/DP D890558D. This is followed by an

impact discussion that details the basis for the impact, and a summary of the substantial conformity analysis for the impact.

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
N.G.1	Construction and implementation of the proposed project for remediation and abandonment would expose sensitive receptors in the area to increased noise levels.	5.10-1	Yes	Yes

Impact Discussion

Activities at the identified areas will involve soil moving, excavation and skimming operations, as well as sheetpile installation. As was determined during the remediation project that was evaluated in the Original EIR, sheetpile installation is a procedure that generates highest levels of noise and would affect the sensitive receptors near the Guadalupe Dunes. Sheetpile installation may be conducted simultaneously with other soil moving operations, thus producing even higher levels of noise.

As discussed in the Original EIR Section 5.10.4, noise levels in decibel units are not linearly additive. The dBA summation chart in the Original EIR (Table 5.10.6) indicates that when two noise sources differ by more than 10 dBA, less than 0.5 dBA is added to the higher value. The crane and vibratory hammer associated with sheetpiling activities are the single greatest source of project noise (more than 15 dBA greater than the other noise sources). Hence, a worst-case noise scenario for noise is when the sheetpile is being installed at the various excavation sites.

Based on modifications to Figure 5.10-3 in the Original EIR, sheetpile installation at these selected CAO excavation sites would produce noise levels between 60 and 65 dBA at the Rancho Guadalupe County Park, the residence at the end of Thornberry Road, and in the Point Sal Dunes residential area. Noise levels at the Kermit McKenzie Junior High School and LeRoy County Park would be range from 55 to 60 dBA. Based on the significance criterion of exceeding 65 dBA at sensitive receptors, noise impacts associated with the proposed project changes would be considered *less than significant* (Class III). The Original EIR found this impact to be significant (Class I). The higher severity of this impact in the Original EIR was because some of the excavations sites were closer to a number of the sensitive receptors.

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. Conditions F95 through F99 in CDP/DP D890558D serve to reduce the severity of this insignificant impact.

4.6 Visual Resources

This section provides a substantial conformance review for proposed cleanup activities of contaminated soils at five corrective action sites within the Field: A6/TB2; B5A North (B5A N); C7 North (C7 N; C7 Southeast (C7 SE); and P13. The existing contaminant distribution patterns at these five areas, along with Corrective Action Plan options, are discussed in LFR (2004) and

summarized in Section 2 of this Appendix. The Regulatory Setting, Significance Criteria, and Impact Assessment Methodology are discussed in the Original EIR, Chapter 5.7.

The reminder of this section discusses the visual impacts identified for five corrective action sites, and associated substantial conformity analysis. Each impact starts with an impact summary box that provides the impact number, a description of the impact, and the related impact number from the Original EIR. The impact summary box also indicates whether or not the impact is in substantial conformity with the Original EIR and CDP/DP D890558D. This is followed by an impact discussion that details the basis for the impact, and a summary of the substantial conformity analysis for the impact.

SCR Impact #	Description	1998 EIR Impact #	Substantial Conformity	
			1998 EIR	CDP/DP D890558D
V.G.1	Temporary and short-term visual impacts would result from the presence and operation of construction equipment.	5.7-6	Yes	Yes

Impact Discussion

From all areas except the P13 site, the critical views are those from points on the beach between 700–1,500 feet of the remediation activities. The A6/TB2 site is also visible from points as far south as the river mouth. The proposed remediation action for these sites is excavation, and a total of approximately 6.6 acres of the dunes area along and near the B Road will be disturbed (sites A6/TB2 and B5A N). Construction activities are expected to occur over a multi-week period, and it is assumed that these sites will receive priority for backfilling within this period. It is also assumed that excavation will be constrained to occur during the October-through-February period; otherwise, the aerial extent of excavation is such that excavation would inevitably disturb least terns and nesting snowy plovers.

Equipment will include a track-mounted excavator or other conventional excavation equipment and trucks for hauling the sand to TB8 or TB9 or offsite for disposal and hauling sand back to the site for backfilling. All sites will include sheetpiling, which will involve the use of cranes and vertical sheetpiles. Orange construction fencing will also be installed around the perimeter for public safety. The excavation pit and the presence and activity of construction equipment would be in the immediate foreground of views from the beach for some sites (A6/TB6, parts of B5A North). However, the visual impacts would occur during non-peak visitation to the Preserve, and the impacts would be temporary in nature. Uncontaminated surface sand will be stockpiled and redistributed across the disturbed area after backfilling and, afterward, there should be no evidence of remediation at this site. Although the excavation and presence of heavy equipment would perceptibly worsen the quality of these views from a number of the public viewing points identified in the Original EIR, the impact would be temporary due to the short period of activity. Therefore, the impact is considered *less than significant* (Class III), which is the same as the Original EIR.

Substantial Conformity Determination

This impact was found to be in substantial conformity with the Original EIR and the existing CDP/DP D890558D issued by the County of San Luis Obispo. The severity of this impact has not increased over what was found in the Original EIR. There are no conditions in CDP/DP

D890558D for this impact since it was found to insignificant, and not within the viewshed of Rancho Guadalupe County Park.

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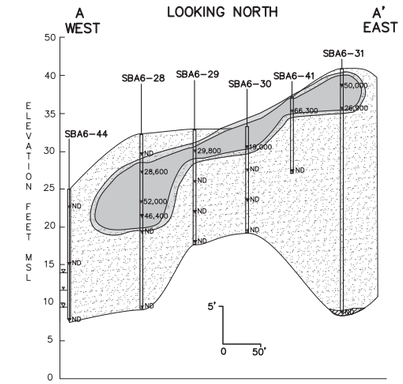
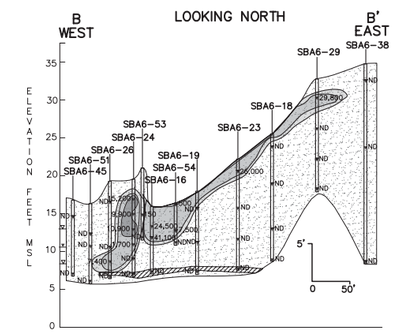
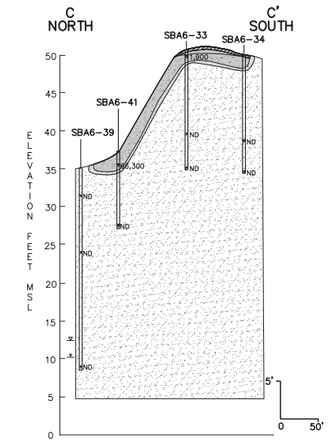
Attachment 1 – Excavation Drawings for Selected CAO Sites







NOTES FOR ADDITIONAL CAO SITES CONCEPTUAL CORRECTIVE ACTION PLAN DRAWINGS:

1. THIS DRAWING WAS PREPARED FOR THE PURPOSE OF EVALUATING POTENTIAL REMEDIAL ACTIONS AT THIS SITE. IT IS CONCEPTUAL AND WAS NOT DESIGNED TO A CONSTRUCTION LEVEL OF DETAIL. TEMPORARY CONSTRUCTION FEATURES THAT MAY NOT BE SHOWN ON THE DRAWINGS BUT WILL BE REQUIRED IF EXCAVATION IS CONDUCTED AT THE SITE INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING EXAMPLES:
   A. DECON/FUELING SITE
   B. WATER EXTRACTION WELLS AND PIPING TO THE TB8 WATER HANDLING SYSTEM OR A 500-BARREL PORTABLE TANK
   C. AS NEEDED, ALL-WEATHER SURFACES USING AGGREGATE BASE
   D. IF NEEDED, SKIMMING AND BOTTOM-POLISHING DREDGE SYSTEM
   E. STOCKPILES FOR VEGETATED AND CLEAN OVERBURDEN (APPROVED SITE-WIDE STOCKPILE SITES OR ADJACENT WELL PADS/EXCAVATION SITES WILL BE USED)
   F. EROSION CONTROL MEASURES
2. THE POST-CONSTRUCTION FEATURES (FINAL CONTOURS, HABITAT RESTORATION, ROADS, ACCESS TRAILS, INFRASTRUCTURE, MONITORING WELLS, ETC.) WILL BE DETAILED ON THE SITE-SPECIFIC RESTORATION PLANS.
3. THE LIMITS OF DISTURBANCE BOUNDARY LINE AROUND THE CONSTRUCTION SITES ARE SHOWN WITH A TYPICAL FENCE SYMBOL. THE LOCATION OF THE BOUNDARY LINE WILL BE MARKED IN THE FIELD USING FENCE OR OTHER DELINEATORS AND CONSTRUCTION ACTIVITIES WILL BE CONFINED TO THIS AREA. MINOR ADJUSTMENTS MAY BE MADE TO THE DISTURBANCE BOUNDARY LINE IN THE FIELD AT THE TIME OF CONSTRUCTION TO AVOID FEDERAL AND/OR STATE LISTED PLANTS OR CULTURAL RESOURCES. THE "SPANNE VALLEY" CONTAINS A NUMBER OF KNOWN CULTURAL RESOURCES AND THERE IS A HIGH LIKELIHOOD THAT ADDITIONAL RESOURCES MAY BE PRESENT SO ALL EARTHMOVING ACTIVITIES WITH THE SPANNE VALLEY MUST BE REVIEWED WITH THE PROJECT ARCHAEOLOGIST.

BASIS FOR DESIGN AND EXCAVATION/DISTURBANCE QUANTITY ESTIMATES:

1. DISTURBANCE AREAS INCLUDE A TOTAL OF ALL AREAS WITHIN THE LIMITS OF DISTURBANCE BOUNDARY LINE IN THE VICINITY OF THE EXCAVATION AND ANY RELATED AREAS SPECIFICALLY PREPARED FOR STAGING, STOCKPILING, ETC. IN ASSOCIATED WITH THAT EXCAVATION. A CALCULATION FOR AREAS THAT HAVE BEEN PREVIOUSLY DISTURBED (ROADS, WELL PADS, EXISTING STAGING OR STOCKPILE AREAS, ETC.) IS ALSO PROVIDED; THESE AREAS ARE A SUBCATEGORY OF, AND ARE INCLUDED IN, THE TOTAL DISTURBANCE AREA CALCULATION. FENCING/DELINEATORS MAY BE SHOWN ON THE DRAWINGS FOR PLACEMENT ALONG NEARBY ROADS AND/OR WELL PADS TO PREVENT VEHICLE AND FOOT TRAFFIC FROM LEAVING THESE AREAS; THESE AREAS ARE NOT INCLUDED IN THE DISTURBANCE CALCULATIONS.
2. VEGETATED MATERIAL/OVERBURDEN IS THE TOP 12 INCHES OF THE EXCAVATED AREA.
3. CLEAN OVERBURDEN IS THE MATERIAL IN THE EXCAVATED AREA FROM THE BOTTOM OF THE VEGETATED OVERBURDEN TO ONE FOOT ABOVE THE UPPER 0 (HDH-DETECT) MG/KG PLUME LIMIT.
4. AFFECTED MATERIAL – DILUENT-AFFECTED SOILS FROM TWO FEET ABOVE THE UPPER 0 (HDH-DETECT) MG/KG PLUME LIMIT TO ONE FOOT BELOW THE BOTTOM 0 (HDH-DETECT) MG/KG PLUME LIMIT.
5. SUMP MATERIAL – SUMP-AFFECTED SOILS FROM ONE FOOT ABOVE THE UPPER 0 (HDH-DETECT) MG/KG PLUME LIMIT TO ONE FOOT BELOW THE BOTTOM 0 (HDH-DETECT) MG/KG PLUME LIMIT.
6. CUT SLOPES ABOVE GROUNDWATER ARE 2:1 MAXIMUM. WITHIN GROUNDWATER, CUT SLOPES WILL BE APPROXIMATELY 10:1.
7. THE GROUNDWATER ELEVATIONS AND PLUME DELINEATION INFORMATION SHOWN WAS OBTAINED FROM HISTORICAL DATA AND PROVIDED BY LFR LEVINE-FRICKE IN AUGUST 2004.

LEGEND

- APPROXIMATE EXTENT OF SURFACE REMOVAL ACTION
- SOIL BORING LOCATION
- PROPOSED DRIVEN STEEL SHEET PILING
- EXISTING WELL
- VEGETATION LIMITS
- BEACH SPECTACLE POD LOCATION (JULY 2004)
- SURF THISTLE LOCATION (JULY 2004)
- SNOWY PLOVER NESTING HABITAT BOUNDARY
- 200 FT. FROG BOUNDARY
- 500 FT. FROG BOUNDARY
- PROPOSED DISTURBANCE BOUNDARY
- APPROXIMATE TPH CONCENTRATIONS BETWEEN 0 AND 1,000 MG/KG
- APPROXIMATE TPH CONCENTRATIONS BETWEEN 1,000 AND 10,000 MG/KG
- APPROXIMATE TPH CONCENTRATIONS GREATER THAN 10,000 MG/KG

SITE	EXCAVATED QUANTITIES						MISCELLANEOUS					
	WATER SURFACE AREA (SQ. FT.)	VEGETATED MATERIAL & OVERBURDEN (CUBIC YARDS)	CLEAN OVERBURDEN (CUBIC YARDS)	AFFECTED MATERIAL (CUBIC YARDS)	POTENTIAL SUMP MATERIAL (CUBIC YARDS)	ROAD BASE MATERIAL (CUBIC YARDS)	ANTICIPATED WATER ELEV. (FEET)	SHEET PILE QUANTITIY (LINEAR FT.)	PROBABILITY OF FREE PRODUCT	PIPELINE MATERIAL (LINEAR FT.)	DISTURBED AREA (ACRES)	PREVIOUSLY DISTURBED AREA (ACRES)
A6/TB2	11,078	1,860	0	2,500	4,000	215	10.0	428	MODERATE	25	2.6	0.1

NOTES:

* EARTHWORK QUANTITIES ARE FOR PRELIMINARY PLANNING PURPOSES ONLY.

THIS DOCUMENT WAS PREPARED BY CANNON ASSOCIATES (CA) AS AN INSTRUMENT OF PROFESSIONAL SERVICE. THE RECIPIENT MAY MAINTAIN COPIES FOR INFORMATION AND REFERENCE IN CONNECTION ONLY WITH THIS SPECIFIC PROJECT. FURTHER, THE RECIPIENT RECOGNIZES THAT CHANGES OR MODIFICATIONS TO CA INSTRUMENTS OF PROFESSIONAL SERVICE INTRODUCED BY ANYONE OTHER THAN CA MAY RESULT IN ADVERSE CONSEQUENCES WHICH CA CAN NEITHER PREDICT NOR CONTROL. ACCEPTANCE OF THE DELIVERY OF THIS DOCUMENT CONSTITUTES AGREEMENT TO THESE TERMS AND CONDITIONS.

Cannon ASSOCIATES
ENGINEERS PLANNERS SURVEYORS
364 Pacific Street
San Luis Obispo, CA. 93401
(805) 544-7407

REV. NO	DATE	REVISED (DESTROY ALL PRINTS BEARING EARLIER DATE)	REV. BY	CKD. BY	APP'D
A	07/16/03	ISSUED FOR REVIEW	JEM	TM	
B	10/01/03	RE ISSUED FOR REVIEW	JEM	TM	
C	08/17/04	RE ISSUED FOR REVIEW	ERC	TM	

APPROVED FOR CONSTRUCTION		
A. F. E.	DATE	SIGNED

DRAWN BY JM/TM
CHECKED BY TM
TRACED BY
TRAC'G. CKD
APP'D
APP'D
SCALE AS SHOWN
DATE 08/17/04

A6/TB2 AREA CONCEPTUAL CORRECTIVE ACTION PLAN FOR FULL EXCAVATION

Unocal Corporation
Los Angeles, California
UNOCAL 76

DRAWING NUMBER
FIGURE B
SHEETS 1 SHEET
CADD FILE: DATE: BY: REV.

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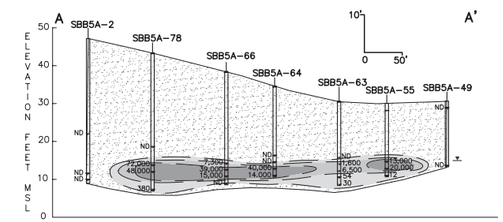

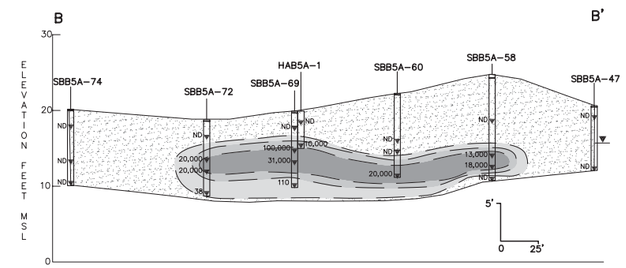

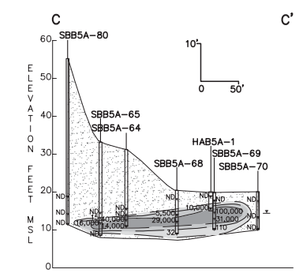

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   C. AS NEEDED, ALL-WEATHER SURFACES USING AGGREGATE BASE
   D. IF NEEDED, SKIMMING AND BOTTOM-POLISHING DREDGE SYSTEM
   E. STOCKPILES FOR VEGETATED AND CLEAN OVERBURDEN (APPROVED SITE-WIDE STOCKPILE SITES OR ADJACENT WELL PADS/EXCAVATION SITES WILL BE USED)
   F. EROSION CONTROL MEASURES
2. THE POST-CONSTRUCTION FEATURES (FINAL CONTOURS, HABITAT RESTORATION, ROADS, ACCESS TRAILS, INFRASTRUCTURE, MONITORING WELLS, ETC.) WILL BE DETAILED ON THE SITE-SPECIFIC RESTORATION PLANS.
3. THE LIMITS OF DISTURBANCE BOUNDARY LINE AROUND THE CONSTRUCTION SITES ARE SHOWN WITH A TYPICAL FENCE SYMBOL. THE LOCATION OF THE BOUNDARY LINE WILL BE MARKED IN THE FIELD USING FENCE OR OTHER DELINEATORS AND CONSTRUCTION ACTIVITIES WILL BE CONFINED TO THIS AREA. MINOR ADJUSTMENTS MAY BE MADE TO THE DISTURBANCE BOUNDARY LINE IN THE FIELD AT THE TIME OF CONSTRUCTION TO AVOID FEDERAL AND/OR STATE LISTED PLANTS OR CULTURAL RESOURCES. THE "SPANNE VALLEY" CONTAINS A NUMBER OF KNOWN CULTURAL RESOURCES AND THERE IS A HIGH LIKELIHOOD THAT ADDITIONAL RESOURCES MAY BE PRESENT SO ALL EARTHMOVING ACTIVITIES WITH THE SPANNE VALLEY MUST BE REVIEWED WITH THE PROJECT ARCHAEOLOGIST.

BASIS FOR DESIGN AND EXCAVATION/DISTURBANCE QUANTITY ESTIMATES:

1. DISTURBANCE AREAS INCLUDE A TOTAL OF ALL AREAS WITHIN THE LIMITS OF DISTURBANCE BOUNDARY LINE IN THE VICINITY OF THE EXCAVATION AND ANY RELATED AREAS SPECIFICALLY PREPARED FOR STAGING, STOCKPILING, ETC. IN ASSOCIATED WITH THAT EXCAVATION. A CALCULATION FOR AREAS THAT HAVE BEEN PREVIOUSLY DISTURBED (ROADS, WELL PADS, EXISTING STAGING OR STOCKPILE AREAS, ETC.) IS ALSO PROVIDED; THESE AREAS ARE A SUBCATEGORY OF, AND ARE INCLUDED IN, THE TOTAL DISTURBANCE AREA CALCULATION. FENCING/DELINEATORS MAY BE SHOWN ON THE DRAWINGS FOR PLACEMENT ALONG NEARBY ROADS AND/OR WELL PADS TO PREVENT VEHICLE AND FOOT TRAFFIC FROM LEAVING THESE AREAS; THESE AREAS ARE NOT INCLUDED IN THE DISTURBANCE CALCULATIONS.
2. VEGETATED MATERIAL/OVERBURDEN IS THE TOP 12 INCHES OF THE EXCAVATED AREA.
3. CLEAN OVERBURDEN IS THE MATERIAL IN THE EXCAVATED AREA FROM THE BOTTOM OF THE VEGETATED OVERBURDEN TO ONE FOOT ABOVE THE UPPER 0 (HDH-DETECT) MG/KG PLUME LIMIT.
4. AFFECTED MATERIAL – DILUENT-AFFECTED SOILS FROM TWO FEET ABOVE THE UPPER 0 (HDH-DETECT) MG/KG PLUME LIMIT TO ONE FOOT BELOW THE BOTTOM 0 (HDH-DETECT) MG/KG PLUME LIMIT.
5. SUMP MATERIAL – SUMP-AFFECTED SOILS FROM ONE FOOT ABOVE THE UPPER 0 (HDH-DETECT) MG/KG PLUME LIMIT TO ONE FOOT BELOW THE BOTTOM 0 (HDH-DETECT) MG/KG PLUME LIMIT.
6. CUT SLOPES ABOVE GROUNDWATER ARE 2:1 MAXIMUM. WITHIN GROUNDWATER, CUT SLOPES WILL BE APPROXIMATELY 10:1.
7. THE GROUNDWATER ELEVATIONS AND PLUME DELINEATION INFORMATION SHOWN WAS OBTAINED FROM HISTORICAL DATA AND PROVIDED BY LFR LEVINE-FRICKE IN AUGUST 2004.

LEGEND

- SOIL BORING LOCATION
- PROPOSED DRIVEN STEEL SHEET PILING
- EXISTING WELL
- VEGETATION LIMITS
- BEACH SPECTACLE POD LOCATION (JULY 2004)
- SURF THISTLE LOCATION (JULY 2004)
- SNOWY PLOVER NESTING HABITAT BOUNDARY
- FEDERAL WETLAND AREAS (JULY 2004)
- STATE WETLAND AREAS (MARCH 2003)
- CULTURAL RESOURCES AREA INCLUDES 100 METER BUFFER ZONE
- PROPOSED DISTURBANCE BOUNDARY
- APPROXIMATE TPH CONCENTRATIONS BETWEEN 0 AND 1,000 MG/KG
- APPROXIMATE TPH CONCENTRATIONS BETWEEN 1,000 AND 10,000 MG/KG
- APPROXIMATE TPH CONCENTRATIONS GREATER THAN 10,000 MG/KG

SITE	EXCAVATED QUANTITIES						MISCELLANEOUS					
	WATER SURFACE AREA (SQ. FT.)	VEGETATED MATERIAL & OVERBURDEN (CUBIC YARDS)	CLEAN OVERBURDEN (CUBIC YARDS)	AFFECTED MATERIAL (CUBIC YARDS)	POTENTIAL SUMP MATERIAL (CUBIC YARDS)	ROAD BASE MATERIAL (CUBIC YARDS)	ANTICIPATED WATER ELEV. (FEET)	SHEET PILE QUANTITIY (LINEAR FT.)	PROBABILITY OF FREE PRODUCT	PIPELINE MATERIAL (LINEAR FT.)	DISTURBED AREA (ACRES)	PREVIOUSLY DISTURBED AREA (ACRES)
B5A NORTH (FULL EXCAVATION)	83,300	4,700	65,650	27,750	0	1,350	13.0	1,230	HIGH	2,821	4.2	0.5

NOTES:

* EARTHWORK QUANTITIES ARE FOR PRELIMINARY PLANNING PURPOSES ONLY.

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B	10/01/03	RE ISSUED FOR REVIEW	JEM	TM	
C	08/17/04	RE ISSUED FOR REVIEW	ERC	TM	

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CHECKED BY TM
TRACED BY
TRAC'G. CKD
APP'D
APP'D
SCALE AS SHOWN
DATE 08/17/04

B5A NORTH AREA CONCEPTUAL CORRECTIVE ACTION PLAN FOR FULL EXCAVATION

Unocal Corporation
Los Angeles, California
UNOCAL 76

DRAWING NUMBER
FIGURE D
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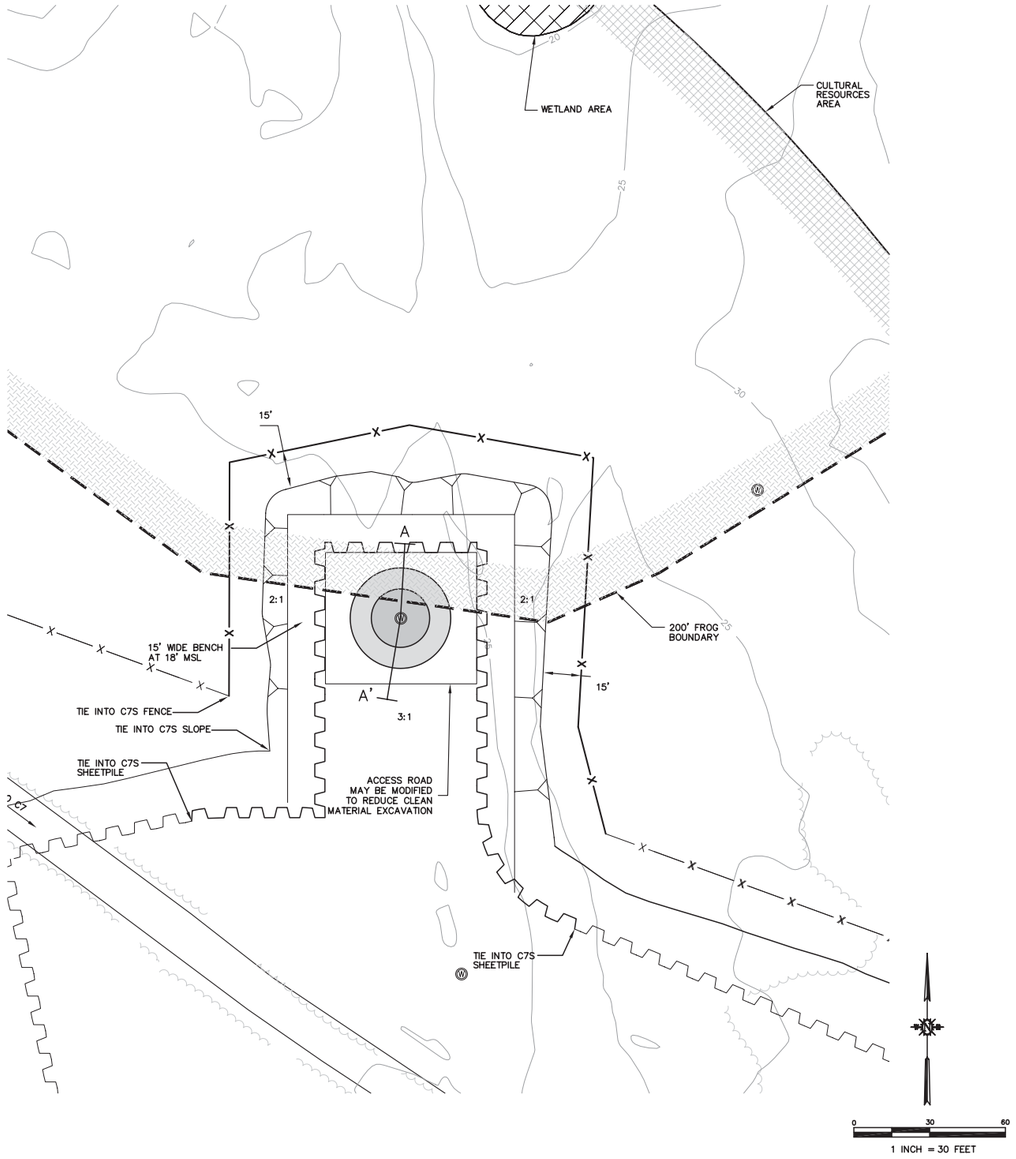

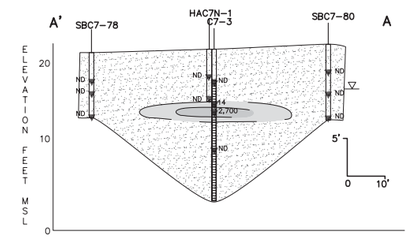

NOTES FOR ADDITIONAL CAO SITES CONCEPTUAL CORRECTIVE ACTION PLAN DRAWINGS:

1. THIS DRAWING WAS PREPARED FOR THE PURPOSE OF EVALUATING POTENTIAL REMEDIAL ACTIONS AT THIS SITE. IT IS CONCEPTUAL AND WAS NOT DESIGNED TO A CONSTRUCTION LEVEL OF DETAIL. TEMPORARY CONSTRUCTION FEATURES THAT MAY NOT BE SHOWN ON THE DRAWINGS BUT WILL BE REQUIRED IF EXCAVATION IS CONDUCTED AT THE SITE INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING EXAMPLES:
   A. DECON/FUELING SITE
   B. WATER EXTRACTION WELLS AND PIPING TO THE TB8 WATER HANDLING SYSTEM OR A 500-BARREL PORTABLE TANK
   C. AS NEEDED, ALL-WEATHER SURFACES USING AGGREGATE BASE
   D. IF NEEDED, SKIMMING AND BOTTOM-POLISHING DREDGE SYSTEM
   E. STOCKPILES FOR VEGETATED AND CLEAN OVERBURDEN (APPROVED SITE-WIDE STOCKPILE SITES OR ADJACENT WELL PADS/EXCAVATION SITES WILL BE USED)
   F. EROSION CONTROL MEASURES
2. THE POST-CONSTRUCTION FEATURES (FINAL CONTOURS, HABITAT RESTORATION, ROADS, ACCESS TRAILS, INFRASTRUCTURE, MONITORING WELLS, ETC.) WILL BE DETAILED ON THE SITE-SPECIFIC RESTORATION PLANS.
3. THE LIMITS OF DISTURBANCE BOUNDARY LINE AROUND THE CONSTRUCTION SITES ARE SHOWN WITH A TYPICAL FENCE SYMBOL. THE LOCATION OF THE BOUNDARY LINE WILL BE MARKED IN THE FIELD USING FENCE OR OTHER DELINEATORS AND CONSTRUCTION ACTIVITIES WILL BE CONFINED TO THIS AREA. MINOR ADJUSTMENTS MAY BE MADE TO THE DISTURBANCE BOUNDARY LINE IN THE FIELD AT THE TIME OF CONSTRUCTION TO AVOID FEDERAL AND/OR STATE LISTED PLANTS OR CULTURAL RESOURCES. THE "SPANNE VALLEY" CONTAINS A NUMBER OF KNOWN CULTURAL RESOURCES AND THERE IS A HIGH LIKELIHOOD THAT ADDITIONAL RESOURCES MAY BE PRESENT SO ALL EARTHMOVING ACTIVITIES WITH THE SPANNE VALLEY MUST BE REVIEWED WITH THE PROJECT ARCHAEOLOGIST.

BASIS FOR DESIGN AND EXCAVATION/DISTURBANCE QUANTITY ESTIMATES:

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7. THE GROUNDWATER ELEVATIONS AND PLUME DELINEATION INFORMATION SHOWN WAS OBTAINED FROM HISTORICAL DATA AND PROVIDED BY LFR LEVINE-FRICKE IN AUGUST 2004.

LEGEND

- SOIL BORING LOCATION
- PROPOSED DRIVEN STEEL SHEET PILING
- EXISTING WELL
- VEGETATION LIMITS
- 200 FT. FROG BOUNDARY
- CULTURAL RESOURCES AREA INCLUDES 100 METER BUFFER ZONE
- FEDERAL WETLAND AREAS (JULY 2004)
- STATE WETLAND AREAS (MARCH 2003)
- PROPOSED DISTURBANCE BOUNDARY
- APPROXIMATE TPH CONCENTRATIONS BETWEEN 0 AND 1,000 MG/KG
- APPROXIMATE TPH CONCENTRATIONS BETWEEN 1,000 AND 10,000 MG/KG

SITE	EXCAVATED QUANTITIES						MISCELLANEOUS					
	WATER SURFACE AREA (SQ. FT.)	VEGETATED MATERIAL & OVERBURDEN (CUBIC YARDS)	CLEAN OVERBURDEN (CUBIC YARDS)	AFFECTED MATERIAL (CUBIC YARDS)	POTENTIAL SUMP MATERIAL (CUBIC YARDS)	ROAD BASE MATERIAL (CUBIC YARDS)	ANTICIPATED WATER ELEV. (FEET)	SHEET PILE QUANTITIY (LINEAR FT.)	PROBABILITY OF FREE PRODUCT	PIPELINE MATERIAL (LINEAR FT.)	DISTURBED AREA (ACRES)	PREVIOUSLY DISTURBED AREA (ACRES)
C7 NORTH	7,600	710	2,700	450	0	0	16.0	440	MODERATE	0	0.4	0.0

NOTES:

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A. F. E.	DATE	SIGNED

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TRACED BY
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C7 NORTH AREA CONCEPTUAL CORRECTIVE ACTION PLAN FOR EXCAVATION WITH SHEET PILE

Unocal Corporation
Los Angeles, California
UNOCAL 76

DRAWING NUMBER
FIGURE E
SHEETS 3 SHEET 3
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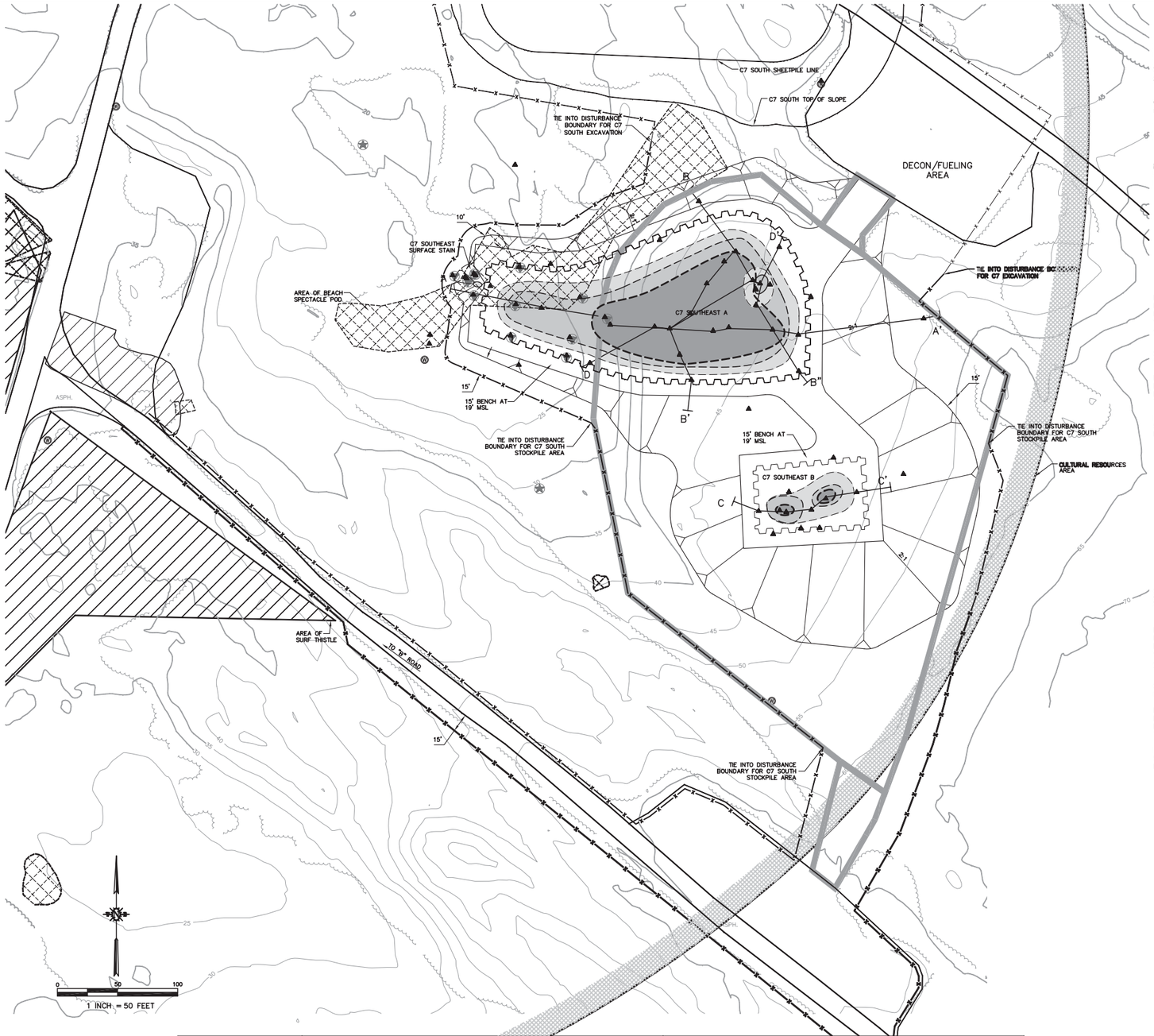

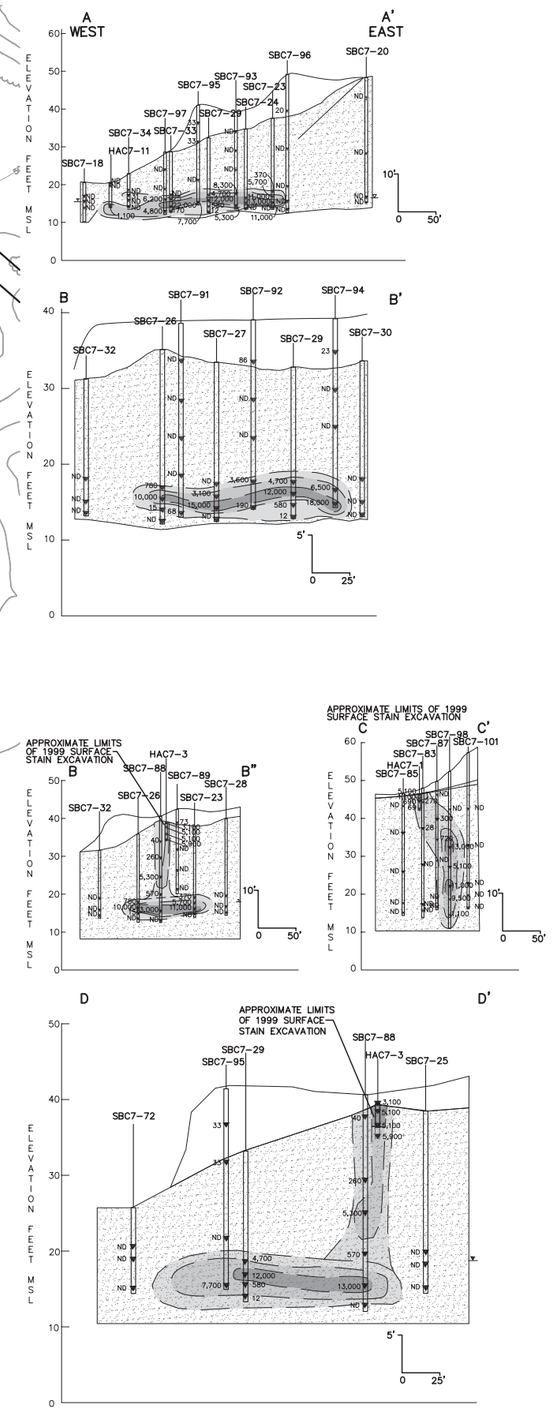

SITE	EXCAVATED QUANTITIES						MISCELLANEOUS					
	WATER SURFACE AREA (SQ. FT.)	VEGETATED MATERIAL & OVERBURDEN (CUBIC YARDS)	CLEAN OVERBURDEN (CUBIC YARDS)	AFFECTED MATERIAL (CUBIC YARDS)	POTENTIAL SUMP MATERIAL (CUBIC YARDS)	ROAD BASE MATERIAL (CUBIC YARDS)	ANTICIPATED WATER ELEV. (FEET)	SHEET PILE QUANTITIY (LINEAR FT.)	PROBABILITY OF FREE PRODUCT	PIPELINE MATERIAL (LINEAR FT.)	DISTURBED AREA (ACRES)	PREVIOUSLY DISTURBED AREA (ACRES)
C7 SOUTHEAST A	24,800	2,300	34,500	7,400	0	0	15.5	670	HIGH	0	3.6	2.7
C7 SOUTHEAST B	4,230	1,560	23,000	1,250	0	0	15.5	270	HIGH	0	3.6	2.7
C7 SOUTHEAST SURFACE STAIN	0	38	135	3	0	0	15.5	0	HIGH	0	0	2.7

NOTES FOR ADDITIONAL CAO SITES CONCEPTUAL CORRECTIVE ACTION PLAN DRAWINGS:

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   C. AS NEEDED, ALL-WEATHER SURFACES USING AGGREGATE BASE
   D. IF NEEDED, SKIMMING AND BOTTOM-POLISHING DREDGE SYSTEM
   E. STOCKPILES FOR VEGETATED AND CLEAN OVERBURDEN (APPROVED SITE-WIDE STOCKPILE SITES OR ADJACENT WELL PADS/EXCAVATION SITES WILL BE USED)
   F. EROSION CONTROL MEASURES
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7. THE GROUNDWATER ELEVATIONS AND PLUME DELINEATION INFORMATION SHOWN WAS OBTAINED FROM HISTORICAL DATA AND PROVIDED BY LFR LEVINE-FRICKE IN AUGUST 2004.

LEGEND

- SOIL BORING LOCATION
- PROPOSED DRIVEN STEEL SHEET PILING
- EXISTING WELL
- VEGETATION LIMITS
- BEACH SPECTACLE POD LOCATION (JULY 2004)
- SURF THISTLE LOCATION (JULY 2004)
- CULTURAL RESOURCES AREA INCLUDES 100 METER BUFFER ZONE
- PROPOSED DISTURBANCE BOUNDARY
- APPROXIMATE TPH CONCENTRATIONS BETWEEN 0 AND 1,000 MG/KG
- APPROXIMATE TPH CONCENTRATIONS BETWEEN 1,000 AND 10,000 MG/KG
- APPROXIMATE TPH CONCENTRATIONS GREATER THAN 10,000 MG/KG
- LOCATION OF CULTURAL RESOURCE
- SOIL BORINGS CONTAINING DARKENED SUBSURFACE SOILS INDICATIVE OF POTENTIAL CULTURAL RESOURCE AREAS

NOTES:

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C7 SOUTHEAST AREA CONCEPTUAL CORRECTIVE ACTION PLAN FOR FULL EXCAVATION

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Los Angeles, California
UNOCAL 76

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FIGURE F
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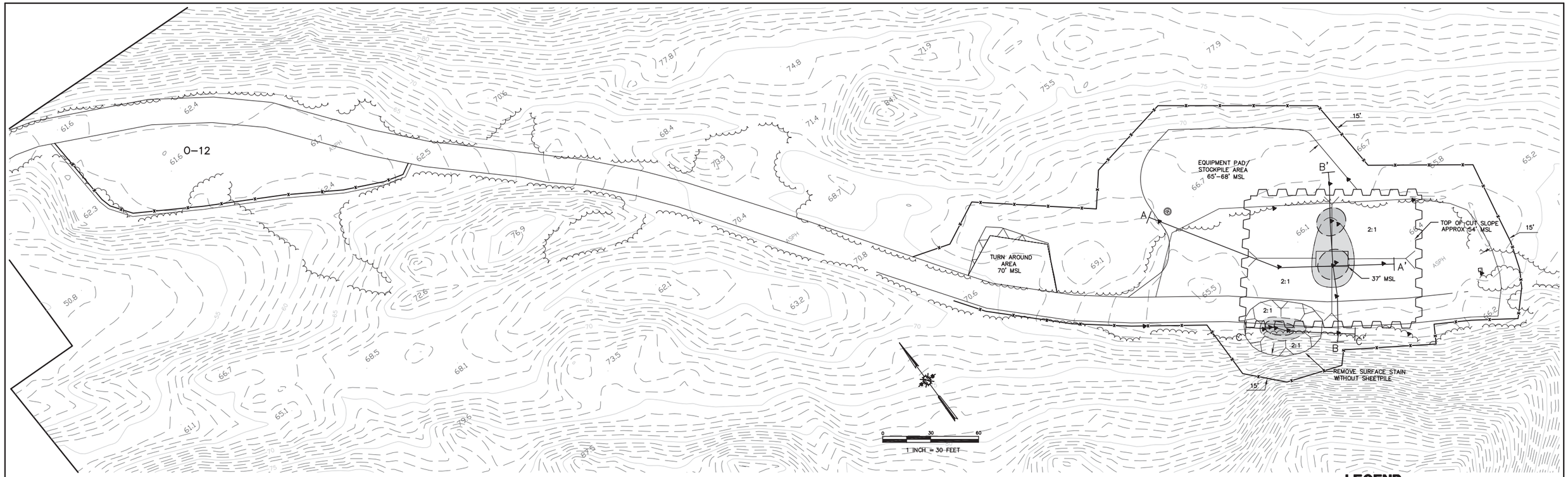

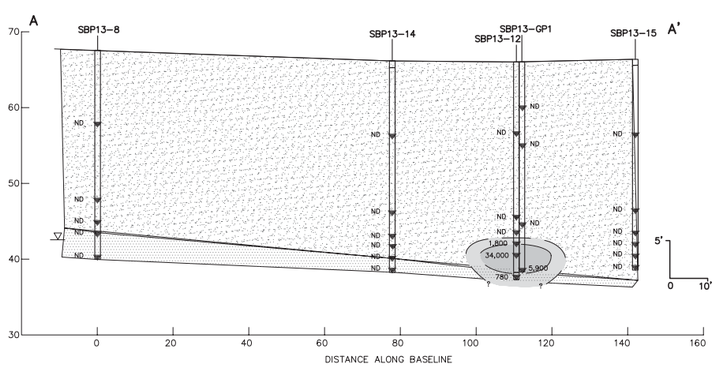

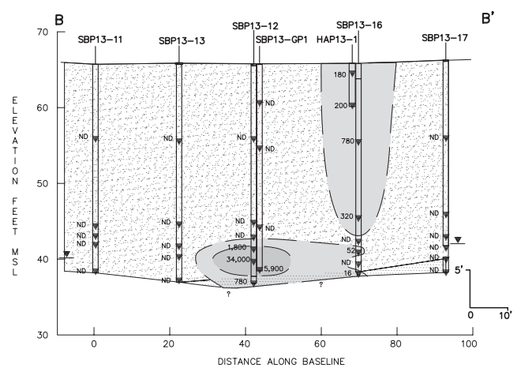

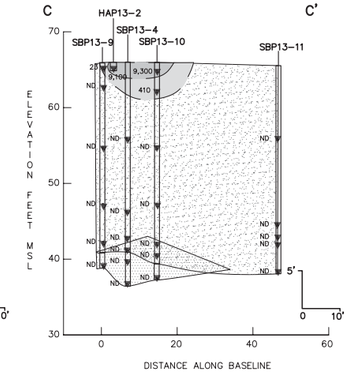

LEGEND

- SOIL BORING LOCATION
- PROPOSED DRIVEN STEEL SHEET PILING
- EXISTING WELL
- VEGETATION LIMITS
- PROPOSED DISTURBANCE BOUNDARY
- APPROXIMATE TPH CONCENTRATIONS BETWEEN 0 AND 1,000 MG/KG
- APPROXIMATE TPH CONCENTRATIONS BETWEEN 1,000 AND 10,000 MG/KG
- SILT LAYER

NOTES FOR ADDITIONAL CAO SITES CONCEPTUAL CORRECTIVE ACTION PLAN DRAWINGS:

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   - E. STOCKPILES FOR VEGETATED AND CLEAN OVERBURDEN (APPROVED SITE-WIDE STOCKPILE SITES OR ADJACENT WELL PADS/EXCAVATION SITES WILL BE USED)
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3. THE LIMITS OF DISTURBANCE BOUNDARY LINE AROUND THE CONSTRUCTION SITES ARE SHOWN WITH A TYPICAL FENCE SYMBOL. THE LOCATION OF THE BOUNDARY LINE WILL BE MARKED IN THE FIELD USING FENCE OR OTHER DELINEATORS AND CONSTRUCTION ACTIVITIES WILL BE CONFINED TO THIS AREA. MINOR ADJUSTMENTS MAY BE MADE TO THE DISTURBANCE BOUNDARY LINE IN THE FIELD AT THE TIME OF CONSTRUCTION TO AVOID FEDERAL AND/OR STATE LISTED PLANTS OR CULTURAL RESOURCES. THE "SPANNE VALLEY" CONTAINS A NUMBER OF KNOWN CULTURAL RESOURCES AND THERE IS A HIGH LIKELIHOOD THAT ADDITIONAL RESOURCES MAY BE PRESENT SO ALL EARTHMOVING ACTIVITIES WITH THE SPANNE VALLEY MUST BE REVIEWED WITH THE PROJECT ARCHAEOLOGIST.

BASIS FOR DESIGN AND EXCAVATION/DISTURBANCE QUANTITY ESTIMATES:

1. DISTURBANCE AREAS INCLUDE A TOTAL OF ALL AREAS WITHIN THE LIMITS OF DISTURBANCE BOUNDARY LINE IN THE VICINITY OF THE EXCAVATION AND ANY RELATED AREAS SPECIFICALLY PREPARED FOR STAGING, STOCKPILING, ETC. IN ASSOCIATED WITH THAT EXCAVATION. A CALCULATION FOR AREAS THAT HAVE BEEN PREVIOUSLY DISTURBED (ROADS, WELL PADS, EXISTING STAGING OR STOCKPILE AREAS, ETC.) IS ALSO PROVIDED; THESE AREAS ARE A SUBCATEGORY OF, AND ARE INCLUDED IN, THE TOTAL DISTURBANCE AREA CALCULATION. FENCING/DELINEATORS MAY BE SHOWN ON THE DRAWINGS FOR PLACEMENT ALONG NEARBY ROADS AND/OR WELL PADS TO PREVENT VEHICLE AND FOOT TRAFFIC FROM LEAVING THESE AREAS; THESE AREAS ARE NOT INCLUDED IN THE DISTURBANCE CALCULATIONS.
2. VEGETATED MATERIAL/OVERBURDEN IS THE TOP 12 INCHES OF THE EXCAVATED AREA.
3. CLEAN OVERBURDEN IS THE MATERIAL IN THE EXCAVATED AREA FROM THE BOTTOM OF THE VEGETATED OVERBURDEN TO ONE FOOT ABOVE THE UPPER 0 (HDH-DETECT) MG/KG PLUME LIMIT.
4. AFFECTED MATERIAL – DILUENT-AFFECTED SOILS FROM TWO FEET ABOVE THE UPPER 0 (HDH-DETECT) MG/KG PLUME LIMIT TO ONE FOOT BELOW THE BOTTOM 0 (HDH-DETECT) MG/KG PLUME LIMIT.
5. SUMP MATERIAL – SUMP-AFFECTED SOILS FROM ONE FOOT ABOVE THE UPPER 0 (HDH-DETECT) MG/KG PLUME LIMIT TO ONE FOOT BELOW THE BOTTOM 0 (HDH-DETECT) MG/KG PLUME LIMIT.
6. CUT SLOPES ABOVE GROUNDWATER ARE 2:1 MAXIMUM. WITHIN GROUNDWATER, CUT SLOPES WILL BE APPROXIMATELY 10:1.
7. THE GROUNDWATER ELEVATIONS AND PLUME DELINEATION INFORMATION SHOWN WAS OBTAINED FROM HISTORICAL DATA AND PROVIDED BY LFR LEVINE-FRICKE IN AUGUST 2004.

SITE	FILL QUANTITIES	EXCAVATED QUANTITIES						MISCELLANEOUS					
	VOLUME OF FILL FOR TURN AROUND (CUBIC YARDS)	WATER SURFACE AREA (SQ. FT.)	VEGETATED MATERIAL & OVERBURDEN (CUBIC YARDS)	CLEAN OVERBURDEN (CUBIC YARDS)	AFFECTED MATERIAL (CUBIC YARDS)	POTENTIAL SUMP MATERIAL (CUBIC YARDS)	ROAD BASE MATERIAL (CUBIC YARDS)	ANTICIPATED WATER ELEV. (FEET)	SHEET PILE QUANTITY (LINEAR FT.)	PROBABILITY OF FREE PRODUCT	PIPELINE MATERIAL (LINEAR FT.)	DISTURBED AREA (ACRES)	PREVIOUSLY DISTURBED AREA (ACRES)
P13 (EXCAVATION)	30	8,100	0	4,190	300	410	700	41.0	365	LOW	0	0.9	0.4

NOTES:

* EARTHWORK QUANTITIES ARE FOR PRELIMINARY PLANNING PURPOSES ONLY.

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REV. NO	DATE	REVISED (DESTROY ALL PRINTS BEARING EARLIER DATE)	REV. BY	CKD. BY	APP'D
A	07/16/03	ISSUED FOR REVIEW	JEM	TM	
B	10/01/03	RE ISSUED FOR REVIEW	JEM	TM	
C	08/17/04	RE ISSUED FOR REVIEW	ERC	TM	

APPROVED FOR CONSTRUCTION		
A. F. E.	DATE	SIGNED

DRAWN BY JM/TM
CHECKED BY TM
TRACED BY
TRAC'G. CKD
APP'D
APP'D
SCALE AS SHOWN
DATE 08/17/04

P13 AREA CONCEPTUAL CORRECTIVE ACTION PLAN FOR EXCAVATION

Unocal Corporation
Los Angeles, California
UNOCAL 76

DRAWING NUMBER
FIGURE G
SHEETS 3 SHEET 3
CADD FILE: DATE: BY: REV.

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