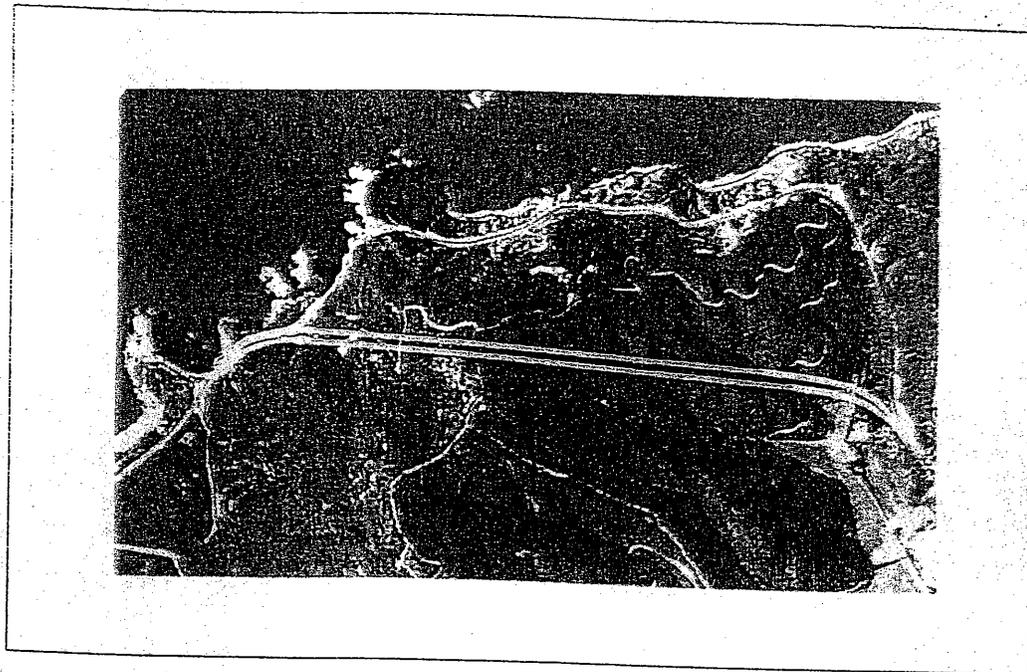


Final Wetlands Report
Final Mitigation and Revegetation Plan
Devil's Slide Tunnel Project



Caltrans District 04

San Mateo County

4-SM-1

PM 36.6/41.0

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December 29, 2004



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Final Mitigation and Revegetation Plan

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Caltrans District 4

Office of Biological Sciences and Permits

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Summary

In November of 1996, the voters of San Mateo County approved the Devil's Slide Tunnel Initiative known as Measure T. Measure T amended the San Mateo County Local Coastal Program (LCP) and authorized the construction of a double-bore tunnel to bypass a geologically unstable region south of Pacifica along the San Mateo coast. As the preferred alternative, the Devil's Slide Tunnel Project is a 1,219-meter-long (4,000-foot-long), double bore tunnel with one lane in each direction. At project completion, Caltrans will relinquish a portion of Highway 1 right-of-way to San Mateo County to own and operate as a non-motorized transportation facility.

The shorter alignment required for the Tunnel Project substantially reduced the wetland impacts that would have resulted from the original Inland Highway Bypass or the Martini Creek Alignment. Since 1960, Caltrans has reduced impacts to aquatic resources by 97 percent, from approximately 14.2 hectares (35 acres) to 0.40 hectares (0.97 acres), with the selection of the Tunnel Project.

A variety of wetlands including intermittent streams, seasonal ponds, drainages, permanent ponds, among others, exist throughout the project site. The California Coastal Commission (CCC) has the most comprehensive definition for wetlands and buffer zones. Consequently, using its definition results in the largest wetland and riparian area footprint leading to greater impacts as compared to the other resource and regulatory agencies, such as the United States Army Corps of Engineers (USACE). Accordingly, the CCC definition is used here to delineate wetlands, assess project impacts, and determine the overall mitigation acreage. This report specifically addresses the CCC jurisdictional wetlands, riparian areas and buffer zones.

Most of the wetlands are concentrated near the northern and southern portions of the project site. Specifically, wetlands occur at the following locations:

- Fill Disposal Site Drainage Area;
- South Portal Drainage Area; and
- North Portal Drainage Area/Shamrock Ranch.

The total area of wetlands that will be affected by the project is approximately 0.40 hectares (0.97 acres). In addition, the project will permanently affect wetland buffer zones totaling approximately 5.13 hectares (12.68 acres). Caltrans has established avoidance, minimization and mitigation measures in coordination with the following resource and regulatory agencies:

- California Coastal Commission;
- California Department of Fish and Game;
- Regional Water Quality Control Board;
- United States Army Corps of Engineers; and

- United States Fish and Wildlife Service.

The proposed mitigation for the project impacts conforms to the “no net loss” policy regarding type, function, and value of wetlands as directed by Federal Executive Order 11990. Unavoidable impacts to wetlands and buffer zones will be mitigated to provide comparable habitat, thereby replacing the impacted functions and values. At the project development team meetings, Caltrans and the resource and regulatory agencies agreed that all wetland and riparian corridor impacts resulting from the project would be mitigated at a 3:1 area replacement ratio. It was further agreed that temporary wetland and riparian corridor construction impacts of the Tunnel Project would be considered permanent due to the project duration.

Caltrans will provide approximately 2.06 hectares, (5.09 acres) of mitigation including: (1) 0.48 hectares (1.19 acres) of wetland creation; (2) 1.38 hectares (3.40 acres) of wetland restoration; and (3) 0.20 hectares (0.50 acres) of wetland enhancement. The mitigation will be provided onsite at Shamrock Ranch/OMC and offsite mitigation at the Charthouse Mitigation Site.

Mitigation at Shamrock Ranch will include the creation of a new frog pond for the California red-legged frog and restoration of some, but not all, of the wetland and riparian areas affected by the project. A total of 0.21 hectares (0.53 acres) of mitigation will be provided at Shamrock Ranch. This includes 0.016 hectares (0.04 acres) of wetland creation for the frog pond and 0.20 hectares (0.49 acres) of wetland restoration elsewhere on-site. Caltrans has already constructed the new frog pond. Other onsite wetland restoration activities will commence upon completion of the Devil’s Slide Tunnel Project.

The Charthouse Mitigation Site is located within the Montara Mountain watershed, south of the project site and east of Highway 1, just north of the former Charthouse Restaurant. The site is owned by the Peninsula Open Space Trust. Caltrans will use approximately 2.65 hectares (6.46 acres) of the site for mitigation. This includes 0.49 hectare (1.15 acres) of wetland creation, 1.17 hectares (2.90 acres) of wetland restoration and 0.99 hectares (2.40 acres) of buffer zone. The proposal for the mitigation site includes:

- Removal of fill material and re-grading to the appropriate wetland elevations;
- Planting of targeted wetland plant species;
- Elimination of non-native species; and
- Creation of one or more seasonal ponds on a portion of the site.

Due to the implementation of wetland restoration activities proposed at the Charthouse Mitigation Site in San Mateo County, approximately 1.17 hectares (2.90 acres) of disturbed wetlands will be temporarily affected. In addition, due to the need to build a temporary access road and bridge to the Charthouse Mitigation Site, approximately 0.04 hectare (0.1 acre) of wetland will be temporarily affected. However, the overall long-term wetland impact at the site will be positive due to the increase in total wetland area and the increase in wildlife habitat value.

Caltrans will commence all excavation, soil removal, grading, control of invasive species, and erosion control at the Charthouse Mitigation Site as early as June of 2005, depending on the end of the rainy season. It is estimated that these activities will take approximately two to four months. Any temporary wetland impact areas resulting from restoration activities will be replanted.

Caltrans will perform maintenance and monitoring of the mitigation sites for up to ten years or until the sites have been deemed successful and self-sustaining by the resource and regulatory agencies, whichever is earliest.

With the mitigation measures described herein, there will be no net loss of wetlands and riparian areas affected by the Devil's Slide Tunnel Project. In the long term, the on-site and off-site mitigation measures are expected to improve the overall functional capacity of the wetlands.

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Abbreviated Terms

BMPs	best management practices
BA	biological assessment
BO	biological opinion
CCC	California Coastal Commission
CRLF	California red-legged frog
CDFG	California Department of Fish and Game
DSTP	Devil Slide Tunnel Project
ESAs	environmentally sensitive areas
FAC	facultative plants
FACU	facultative upland plants
FACW	facultative wetland plants
FHWA	Federal Highway Administration
GPS	Global Position System
LCP	San Mateo County Local Coastal Program
NES	natural environment study
OBL	obligate wetland plants
POST	Peninsula Open Space Trust
RWQCB	Regional Water Quality Control Board
SSEIS/EIR	Final Second Supplement to the 1986 Environmental Impact Statement/Environmental Impact Report
SWPPP	stormwater pollution prevention plan
UPL	obligate upland plants
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service

1 Introduction and Project Description

1.1 Project Background

In November of 1996, the voters of San Mateo County approved the Devil's Slide Tunnel Initiative known as Measure T. Measure T amended the San Mateo County Local Coastal Program (LCP) and authorized the construction of a double-bore tunnel to bypass a geologically unstable region south of Pacifica along the San Mateo coast. On January 9, 1997, the California Coastal Commission (CCC) voted to certify the LCP amendment as submitted by the County. Subsequently, Caltrans submitted a consistency certification for the Devil's Slide Tunnel Project (Tunnel Project) to the CCC. On October 10, 2000, the CCC, by unanimous vote concurred with the consistency certification and found the Tunnel Project consistent with the California Coastal Zone Management Program.

On December 23, 1999, a biological assessment (BA) and a natural environment study (NES) were approved for the Tunnel Project. On December 18, 2000, the United States Fish and Wildlife Service (USFWS) issued a biological opinion (BO) (FWS REF#1-1-00-F-92; 12-18-00) finding that the Tunnel Project, including the proposed conservation measures, was not likely to jeopardize the existence of the California red-legged frog (*Rana aurora draytonii*) or destroy or modify its proposed critical habitat. Caltrans completed a conceptual mitigation plan for the California red-legged frog (CRLF) on December 22, 1999.

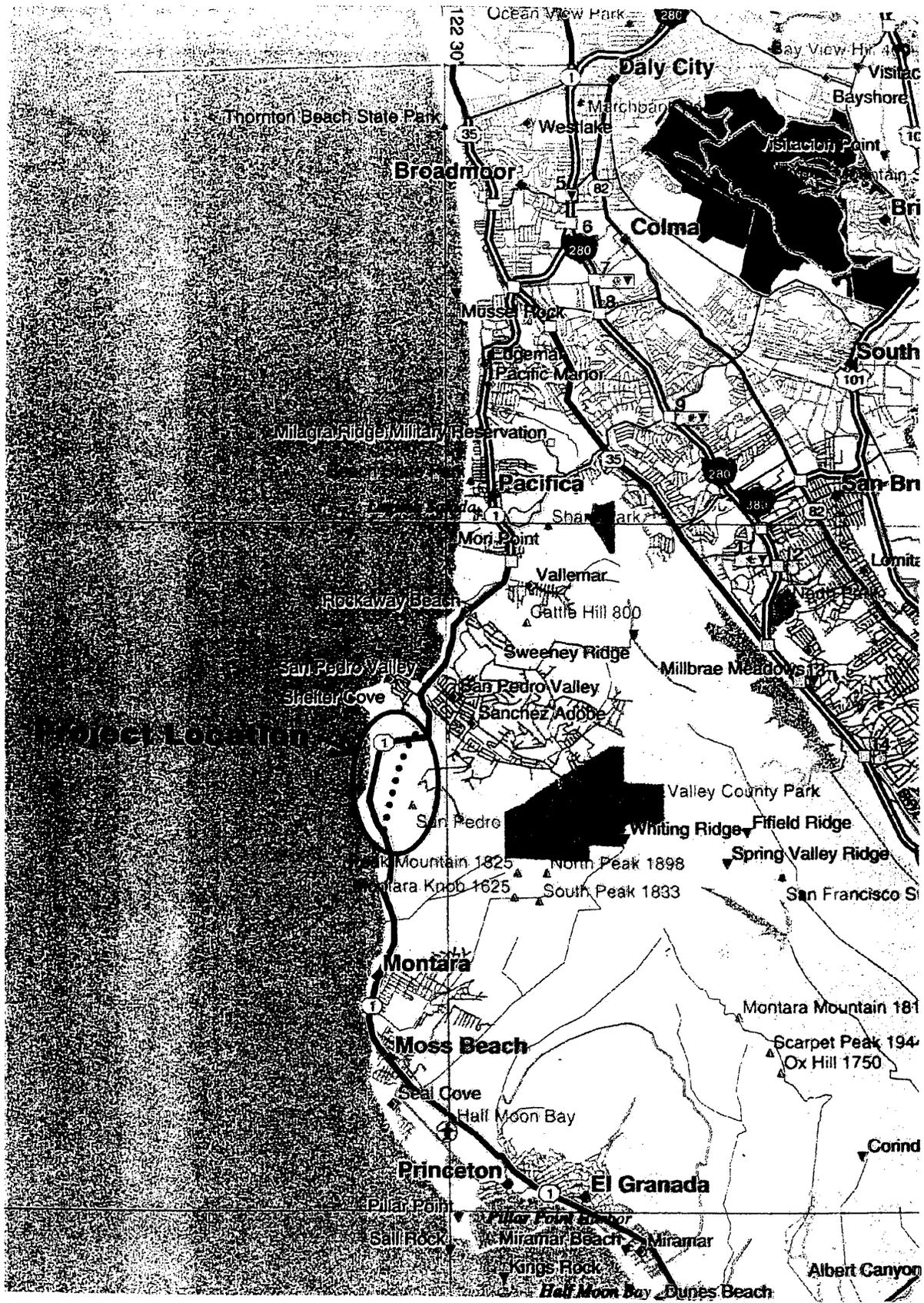
A Final Second Supplement to the 1986 Environmental Impact Statement/Report (SSEIS/EIR) was completed in May 2002 identifying the Tunnel Project as the preferred alternative. In selecting the Tunnel Project, the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA) committed to provide a safe, dependable, and stable highway to bypass the geologically unstable area of Highway 1 at Devil's Slide in San Mateo County (Exhibit 1). The Tunnel Project is a 1,219-meter-long (4,000-foot-long), double bore tunnel with one lane in each direction (Exhibit 2). The shorter alignment required for the Tunnel Project substantially reduced the total wetland impacts that would have resulted from the original Inland Highway Bypass or the Martini Creek Alignment.

Wetlands, riparian areas and buffers, and the wildlife utilizing such areas, within the project site fall under the jurisdiction of several resource and regulatory agencies including, but not limited to:

- California Coastal Commission;
- California Department of Fish and Game (CDFG);
- Regional Water Quality Control Board (RWQCB);
- United States Army Corps of Engineers (USACE); and
- United States Fish and Wildlife Service (USFWS).

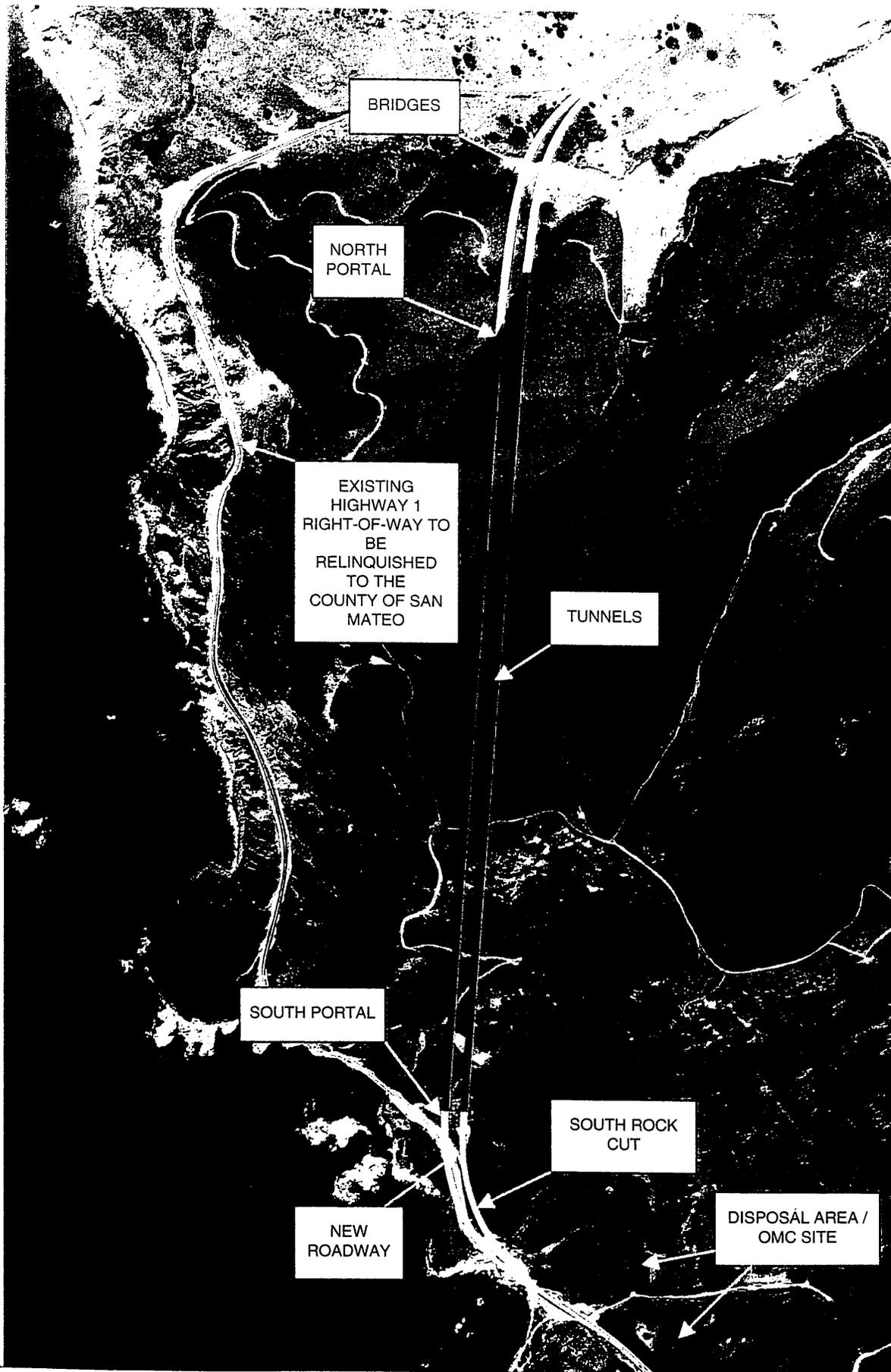
The CCC has the most comprehensive definition for wetlands and buffer zones. Consequently, using its definition results in the largest wetland and riparian area footprint leading to greater impacts as compared to the other resource and regulatory agencies, such as the USACE. Accordingly, the CCC definition is used here to delineate wetlands, assess project impacts, and determine the overall mitigation acreage. This report specifically addresses the CCC jurisdictional wetlands, riparian areas and buffer zones. The purpose of this wetlands report is to:

- Provide a summary of the Tunnel Project;
- Provide a summary of the alternatives analysis for the Tunnel Project;
- Describe the location (delineations) and value of wetlands and riparian areas at the Tunnel Project Site and at the Charthouse Mitigation Site;
- Identify the impacts to wetlands, riparian areas and buffer zones resulting from the Tunnel Project; and
- Provide a mitigation implementation, monitoring, and maintenance plan to compensate for impacts with on-site wetland creation and restoration at Shamrock Ranch and off-site wetland creation and restoration at the Charthouse Mitigation Site.



Devil's Slide Tunnel Project

EXHIBIT 1
PROJECT LOCATION MAP



Devil's Slide Tunnel Project

**EXHIBIT 2
PROJECT ELEMENTS**

2 Environmental Coordination

Caltrans has established avoidance, minimization and mitigation measures in coordination with the following resource and regulatory agencies:

- California Coastal Commission;
- California Department of Fish and Game;
- Regional Water Quality Control Board;
- United States Army Corps of Engineers; and
- United States Fish and Wildlife Service.

Unavoidable impacts to wetlands and buffer zones will be mitigated to provide comparable habitat, thereby replacing the impacted functions and values. The following documents were used during the formulation of avoidance, minimization and mitigation measures:

- *Procedural Guidance for Evaluating Wetland Mitigation Projects in California's Coastal Zone* (CCC, 1995);
- *Statewide Interpretive Guidelines for Wetlands and Other Wet Environmentally Sensitive Habitats* (CCC, 1981);
- *Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone* (CCC, 1994);
- *Habitat Mitigation and Monitoring Proposal Guidelines* (USACE, 1994); and
- *U.S. Fish and Wildlife Service Mitigation Policy* (USFWS, 1981).

Caltrans sent a conceptual mitigation plan for wetlands and riparian habitat, dated June 14, 2002, to the resource and regulatory agencies for their review and comments. Since that submittal, Caltrans has regularly coordinated with the resource and regulatory agencies to address their concerns and comments. Written responses to all comments made on the conceptual mitigation plan were sent out in formal letters to the agencies on April 13, 2003 (refer to Appendix 1). Project development team meetings with the resource and regulatory agencies were held on September 10, 2002 and April 24, 2003 to:

- Address all comments made on the conceptual mitigation plan;
- Discuss the total wetland impacts of the project; and
- Arrive at a consensus in regard to the appropriate compensatory mitigation that would be required.

At these meetings, Caltrans and the resource and regulatory agencies in attendance agreed that:

- All temporary construction impacts of the Tunnel Project would be considered permanent impacts due to the long-term nature of the proposed construction project;
- The wetland mitigation replacement ratio would be 3:1 in terms of area;
- Caltrans would provide on-site and off-site mitigation;
- Caltrans would restore some, but not all, wetland and riparian areas disturbed at Shamrock Ranch following construction; and
- Caltrans committed to provide off-site mitigation for unavoidable impacts to wetlands.

Off-site mitigation is required because the steep topography at the project site limits on-site mitigation opportunities. An off-site mitigation site has been identified within the San Pedro/Montara Mountain watershed area. The mitigation site is located east of the existing Highway 1 roadway in Montara just northwest of Kanoff Avenue (Exhibit 5). The property is owned by Peninsula Open Space Trust (POST). The full extent of on-site restoration and off-site compensatory mitigation is covered in Chapter 8 of this report.

In consultation with the USFWS, Caltrans prepared a conceptual mitigation plan for the CRLF which was included in the BA (Caltrans, 1999c). This plan provided for the creation of a new frog pond which include CCC wetlands. Also, the NES (Caltrans, 1999b) contains construction mitigation measures that will protect wetlands and riparian habitat.

3 Project Information

3.1 Project Location

The project site is located in the Coast Ranges of California. Devil's Slide is a place name given to a steep, rocky coastal promontory located midway between Montara and the Linda Mar District of Pacifica (Exhibit 1). Locally, however, Devil's Slide commonly refers to the entire stretch of rugged coastline extending from the promontory north to Point San Pedro. San Pedro Mountain, which rises to over 305 meters (1,000 feet) in elevation about 805 meters (0.5 mile) inland from the Pacific Ocean, backs Devil's Slide to the east and marks the northern end of the larger land mass known as Montara Mountain. Montara Mountain forms the high northwest trending ridge separating the San Mateo County coast from San Francisco Bay. The summit ridge of San Pedro Mountain trends northwest from Montara Mountain across the tunnel alignment. The tunnel will pass under the summit ridge approximately 0.4 kilometers (0.25 miles) inland of the existing Highway 1.

3.2 Site Description

The segment of Highway 1 included in the Tunnel Project is located between the Linda Mar District of Pacifica and Montara in San Mateo County. The north end of the project is approximately 2.4 kilometers (1.5 miles) south of Linda Mar. This section of Highway 1 is one of the most spectacular segments of the California Coast and, being immediately adjacent to the San Francisco Bay Area, is visited by large numbers of people including local residents and tourists. Leaving Pacifica, the road rises through a eucalyptus grove for about 1.6 kilometers (one mile) and emerges from the grove, on a right turn, to a view of the Shamrock Valley below and San Pedro Mountain ahead.

The road continues westerly for approximately 900 meters (2,700 feet) through a cut in the coastal bluff. A sharp turn to the south provides a sudden and spectacular view of the Devil's Slide cliffs 100 meters (330 feet) below the road and the San Pedro Mountain cliffs 200 meters (650 feet) above the road. Continuing south, one encounters numerous slide areas along the twisting road and finally Devil's Slide itself. Over time, the road has dropped approximately 20 meters (64 feet). This 1,000-meter-section (3,280-foot-section) of slide-prone road has concrete barriers on both sides, drainage facilities, a pump system for dewatering wells and a chain link fence on the slopes for rock fall protection. The concrete barriers provide additional rockfall protection on the uphill side and a barrier to inhibit motorists from driving off the cliff on the downhill side.

Leaving the Devil's Slide area, the road continues south in a curvilinear alignment along the coast for approximately seven kilometers (four miles) to the town of Montara, passing Montara State Beach and Gray Whale Cove State Beach. The road passes numerous cuts exposing the geologic formations and fills placed to cross small

creeks and gullies. There are numerous parking locations provided along the road for viewing the coastline and accessing the beaches.

3.3 Project Description

To ensure public safety, the geologically unstable region of Devil's Slide will be bypassed with a double bore tunnel. Proceeding south from Pacifica, the new alignment departs from the existing Highway 1 (Kilometer Post 64.1/Post Mile 39.8) along a 7 percent uphill grade and bridges the valley at Shamrock Ranch (which is located approximately 1.6 kilometers (one mile) south of Linda Mar Avenue in Pacifica). The north tunnel approach road is approximately 457 meters long (1,500 feet long) and includes 320-meter-long (1,050-foot-long) parallel bridges. At its highest point, the bridge structures will be approximately 38 meters (125 feet) above the valley floor of Shamrock Ranch. In addition to end abutments, intermediate piers will be required on either side of the valley. The new alignment then passes through a small ravine, enters the North Portal through San Pedro Mountain and exits just south of the Devil's Slide area where it will rejoin the existing Highway 1 (KP 61.0/PM 37.9). The tunnel slopes to the south at 2 percent grade and is a 1,219-meter-long (4,000-foot-long) double bore tunnel (separating the two traffic directions) through San Pedro Mountain. Each tunnel will be approximately 9.14 meters wide (30 feet wide), including 1.22-meter-wide (4-foot-wide) interior walkways on both sides, a 3.66-meter-wide (12-foot-wide) travel lane, and a 2.44-meter-wide (8-foot-wide) and 0.61-meter-wide (2-foot-wide) shoulder. The south tunnel approach road is 305 meters long (1,000 feet long). Approximately 466,435 cubic meters (610,075 cubic yards) of material will be generated by the project. All of the excess material will be placed at the fill disposal site near the South Portals. (Exhibit 2 depicts the project elements.)

Tunnel infrastructure systems are needed for safety and operations. These include tunnel control, tunnel surveillance, traffic control, communications, emergency evacuation, environmental monitoring and tunnel maintenance.

The project also includes the South Rock Cut, which involves excavating the existing west-facing rock slope area located just south of the South Portals, along the east side of the existing Highway 1. The cut is required for safe sight distance along the new road alignment where the new road leaves the highway and connects to the South Portals. The cut will also provide a separate construction access road adjacent to existing Highway 1. This road will be used to haul excavated materials from the tunnels to the Fill Disposal Site and will allow the construction work to be completed with minimum disruption to motorists on Highway 1.

A Tunnel Operations and Maintenance Center (OMC) will be located approximately 549 meters (1,800 feet) south of the tunnel, near the Fill Disposal Site, and will include a control room where tunnel control computers will be housed.

Upon completion of the Devil's Slide Tunnel Project, Caltrans will relinquish a portion of Highway 1 right-of-way to San Mateo County to own and operate as a non-motorized transportation facility. In turn, San Mateo County may transfer the

property to a third party for future management. The segment of Highway 1 that Caltrans will relinquish is between KP 62.12 at the south end and KP 64.06 at the north end. It is approximately 1.94 kilometers (1.21 miles) long and parallels the Pacific Ocean. This portion of Highway 1 will be restricted to a two-lane trail for pedestrians and bicycles. Caltrans will provide cul-de-sacs at both ends of the abandoned highway as staging areas for bicyclists and pedestrians. This will ensure continued public access to and along the coast, although current access at the water's edge is limited due to the steep and rocky terrain below the edge of the highway. The new alignment of Highway 1 will avoid significant impacts on property and aquatic resources and will provide the traveling public with the safest, most direct route between Pacifica and Montara.

4 Alternatives Analysis

4.1 Historic Alternatives Analysis

The following analysis outlines those project alternatives explored and adopted to avoid and/or minimize impacts to wetlands to the maximum extent possible. This analysis was completed pursuant to Section 404 of the Clean Water Act and shows that the Devil's Slide Tunnel Project is the least damaging practical alternative with respect to aquatic resources, including CCC jurisdictional wetlands and riparian areas. Since 1960, Caltrans has reduced impacts to aquatic resources, by 97 percent, from approximately 14.2 hectares (35 acres) to 0.39 hectares (0.97 acres).

The preferred alternative, the Tunnel Alternative Alignment, is one of several alternatives studied since 1960. The following is a summary of past alternatives:

- **Inland Alternative Alignment (1960):** Two-lane highway with slow vehicle climbing lanes over San Pedro Mountain from the Half Moon Bay Airport to Linda Mar Boulevard in Pacifica. This alternative would have resulted in approximately 14.2 hectares (35 acres) of riparian impacts. At that time, wetlands were included under the general heading of riparian areas.
- **Martini Creek Alignment (1986 FEIS):** Two-lane highway with slow vehicle climbing lanes over San Pedro Mountain from just north of Montara to Linda Mar Boulevard in Pacifica. This alternative included several bridges and would have resulted in approximately 11.3 hectares (28 acres) of potential impacts to USACE Section 404 wetlands and other waters of the U.S. (Final Second Supplement to the 1986 EIS/EIR, May 2002).
- **Tunnel Alternative Alignment—Preferred Alternative (Measure T):** A 1,219 meter-long (4,000-foot-long), double bore tunnel and north approach bridges with one lane in each direction from just south of Devil's Slide to just north of Shamrock Ranch in Pacifica. This alternative would have resulted in approximately 0.84 hectare (2.08 acres) of wetland impacts.

4.2 NEPA/404 Integration Process

In December 1996, Caltrans initiated an interagency meeting under the NEPA/404 Integration Process for the Devil's Slide Tunnel Project. This was done to examine four alternative alignments for the tunnel. The four alternatives considered at that time included placing fill within Shamrock Ranch between existing Highway 1 and the North Portals. An initial study of the four alternatives for placing fill across Shamrock Ranch identified the following impacts to aquatic resources including wetlands, riparian areas and Waters of the U.S.:

Fill Alternatives	A	B	C	D
Shamrock Ranch	0.34	0.7	1.99	0.65

Impacts (acres)¹

It is important to note that the wetland impacts for all fill alternatives were at Shamrock Ranch only. As further described below, Caltrans ultimately chose a modification of Alternative C, incorporating a bridge, as the preferred alternative through Shamrock Ranch.

In May of 1997, USFWS did not favor any of the fill alternatives. However, USFWS was willing to accept a design option involving a bridge structure to span Shamrock Ranch that would substantially avoid impacts to CRLF habitat. In June 1997, USACE indicated that an individual permit would be required if Caltrans pursued the fill alternative within Shamrock Ranch. Based on comments by the resource and regulatory agencies, Caltrans adopted Alternative Alignment C but with a bridge between Highway 1 and the North Portals. The selection considered engineering and geological concerns, cost, potential disruptions to the Shamrock Ranch operations and other factors. Although the bridge resulted in an increased project cost of approximately \$20 million, it avoided significant impacts to CRLF habitat, including CCC jurisdictional wetlands. Caltrans and the resource and regulatory agencies then mutually agreed to end the formal NEPA/404 Integration Process.

4.3 Final Second Supplement to the 1986 EIS/EIR, May 2002

In 2002, the Final Second Supplement to the 1986 EIS/EIR, May 2002 was adopted. This document analyzed the preferred Tunnel Alternative Alignment that included impacts associated with a bridge crossing over Shamrock Ranch and consideration of all impacts for the project.

Ultimately, through further avoidance and minimization efforts, Caltrans reduced the area of potential impacts to aquatic resources to 0.40 hectares (0.97 acres) for the entire Tunnel Project. The revisions to and the selection of different project alternatives since 1960 shows the progress made in avoiding and minimizing impacts to aquatic resources. The following is a more detailed account of the further efforts Caltrans has taken to avoid and minimize impacts for the preferred Tunnel Alternative.

¹ These impacts were based on cursory visual observations of wetlands in the Ranch. Very little delineation work had been formally performed. Also, at the time of the initial assessment, consideration of wetland impacts related to the whole project were not known.

4.4 Avoidance and Minimization Efforts

Caltrans has worked in collaboration with the resource and regulatory agencies and the local community to further avoid or minimize environmental impacts associated with the Devil's Slide Tunnel Project. Since identifying the Tunnel Alternative (Alternative Alignment C with a bridge) as the preferred alternative, Caltrans has substantially reduced impacts to wetland and riparian areas. This has been accomplished through the following design revisions aimed at maximizing on-site avoidance to wetlands:

- **Realigning the Construction Access Roads at Shamrock Ranch:** The reduction of wetland impacts within Shamrock Ranch was achieved mainly by realigning construction access roads throughout the property to avoid wetland areas as defined by the CCC. In addition, Caltrans narrowed the roadway prism in spots that traversed wetlands to minimize impacts. This has been accomplished using temporary retaining walls. These design revisions avoided and minimized wetland impacts at the North Reservoir Pond Earthen Dam and at a small wetland adjacent to the horse dressage ring.
- **Adding a Water Quality Basin:** Following the adoption of the Second Supplement to the 1986 EIS/EIR, dated May 2002, Caltrans proposed the installation of a bioswale within Shamrock Ranch to treat roadway runoff. This bioswale would have resulted in small impacts to wetlands and riparian areas. The revised plan is to install a water quality basin to treat roadway runoff in a location that completely avoids impacts to wetlands and riparian areas at Shamrock Ranch.
- **Relocating the OMC Building and Re-aligning Access at the Fill Disposal Site:** Caltrans achieved a significant reduction of wetland and riparian impacts by relocating access into the OMC site from the north to the south, pushing the OMC building farther east, limiting grading and installing retaining walls. A modification to the Soil Nail Wall design at the South Rock Cut reduced the amount of fill to be placed at the fill disposal site by 31,000 cubic meters (41,000 cubic yards). In turn, this avoided filling the downhill seasonal ponding depression and associated willow riparian corridor, the largest wetland for the entire project site.
- **Extending the South Tunnel Portal:** The initial plan was to construct the South Portal (northbound direction) as close to the hillside face excavation/beginning of the tunnel as possible. Caltrans has revised this plan to extend the South Portal out and away from the face of the slope. This will reduce the height and scale of excavation. This revised design involves constructing a retaining wall adjacent to the sliver wetlands along the steep hillside to eliminate the need to construct within the wetlands.
- **Removal of Access Road at South Tunnel Portal:** The initial plan called for roadway drainage improvements and a maintenance access area at the north end of the Soil Nail Walls. These improvements would have required filling a seasonal wetland. The revised drainage plan will now allow runoff from above

the walls to sheet flow over the face of the soil nail wall. This eliminates the need for drainage structures and access at the north end of the walls as well as significantly minimizing the excavation behind the walls thereby minimizing impacts to the seasonal wetland.

Caltrans has also implemented a number of measures to minimize impacts to wetlands, riparian areas and buffers during construction. These include the following:

- **Marking Environmentally Sensitive Areas at Shamrock Ranch:** At Shamrock Ranch and at the North Portal, Caltrans will delineate environmentally sensitive areas (ESAs) and mark them with high visibility orange plastic fences, silt fences and sturdy perimeter barriers during construction to protect ponds, wetlands, riparian habitat and CRLF habitat. The ESAs will be off limits to all construction activities, personnel, vehicles, and equipment. The ESAs protecting CRLF habitat will be bordered by frog-proof fences. Caltrans will regularly monitor the construction site and the integrity of the ESAs and will prepare a Construction Monitoring Field Sheet for each monitoring period.
- **Marking Environmentally Sensitive Areas at the Fill Disposal Site and South Portal:** At the Fill Disposal Site and the South Portal, Caltrans will delineate ESA boundaries and mark them with high visibility orange plastic fences, silt fences and sturdy perimeter barriers. The ESAs protecting California red-legged frog habitat will be bordered by frog-proof fences. A biologist will be assigned to regularly monitor the construction site and the integrity of the ESAs and will prepare a Construction Monitoring Field Sheet for each monitoring period.
- **Construction Monitoring of Storm Water Pollution Prevention Measures:** Caltrans will implement storm water pollution prevention measures and best management practices (BMPs) during construction to help minimize and avoid temporary water quality and sediment impacts that could affect the functional value of the wetlands at the site. Caltrans and an independent construction review team that reviews all construction sites statewide will monitor the implementation of storm water pollution prevention measures and BMPs.
- **Mitigating for Potential Impacts to CRLF Use at North Reservoir Pond Wetlands:** Although the North Reservoir Pond will not be directly affected by the project, indirect construction activities such as noise, traffic, and overhead work could affect the CRLF during the course of bridge construction. To compensate for these possible impacts, the USFWS requested that Caltrans relocate the CRLF to a new frog pond. In 2000, Caltrans created a new pond, including wetlands, in an upland horse pasture at Shamrock Ranch to provide additional CRLF breeding habitat. CRLF were then relocated from the North Reservoir Pond to the new pond. These measures were authorized under the BO issued by the USFWS for the Tunnel Project. The new pond provides high value breeding habitat for the CRLF during and following construction.

- **Protecting CRLF at the North Reservoir Pond:** It is not possible to relocate the entire CRLF population from the North Reservoir Pond. In 2002, the pond and its associated wetlands were enclosed in a frog-proof fence. This fence is equipped with one-way entrance funnels that allow wandering frogs to enter the pond but prevent them from leaving. Caltrans will carefully maintain this fence throughout construction of the Tunnel Project. The fence helps minimize incidental loss of CRLF by providing a refuge from construction activities. In conjunction with silt fence and other water pollution control measures required during construction, this barrier will further protect the North Reservoir Pond habitat, including wetlands.
- **Balanced Cantilever Bridge Design:** Given that the North Reservoir Pond will have CRLF throughout the course of construction, a cantilevered bridge design was adopted to minimize construction activity close to the North Reservoir Pond and its attendant wetlands. The cantilever bridge will be built without having to erect scaffolding or reinforced timber. This type of design allows for sectional bridge construction without working below the bridge. While this type of bridge construction is costlier than other methods, it reflects efforts to minimize harm and disruption to the CRLF.

4.5 Alternative Analysis–Summary

From a historical perspective, an overview of the alternatives analysis shows that the preferred alternative, the Tunnel Alternative (Alternative Alignment C with a bridge), is clearly the least environmentally damaging alternative and avoids or minimizes impacts to aquatic resources while fulfilling the scope, purpose and need of the Project. With respect to the Tunnel Alternative, Caltrans refined the project in collaboration with resource and regulatory agencies and local partners to either avoid or minimize impacts to aquatic resources such as wetlands, riparian areas and buffers.

5 Existing Wetlands and Buffer Zones— On-Site, Shamrock Ranch/OMC/Fill Disposal Site

5.1 Environmental Setting

The study site is located in the Coast Ranges of California. Devil's Slide is a place name given to a steep, rocky coastal promontory located about midway between Montara and the Linda Mar District of Pacifica. Locally, however, Devil's Slide commonly refers to the entire stretch of rugged coastline extending from the promontory north to Point San Pedro.

San Pedro Mountain, which rises to over 305 meters (1,000 feet) in elevation about 805 meters (0.5 mile) inland from the ocean, backs Devil's Slide to the east and marks the northern end of the larger landmass known as Montara Mountain. Montara Mountain forms the high northwest trending ridge separating the San Mateo County coast from San Francisco Bay.

The summit ridge of San Pedro Mountain trends west-northwest from Montara Mountain across the alignment. The terrain is characterized by steep, eroded slopes with natural gradients ranging between thirty and seventy percent. Deeply incised gullies drain the ridges. An old, abandoned county road, several graded fire and utility maintenance roads, and foot trails crisscross San Pedro Mountain.

The project site has a Mediterranean climate with a strong maritime influence. The winters are relatively warm with a short rainy season. Summers tend to be relatively cool and dry but subject to extended periods of coastal fog. Temperature ranges, seasonally and diurnally, are narrow while air moisture remains relatively high. Wind is an important environmental factor on the exposed slopes of San Pedro Mountain and Montara Mountain.

Extremely dense northern coastal scrub covers most of the project vicinity, especially those portions over San Pedro Mountain and along the steeper foot slopes of Montara Mountain. This plant community is dominated by coastal sage (*Artemisia californica*) and coyote brush (*Baccharis pilularis*). Other common species include poison oak (*Toxicodendron diversilobum*), bush monkey flower (*Diplacus aurantiacus*), and California blackberry (*Rubus vitifolius*). Additional herbs include yarrow (*Achillea millefolium* v. *californica*), pearly everlasting (*Anaphalis margaritacea*), yerba buena (*Satureja douglasii*), coast figwort (*Scrophularia californica*), monardella (*Monardella villosa* v. *franciscanum*) and lizard tail (*Eriophyllum staechadifolium*). Small grassy openings and barren rocky areas are scattered throughout the scrub. The scrub extends westerly to the cliffs above Devil's Slide, although coyote brush becomes less dominant nearer the coast, replaced by poison oak and coastal sage along the bluffs.

In addition to the northern coastal scrub community described above, the tunnel alignment corridor traverses areas with other types of vegetation that are both natural and introduced including:

- Aquatic sites and coastal freshwater marshes/seeps;
- Willow riparian scrub;
- Coastal grassland;
- Non-native forest; and
- Pasture/ranch uses/non-native brushland.

5.2 Study Methodology

5.2.1 Field Methods

Caltrans biologists conducted a field delineation for the project site. Using the CCC definition for wetlands, biologists mapped the wetland areas in the field using a Trimble Global Positioning Device.

5.2.2 Regulatory Definitions

Wetland delineations at the Devil's Slide Tunnel Project site were conducted in accordance with the classification procedures described in the *Procedural Guidance for the Review of Wetland Projects in California's Coast Zone* prepared by the California Coastal Commission (CCC, 1994).

The Coastal Act defines wetlands as *...lands within the coastal zone which may be covered periodically or permanently with shallow water....* The definition adopted by the CCC and codified in Section 13577 (b)(1) of Title 14 of the California Code of Regulations defines wetland as *lands where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent or drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salt or other substance in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deepwater habitats. For purposes of this section, the upland limit of a wetland shall be defined as:*

- a. the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;*
- b. the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or*

- c. *in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not.*

Although this definition is based on inundation or shallow saturation long enough for anaerobic reducing conditions to develop within the root zone, in practice, hydrology is the most difficult wetland indicator to demonstrate. In California, a predominance of hydrophytes or a predominance of hydric soils is taken as evidence that the land was “wet enough long enough” to develop wetland characteristics (refer to Appendix 2, Dixon; memo, 2002).

Dr. John Dixon, Wetland Ecologist for the CCC, states that the CCC has always found that the wetland definition in its Regulations is a one-parameter definition. Dr. Dixon provides the example that, in past actions, the Coastal Commission has recognized OBL (obligate wetland plants), FACW (facultative wetland plants), and FAC (facultative plants) species as presumptively “hydrophytic” and, in general, a preponderance of those species has been accepted as presumptive evidence of a wetland. However, he notes that where the wetland character of a site is demonstrably ambiguous because of the presence of substantial upland features, characterizing a species, especially a “FAC” species as “hydrophytic,” requires professional judgment in addition to a demonstration that the species is included on a list of plant species that occur in wetlands. In such cases, the wetland presumption may be falsified where there is strong, positive evidence of upland conditions (as opposed to a lack of evidence, for example, of hydrology) (refer to Appendix 2, Dixon; memo, 2004).

5.2.3 Wetland Delineation Methodology

Since no delineation methods or protocols are included in California law, Caltrans biologists followed the standard methods contained in the U.S. Army Corps of Engineers (USACE) 1987 Wetlands Delineation Manual. Sampling locations were established within the study area of the Devil’s Slide Tunnel Project site to establish the boundary of wetlands. The vegetation, soils, and hydrology were assessed and evaluated for each sampling location. Caltrans biologists also employed professional judgment during the field investigation of sampling locations and considered factors such as topography, adjacency to existing wetland areas, drainage patterns, and soil characteristics. The location of sampling areas and potential wetland boundaries were recorded on project base maps using a Global Positioning System (GPS).

Plant species were identified in the field with taxonomy according to *The Jepson Manual* (Hickman, 1993) and classified according to *The National List of Plant Species that Occur in Wetlands* (Reed, 1988) for wetland indicator status, revised in 1996 (Kartez, 1996). This list divides plant species into five categories based upon their frequency of occurrence in wetlands. These categories include:

- Obligate wetland plants (OBL) that occur almost always in wetlands under natural conditions (>99 percent of the time in wetlands);

- Facultative wetland plants (FACW) that usually occur in wetlands, but occasionally occur in non-wetlands (67 percent to 99 percent of the time in wetlands);
- Facultative wetland plants (FAC) that are equally likely to occur in wetlands or non-wetlands (34 percent to 66 percent of the time in wetlands);
- Facultative upland plants (FACU) that usually occur in non-wetlands, but occasionally are found in wetlands; and
- Obligate upland plants (UPL) that almost always occur in non-wetlands.

At each sampling point, Caltrans biologists conducted a plot survey, and the relative percent cover of each plant species within the plot was determined for each vegetation layer. Those species, whose cumulative total exceeded 50 percent, plus any species with a relative cover of at least 20 percent, were considered dominants. A predominance of wetland plants was demonstrated when greater than 50 percent of the dominant species present were classified as FAC, FACW, or OBL in the *National List of Plant Species that Occur in Wetlands under Region 0, California*.

Caltrans Biologists took a soil sample in each sampling location by hand auger, or by digging a soil pit with a tile spade, to a minimum depth of 25.4 cm (10 inches). The soil data was taken at 25.4 cm (10 inches). Soil texture was estimated in the field by means of a texture-by-feel analysis. Soil color was determined using Munsell Soil Color Charts. All soil samples were evaluated for evidence of redoximorphic features such as iron and manganese concentrations, a reduced matrix, or for depletions, all of which are hydric soil indicators. The determination of a hydric soil was generally based on methods and guidance contained in the USACE 1987 Wetland Delineation Manual, supplemented by criteria developed by the Natural Resource Conservation Service in cooperation with the National Technical Committee for Hydric Soils (NRCS, 2002).

Field indicators of wetland hydrology included, but were not necessarily limited to, visual observations of soil saturation or inundation, drainage patterns, drift lines, sediment deposition, watermarks, and historic records. The degree of inundation or saturation at the project site can vary widely from year to year depending on rainfall patterns. In Mediterranean climates where the majority of the precipitation occurs during the fall and winter, many wetland areas may exhibit seasonal hydrology. The amount of monthly precipitation for the project area during summer months is 0.64 and 0.35 centimeters (0.25 and 0.14 inches), respectively, and as would be expected, primary indicators of wetland hydrology were not readily apparent.

In addition to the plot surveys, the various functions of the wetlands on the project site were also determined. (Refer to Appendix 3 for the plot survey locations. Refer to Appendix 4 for the wetland data sheets.)

5.3 Type, Function and Value of Existing Wetlands and Buffer Zones

A variety of wetlands including permanent and intermittent streams, seasonal ponds, drainages, permanent ponds, among others, exist throughout the project site. Most of

these wetlands are concentrated near the northern and southern portions of the project. Wetlands specifically occur at the following locations:

- North Portal Drainage Area/Shamrock Ranch
- South Portal Drainage Area
- Fill Disposal Site Drainage Area

Caltrans biologists delineated these areas using the CCC definition of wetlands.

The CCC requires the designation of buffer zones around wetlands and along riparian corridors. These buffer zones are intended to provide diversity while protecting the ecological integrity of those sensitive systems. Wetland buffer zones extend 30 meters (100 feet) beyond the limit of wetland vegetation or, in the case of natural water bodies, beyond the high water line.

The following section describes only the existing wetlands and buffer zones that will be affected by the Devil's Slide Tunnel Project.

5.4 North Portal Drainage Area/Shamrock Ranch

There are several existing wetlands within the North Portal Drainage Area/Shamrock Ranch, including:

- North and South Reservoir Ponds
- Intermittent Drainages

The type, function and value of the wetlands follows (refer to Exhibit 3 and Figures 1 through 10 in Appendix 8).

5.4.1 North and South Reservoir Ponds

In the past, earthen dams were installed within two different drainage locations at Shamrock Ranch, creating the North Reservoir Pond and South Reservoir Pond. These Shamrock Ranch reservoir ponds date from the 1950s when the existing drainages were impounded to form stock or irrigation ponds. In spite of the agricultural land uses, wetlands have evolved over time and now surround the perimeter of the reservoir ponds. These wetlands function as habitat for wildlife and contain a high diversity of vegetation including willow (*Salix spp.*), tule (*Scirpus californicus*), rush (*Juncus spp.*), and blackberry (*Rubus vitifolius*).

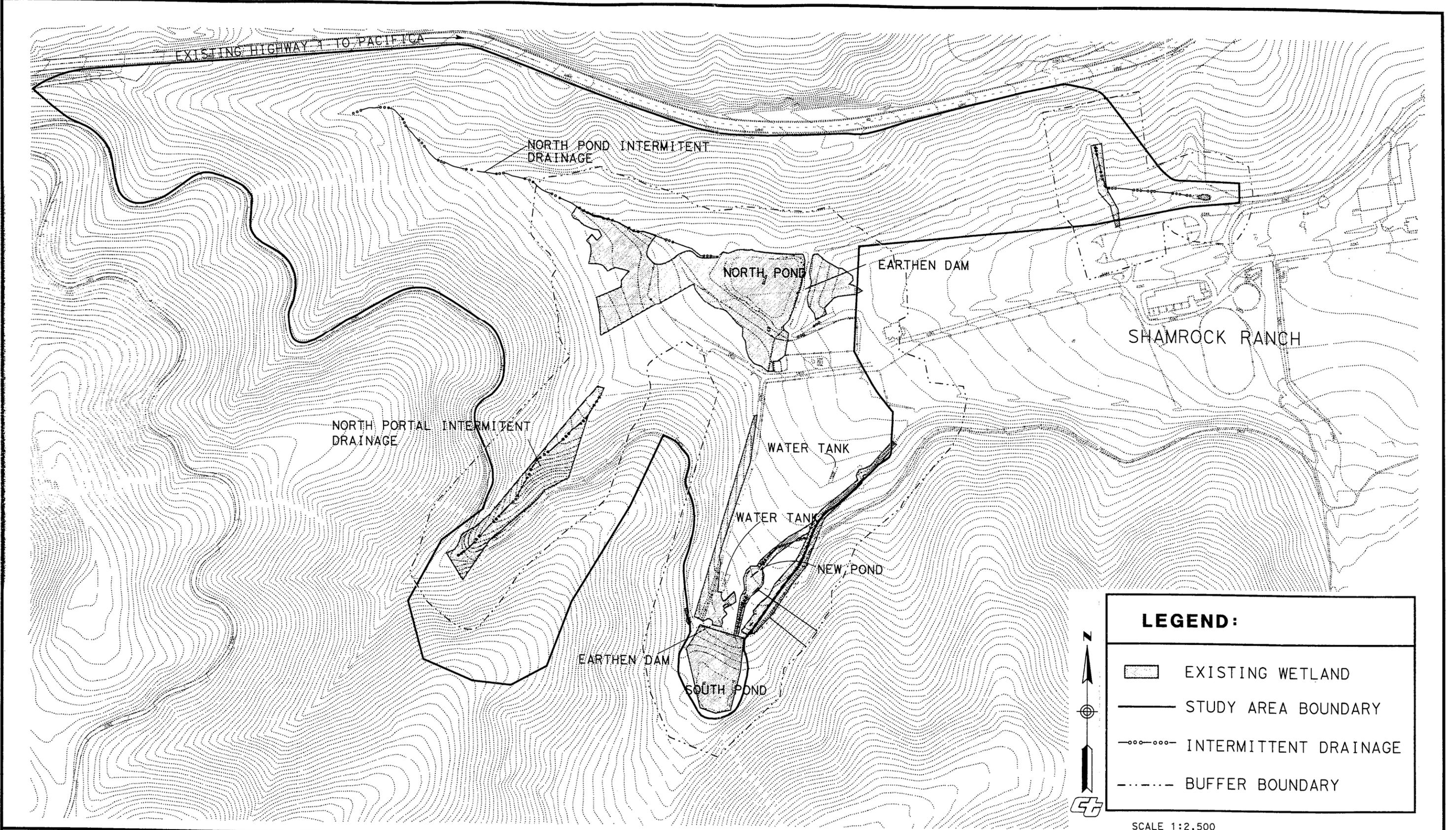
The reservoir ponds also provide habitat for a listed wildlife species. The California red-legged frog (*Rana aurora draytonii*) populates the North and South Reservoir Ponds and uses the areas for breeding, feeding, and refuge. The CRLF is a federally-threatened species and is also designated as a State of California "species of special concern." Therefore, all wetlands associated with the reservoir ponds have a high wildlife habitat value. The impacts and mitigation measures for the Tunnel Project are discussed in the BA/NES dated December 23, 1999 and the BO dated December 18, 2000.

In addition to CRLF habitat, flood control and sediment stabilization, the reservoir ponds function as a water supply for horses boarded at the ranch. At the present time, water is diverted from the South Reservoir Pond by pipe and transferred to adjacent horse troughs.

The reservoir ponds provide minor recreational use for the residents of Shamrock Ranch in terms of swimming and boating. There are also horse trails leading up to the hills above in the western portion of the property that traverse through some portions of the wetland areas. Even with the agricultural land uses associated with Shamrock Ranch, the reservoir ponds and wetland drainages function as open space and serve as transitional areas between the concentrated ranch operations in the eastern portion of the property and the open, coastal hills above the Pacific Ocean in the western portion.

The buffer zone around the west, north and east sides of the North Reservoir Pond is generally of moderate to high habitat value. Along the south side of the reservoir pond, the buffer zone consists primarily of a horse pasture characterized by closely cropped annual grasses. Wildlife habitat values in this area are low.

The South Reservoir Pond buffer zone is characterized by generally high quality habitat with only minimal disturbance. The east and south sides of the reservoir pond exhibit well-developed riparian growth. On the north side, the South Reservoir Pond buffer zone intersects the buffer zone for the new frog pond with the only disturbance being a horse trail at the base of the impoundment dam.



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**DEVIL'S SLIDE TUNNEL PROJECT
 SHAMROCK RANCH NORTH PORTAL DRAINAGE
 EXISTING WETLANDS AND BUFFER ZONES**

LEGEND:

-  EXISTING WETLAND
-  STUDY AREA BOUNDARY
-  INTERMITTENT DRAINAGE
-  BUFFER BOUNDARY

SCALE 1:2,500

EXHIBIT 3

LEGEND:



EXISTING WETLAND



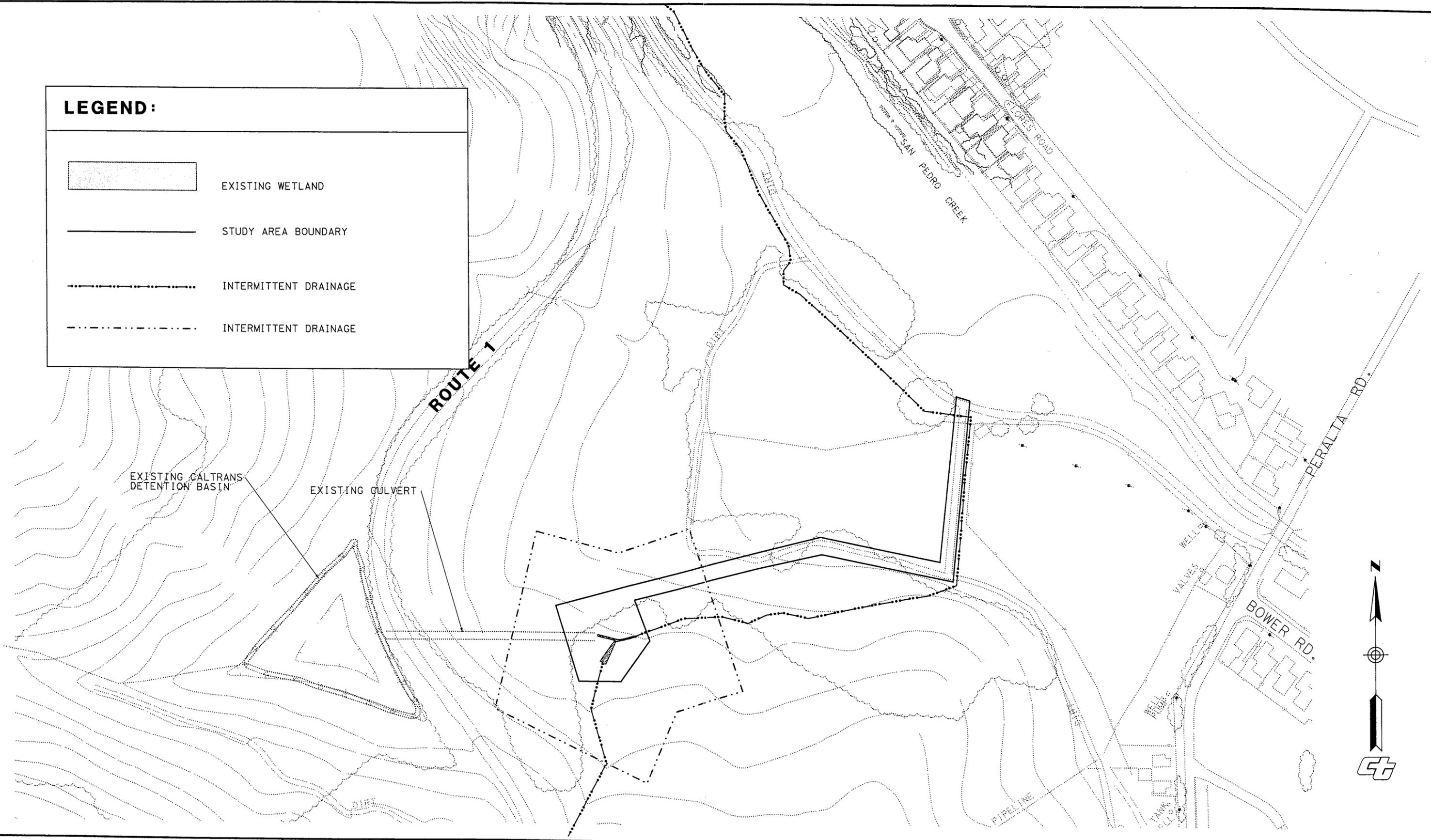
STUDY AREA BOUNDARY



INTERMITTENT DRAINAGE



INTERMITTENT DRAINAGE



EXISTING CALTRANS
DETENTION BASIN

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**DEVIL'S SLIDE TUNNEL PROJECT
SHAMROCK RANCH NORTH PORTAL DRAINAGE
EXISTING WETLANDS AND BUFFER ZONES**

EXHIBIT 3A

5.4.2 Intermittent Drainages

The North Portal Drainage Area is located on the west end of Shamrock Ranch, which is dominated by agricultural land uses. This includes horse grazing, as part of a private ranching operation. Over time, the agricultural land uses have greatly altered the natural environment and disturbed native vegetation.

The natural environment within Shamrock Ranch has been either altered or disturbed by the agricultural land uses. Therefore, except for the reservoir ponds and their buffer zones, which provide habitat for the CRLF, the wildlife habitat value of the wetlands located on Shamrock Ranch is generally lower than other wetland areas within the vicinity of the project site. Many of the disturbed areas of Shamrock Ranch that qualify as CCC wetlands are dominated by poison hemlock (*Conium maculatum*), a hydrophytic plant, and poison oak (*Toxicodendron diversiloba*). These invasive plant species have colonized disturbed ground on the ranch resulting in monocultural plant stands. These areas have very low habitat value except to passerine birds and small rodents. Since these wetlands are located on disturbed areas of the ranch, do not possess wetland hydrology or hydrophytic soil and contain invasive plant species, they are considered to have limited habitat value for wildlife.

There are two areas within the Ranch that contain intermittent drainages where wetlands are either contiguous to or are within the actual drainage. The coastal drainage immediately upstream of the North Reservoir Pond is bounded by coastal scrub and Monterey cypress (*Cupressus macrocarpa*). At the intermediate outfall of the pond, vegetation is dominated by poison oak. Further downstream, there is a riparian corridor containing willow, California blackberry and horsetail (*Equisetum arvense*).

The buffer zone along the intermittent drainage upstream of the North Reservoir Pond is characterized by coastal scrub vegetation interspersed with disturbed grasslands and non-native forest stands of Monterey pine. Habitat value is moderate to high due to the diversity of the cover. The coastal scrub provides habitat value for birds and other wildlife. The diversity of habitat and abundance of ecotonal areas created by the pattern of natural vegetation and agricultural activities provides excellent foraging opportunities for raptors and scavengers such as owl, red-tailed hawk, kestrel, raven, and turkey vulture. Other typical bird species include the California quail, the white-throated swift, song sparrow, white crown sparrow, Bewicks wren, barn swallow, cliff swallow, Wilson warbler, yellow warbler, bushtit, scrub jay, California thrasher, brown twohee, spotted twohee, lesser goldfinch, and house finch. Other wildlife including the small reptiles such as the western fence lizard and the southern alligator lizard are found in these areas. Mammals observed in the project area include woodrat, raccoon, brush rabbit, grey squirrel, chipmunk, ground squirrel, striped and spotted skunk, coyote, and black-tailed deer. The buffer zone also functions as erosion control areas for winter storm peak runoff generated in the upper portion of the watershed.

The intermittent drainage located in a steep natural drainage at the planned North Portal is vegetated by a variety of coastal scrub species and a narrow band of plants adapted to seasonal moisture. These plants include California blackberry, stinging nettle (*Urtica dioica* ssp. *Gracilis*), rush, giant chainfern, horsetail and poison hemlock.

The steep natural drainage at the planned North Portal buffer zone is characterized by dense coastal scrub vegetation with moderate to high habitat value. The coastal scrub provides habitat value for birds and other wildlife and also functions as erosion control areas for winter storm peak runoff generated in the upper portion of the watershed. The diversity of habitat and abundance of ecotonal areas created by the pattern of natural vegetation and agricultural activities provides excellent foraging opportunities for raptors and scavengers such as owl, red-tailed hawk, kestrel, raven, and turkey vulture. Other typical bird species include the California quail, the white-throated swift, song sparrow, white crown sparrow, Bewicks wren, barn swallow, cliff swallow, Wilson warbler, yellow warbler, bushtit, scrub jay, California thrasher, brown twohee, spotted twohee, lesser goldfinch, and house finch. Other wildlife including the small reptiles such as the western fence lizard and the southern alligator lizard are found in these areas. Mammals observed in the project area include woodrat, raccoon, brush rabbit, grey squirrel, chipmunk, ground squirrel, striped and spotted skunk, coyote, and black-tailed deer.

An important function of the wetland drainages of Shamrock Ranch involves flood control and sediment stabilization. The large area of hills in the western portion of the watershed and the steeply sloping topography create high runoff rates during peak flows of winter storms. Stinging nettle, blackberry, and California coffeeberry (*Rhamnus californica*) dominate this drainage. Since this wetland does not exhibit wetland hydrology or hydrophytic soil, it is considered to have a limited habitat for wildlife. The runoff from the drainages eventually flows into the ponds. The ponds help capture and detain peak storm water runoff and also serve to trap and settle out large silt and sediment material flowing from the steeply sloping watershed above. This peak runoff flows through the drainages of Shamrock Ranch to San Pedro Creek and ultimately into the Pacific Ocean.

A small portion of a wetland area is located down slope from the South Reservoir Pond and immediately adjacent to an existing horse trail. This perennial wetland evolved over time and is apparently fed by seeps associated with the upper hillside above, possibly including underground seepage from the South Reservoir Pond. Hydrophytic vegetation is dominated by reed, horsetail, and blackberry. This wetland, which is adjacent to the enclosed new CRLF pond, functions as wildlife habitat for amphibians such as Pacific tree frogs and coast garter snakes. During times of peak stormwater runoff, this wetland serves to filter sediment from runoff flowing from the uphill slopes to the Shamrock Ranch valley below.

5.5 South Portal Drainage Area

Areas that have existing wetlands within the South Portal Drainage Area include:

- Uphill Drainage
- Seasonal Ponding Depression and Permanent Drainage

The type, function and value of these wetlands are described below (refer to Exhibit 4 and Figures 11 through 17 in Appendix 8.)

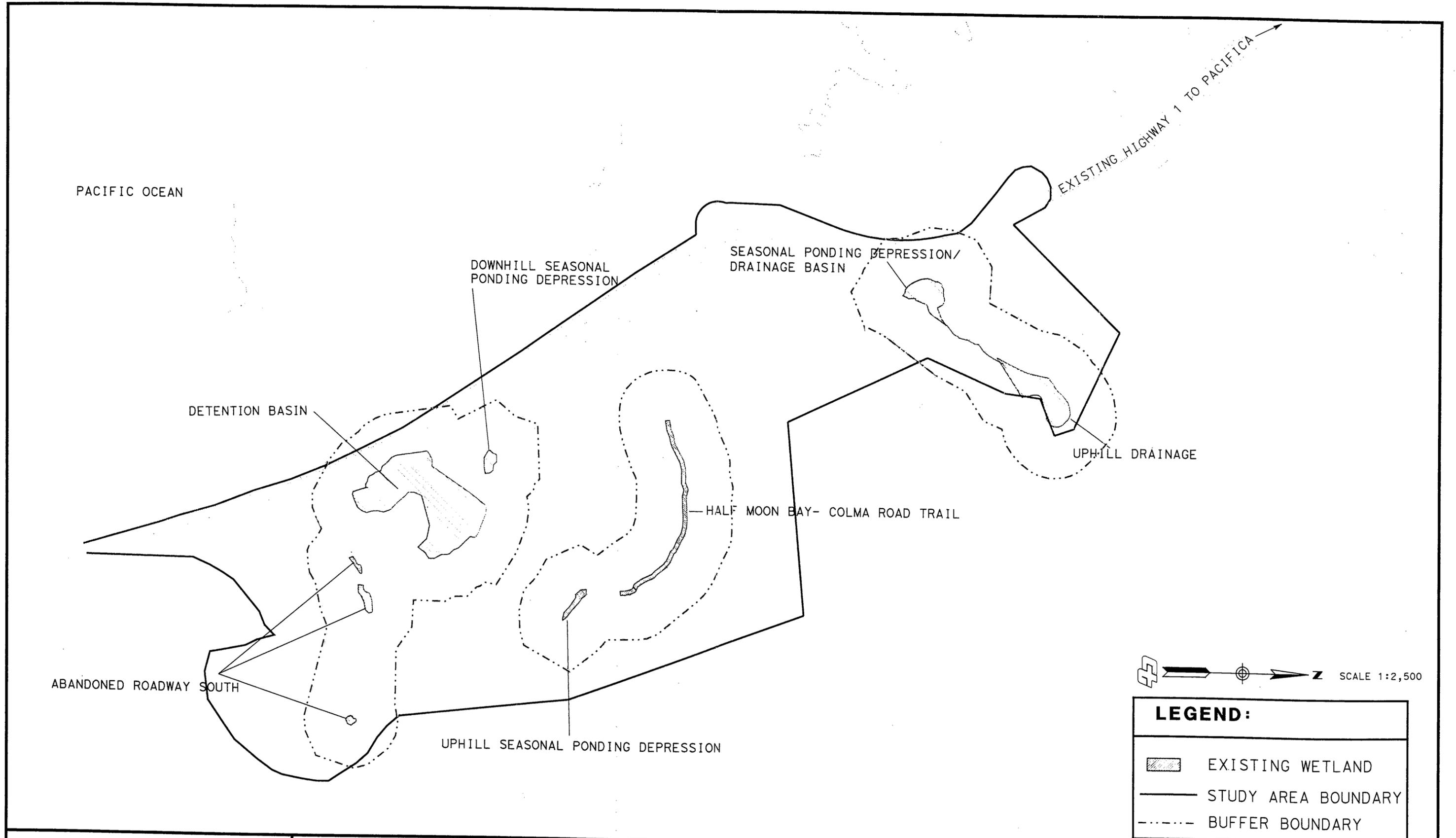
5.5.1 Uphill Drainage

This natural perennial drainage is situated on the side of a steep, rocky hillside just east of Highway 1. It carries runoff from the upper watershed down to an existing drainage basin with a standpipe. The runoff flows from this standpipe under Highway 1 and ultimately into the ocean. Further uphill, the drainage was cut by the old county road alignment which has caused great disturbance and erosion over the years. The old county roadway alignment is the limit of the study area for this delineation. However, the cutting of the drainage has also affected the immediate topography in such a way that additional wetlands have developed within the abandoned alignment.

The portion of the drainage immediately above the seasonal ponding depression to the old county road is so steep that it creates a small cascading waterfall during the winter and spring and supports a small wetland strip. Toward the top of the cascading waterfall, there are areas of willow on both sides of this steep hillside. Owls and ravens use this steep drainage area for habitat. Other important functions of the cascading waterfall and the rest of the uphill drainage are open space and the contribution to aesthetic values.

Above the steep waterfall, the drainage somewhat flattens and fans out to a bowl-shaped area. At the bottom and the lower sides of this bowl-shaped drainage, the hydrophytic vegetation is very dense and diverse. The above normal precipitation of the El Nino rainy season caused a mudslide within the top portion of this drainage.

The vegetation found within buffer zone areas at the South Portal Drainage Area is primarily coastal scrub mixed in with large boulders and rocky areas. The coastal scrub provides habitat value for birds and other wildlife; therefore, the buffer zone has relatively high habitat value on three sides of the wetland. Typical bird species include the California quail, the white-throated swift, song sparrow, white crown sparrow, Bewicks wren, barn swallow, cliff swallow, Wilson warbler, yellow warbler, bushtit, scrub jay, California thrasher, brown twohee, spotted twohee, lesser goldfinch, and house finch. Other wildlife including the small reptiles such as the western fence lizard and the southern alligator lizard are found in these areas. Mammals observed in the project area include woodrat, raccoon, brush rabbit, grey squirrel, chipmunk, ground squirrel, striped and spotted skunk, coyote, and black-tailed deer. In addition, the peregrine falcon nests on a coastal bluff nearby on the other side of existing Highway 1 and uses the coastal scrub area for foraging opportunities. The buffer zone also functions as erosion control areas for storm peak runoff generated in the upper portion of this watershed that drains San Pedro Mountain and the steeply sloping hills. Existing Highway 1 interrupts the buffer zone on the west and limits the habitat value on this side due to the lack of vegetation.



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**DEVIL'S SLIDE TUNNEL PROJECT
 OMC/FILL DISPOSAL SITE
 EXISTING WETLANDS AND BUFFER ZONES**

EXHIBIT 4

5.5.2 Seasonal Ponding Depression and Permanent Drainage

Prior to the construction of Highway 1, runoff from this drainage area flowed directly and freely into the Pacific Ocean. The new roadway blocked off the canyon, and Caltrans placed a culvert under Highway 1 to carry the existing flow into the ocean. Sometime during the early 1970s, Caltrans determined that there were problems with the drainage mainly due to blocking of the culvert. To rectify this, Caltrans installed a 3-meter-high by 1.2-meter-diameter (10-foot-high by 4-foot-diameter) slotted standpipe (above ground riser) to meter drainage from the canyon. This maintenance improvement resulted in the inadvertent creation of a seasonal wetland depression at the base of the standpipe. During normal rainy seasons, the runoff from the surrounding hillside watershed ponds around the base of the riser for at least two weeks resulting in an area of seasonal aquatic habitat. Although the depression does not pond during the summer, the drainage leading to the standpipe retains a permanent water flow.

The standpipe was originally expected to perform two functions:

- To slow the water during heavy rainfall; and
- To prevent clogging of the culvert under Highway 1.

Eventually, the lower slots of the standpipe became plugged; however, the standpipe continued to function because of the slots at higher points of the pipe were still functional and clear of debris. Over time, the ponding water and silt around the base of the riser resulted in the establishment of hydrophytic vegetation within the depression, although these plants were primarily facultative rather than obligate wetland species. The dominant vegetation here includes willow, reed, and poison hemlock.

The wetlands at the Seasonal Ponding Depression have moderate to high wildlife habitat value for amphibians. This involves Pacific tree frog and Coast garter snake, which were observed at the site during field surveys for the project. In response to a request from the Midcoast Community Council, Caltrans conducted additional frog and garter snake surveys of wetland areas within the project site during the spring and summer of 2002. On May 16, 2002, four CRLFs were found within the seasonal ponding depression and Permanent Drainage. Based on the survey results, it appears that this drainage provides foraging habitat for randomly wandering CRLFs, but since the ponding area around the standpipe does not last until the end of August, the drainage does not provide suitable breeding habitat for this species. In addition to sediment detention and foraging habitat for the CRLF, this depression functions as a small area of open space. As a result of these findings, the FHWA requested reinitiation of formal endangered species consultation with the USFWS on April 8, 2003 for the CRLF. In March of 2004, the USFWS completed the reinitiation of formal endangered species consultation and issued the USFWS letter dated March 25, 2004.

The South Portal Drainage Seasonal Ponding Depression buffer zone area is characterized by coastal scrub with relatively high habitat value. Typical bird species include the California quail, the white-throated swift, song sparrow, white crown sparrow, Bewicks wren, barn swallow, cliff swallow, Wilson warbler, yellow warbler, bushtit, scrub jay, California thrasher, brown twohee, spotted twohee, lesser goldfinch, and house finch. Other wildlife including the small reptiles such as the western fence lizard and the southern alligator lizard are found in these areas. Mammals observed in the project area include woodrat, raccoon, brush rabbit, grey squirrel, chipmunk, ground squirrel, striped and spotted skunk, coyote, and black-tailed deer. In addition, the peregrine falcon nests on a coastal bluff nearby on the other side of existing Highway 1 and uses the coastal scrub area for foraging opportunities. Existing Highway 1 interrupts the buffer zone on the west and limits the habitat value due to the lack of vegetation.

5.6 Fill Disposal Site Drainage Area

Several areas within the Fill Disposal Site Drainage Area that have existing wetlands include:

- Uphill Seasonal Ponding Depression and Half Moon Bay Colma Road Trail
- Downhill Seasonal Ponding Depression
- Abandoned Roadway South

The type, function, and value of the existing wetlands within these areas are described below (refer to Exhibit 4 above and Figures 18 through 27 in Appendix 8).

5.6.1 Uphill Seasonal Ponding Depression and Half Moon Bay Colma Road Trail

A seasonal ponding depression has formed within the bottom of the Half Moon Bay Colma Road Trail alignment that is located on the northern hillside. The base of the depression has been compacted so that it has low permeability to rain runoff. Consequently, water ponds within the bottom of the depression. The water in the seasonal ponding depression sometimes lasts into the summer before drying up. This depression has remained intact over time because the cut embankment directly above the depression is rocky so soil has not sloughed off from the hillside above to fill the depression. In addition, due to topographic changes, the rainfall runoff flowing down the hillside from above generally flows around the depression.

An important function of this wetland is to provide habitat for the Pacific tree frog, which uses the seasonal depression as breeding habitat during the winter and early spring. Tree frog larvae have been observed in the seasonal ponding area during spring. After the pond dries up in summer, the adult frogs continue to use the habitat in association with this depression for feeding and refuge. To date, no threatened or endangered wildlife or plant species have been found at the site. Secondary functions of this wetland include open space and minor erosion control.

West of the ponding depression within the Half Moon Bay Colma Road Trail alignment, a strip of compacted soil meets the wetland criteria due to saturation and anaerobic soil conditions lasting greater than 15 consecutive days during the growing season. Without the soil compaction resulting from the Half Moon Bay Colma Road Trail alignment, the soil would not be hydric because the soil matrix color is too high and there are no other indicators of a hydric soil. In relation to hydrophytic vegetation, there are only small patches of rush present on some portions of the Half Moon Bay Colma Road Trail alignment. It is important to note that the compacted soil area within the Half Moon Bay Colma Road Trail alignment is dominated by either pampas grass or bare ground; therefore, the wetland does not provide good habitat for wildlife. Moreover a major function of the wetland is recreation.

The buffer zone for the Uphill Seasonal Ponding Depression and the Half Moon Bay Colma Road Trail is characterized by moderate to high value coastal scrub habitat. The coastal scrub provides habitat value for birds and other wildlife. Typical bird species include the California quail, the white-throated swift, song sparrow, white crown sparrow, Bewicks wren, barn swallow, cliff swallow, Wilson warbler, yellow warbler, bushtit, scrub jay, California thrasher, brown twohee, spotted twohee, lesser goldfinch, and house finch. Other wildlife including the small reptiles such as the western fence lizard and the southern alligator lizard are found in these areas. Mammals observed in the project area include woodrat, raccoon, brush rabbit, grey squirrel, chipmunk, ground squirrel, striped and spotted skunk, coyote, and black-tailed deer. The buffer zone also functions as erosion control areas for the winter storm peak runoff generated in the upper portion of this watershed that drains San Pedro Mountain and the steeply sloping hills.

5.6.2 Downhill Seasonal Ponding Depression

Prior to the construction of Highway 1, runoff from this drainage area flowed directly and freely into the ocean. The new roadway blocked off the canyon, and Caltrans placed a culvert under Highway 1 to continue the existing drainage into the ocean. Sometime during the early 1970s, as with the area at the South Portal, Caltrans installed a 3-meter-high by 1.2-meter-diameter (10-foot-high by 4-foot-diameter) slotted standpipe (above-ground riser) to meter drainage of the canyon.

Eventually, the standpipe plugged up at lower points but continued to be effective because of the slits at higher points of the pipe. The resulting siltation created favorable conditions for wetland species to grow at the site, although these plants were primarily facultative rather than obligate wetland species.

Sediment continues to build up around the above ground riser during times of peak runoff after heavy rainfall. During a normal or above normal rainy season, water ponds within the downhill seasonal ponding depression for at least two weeks. This site has some isolated value. Due to the steep terrain there is a lack of natural freshwater ponds and depressions in the local area. This wetland depression functions as habitat for Pacific tree frog and coast garter snake, which Caltrans biologists have observed at the site. To date, no threatened or endangered species have been found at the site. Ice plant and pampas grass have become invasive species in portions of the

downhill seasonal ponding depression and have caused some degradation of the habitat. Finally, this wetland also functions as a small area of open space.

The buffer zone for the Downhill Seasonal Ponding Depression is characterized by moderate to high value coastal scrub habitat. The highway interrupts the buffer zone on the west side of the wetland. Typical bird species include the California quail, the white-throated swift, song sparrow, white crown sparrow, Bewicks wren, barn swallow, cliff swallow, Wilson warbler, yellow warbler, bushtit, scrub jay, California thrasher, brown twohee, spotted twohee, lesser goldfinch, and house finch. Other wildlife including the small reptiles such as the western fence lizard and the southern alligator lizard are found in these areas. Mammals observed in the project area include woodrat, raccoon, brush rabbit, grey squirrel, chipmunk, ground squirrel, striped and spotted skunk, coyote, and black-tailed deer.

5.6.3 Abandoned Roadway South

A large gully has formed within portions of an abandoned roadway that is located upslope on the south side of the downhill seasonal ponding depression. The base of the gully has become compacted. Consequently, it has a low permeability to rain runoff and water collects in the gully during peak storms. The gully forms an informal ephemeral drainage and is dominated by Pacific wax myrtle (*Myrica californica*), willow, and elderberry (*Sambucus racemosa*). This area provides limited habitat for birds such as song sparrow, yellow warbler, and towhees, and other wildlife, such as western fence lizard and southern alligator lizard. Due to the ephemeral nature of the drainage, the habitat value is limited.

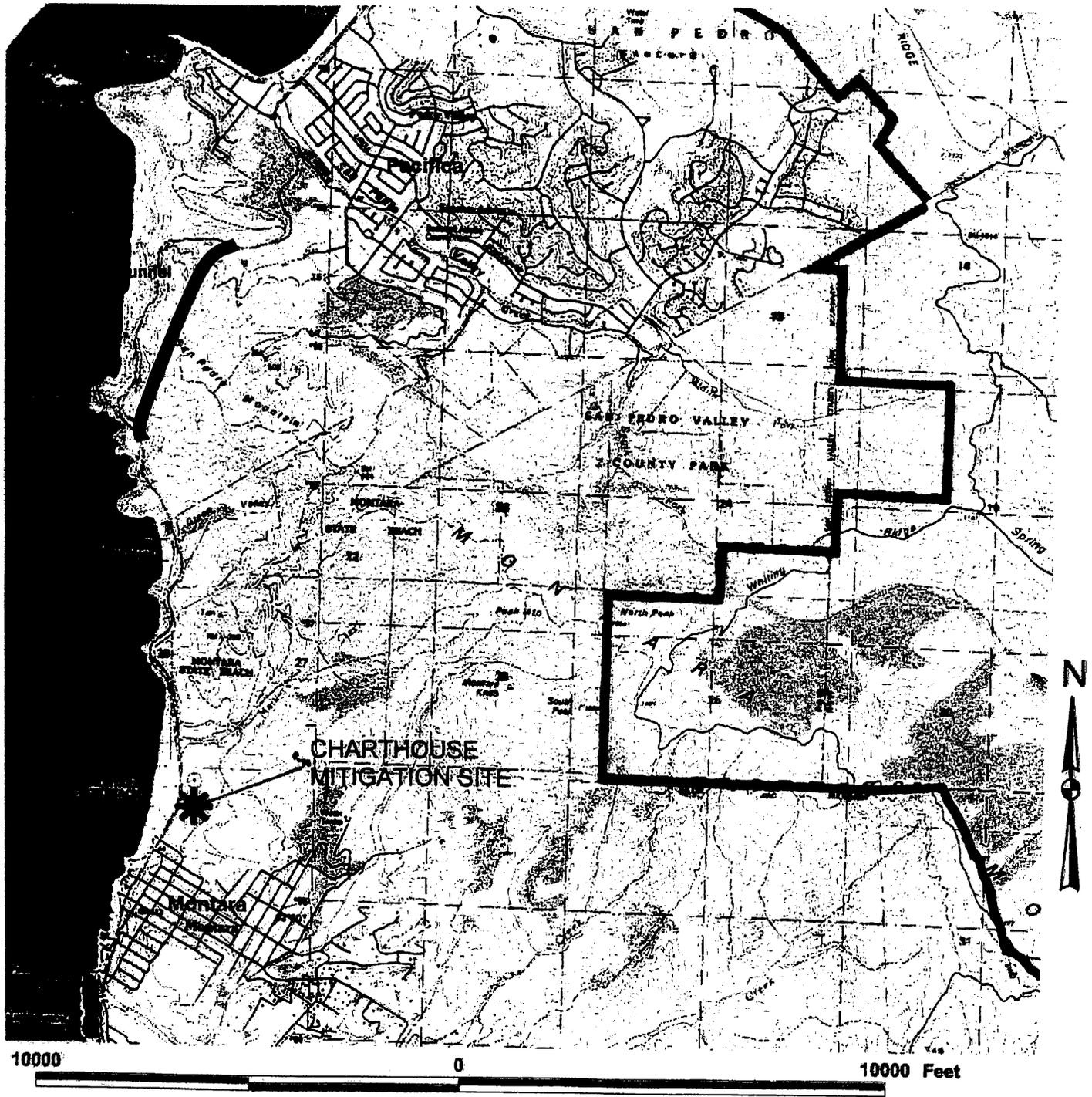
The buffer zone for the Abandoned Roadway South is characterized by coastal scrub habitat of moderate to high value.

6 Existing Wetlands and Buffer Zones— Off-Site, Charthouse Mitigation Site

6.1 Environmental Setting

The Charthouse Mitigation Site is located on the east side of Highway 1 adjacent to Montara State Beach. The geomorphology of the region is characterized by rounded ridge tops with steep sides and narrow canyons. Dissected marine terraces and areas with alluvium on narrow floodplains and terraces are found along the coast. Runoff in the area is rapid and streams on the coastal side of the mountains are generally perennial. (refer to Exhibits 5 and 6).

The Mediterranean climate has a strong maritime influence with relatively warm winters, cool summers and extended periods of coastal fog. Temperature ranges, seasonally and diurnally, are narrow while air moisture remains relatively high. The average high temperature is 17 C (63 F) with an average low of 8 C (47 F). Annual precipitation reported from the Half Moon Bay weather station is 71 centimeters (28 inches), with 80 percent of the rainfall occurring between November and March (UC IPMP, 2003).



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EXHIBIT 5
CHARTHOUSE MITIGATION SITE LOCATION MAP

Devil's Slide Tunnel Project



SCALE 1:2,000

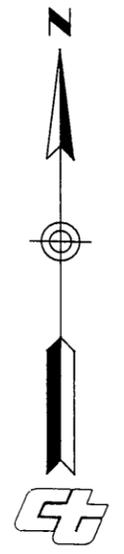
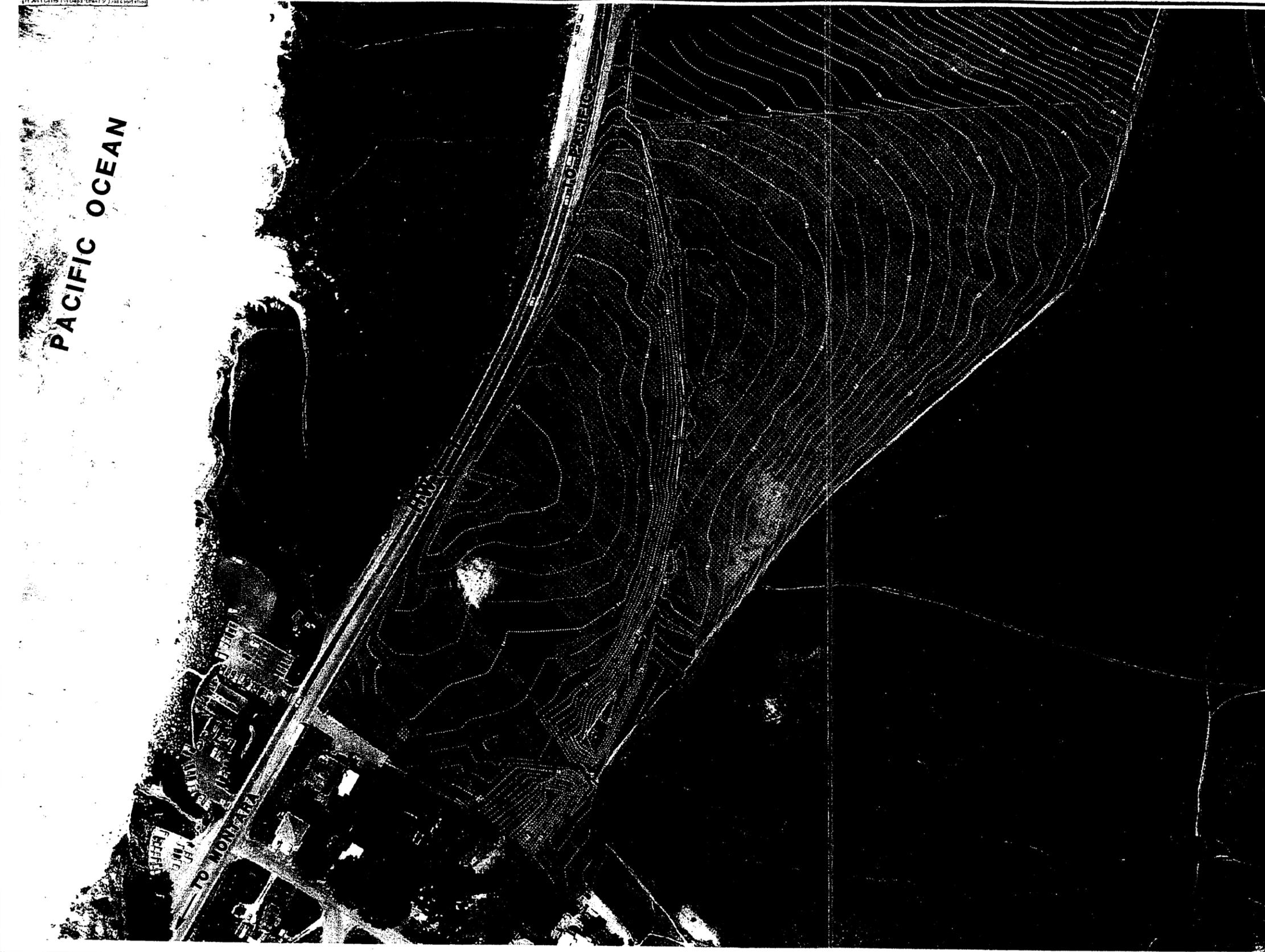
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————	CCC WETLAND BOUNDARY
[Shaded Box]	LIMITS OF HISTORIC LAKE OR POND
[Dotted Box]	LARGE FILL AREA
- - - - -	PROPOSED BUFFER ZONE BOUNDARY

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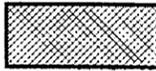
**DEVIL'S SLIDE TUNNEL PROJECT
 CHARTHOUSE MITIGATION SITE
 ENVIRONMENTAL SETTING**

EXHIBIT 6

PACIFIC OCEAN



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**DEVIL'S SLIDE TUNNEL PROJECT
 CHARHOUSE MITIGATION SITE
 EXISTING WETLANDS**

EXHIBIT 7

The regional vegetation is generally characterized by northern coastal scrub in the canyons and hillsides with ruderal/non-native grassland occurring on the lower coastal terraces. Characteristic species in the coastal scrub habitat include coastal sage (*Artemisia californica*), coyote brush, poison oak (*Toxicodendron diversilobum*), bush lupine (*Lupinus arboreus*), and California blackberry (*Rubus vitifolius*). Herbaceous species include: poison hemlock (*Conium maculatum*), black mustard (*Brassica nigra*), yarrow (*Achillea millefolium*), coast figwort (*Scrophularia californica*), and lizard tail (*Eriophyllum staechadifolium*). Small grassy openings and patches of willow are scattered throughout the coastal scrub community. Ruderal non-native grassland habitat is characterized by dense growth of non-native perennial grasses such as Harding grass and velvet grass, with ruderal forbs such as poison hemlock, and bristly ox-tongue.

The Charthouse Mitigation Site is located on a coastal terrace approximately 15 meters (50 feet) above sea level. Surrounding land use in the area includes Highway 1, residential, agricultural and open space. The vegetation in this area includes a mixture of arroyo willow scrub, non-native/ruderal grassland, and seasonal wetland plant communities. Dense areas of arroyo willow (*Salix lasiolepis*) occur throughout the site and are often associated with small seasonal drainages. Upland areas are characterized by non-native perennial grasses such as Harding grass (*Phalaris aquatica*), velvet grass (*Holcus lanatus*), and pampas grass (*Cortaderia jubata*) with scattered coyote brush (*Baccharis pilularis*) in some areas. Seasonal wetlands are present throughout much of this site.

The soils associated with the vicinity of the study area are Mollisols that have been mapped by the Natural Resources Conservation Service (NRCS, 1991) as Typic Argiustolls with 5 to 15 percent slopes. Typic Argiustolls occur on coastal terraces at elevations ranging from 7.6 to 137 meters (25 to 450 feet). These soils are formed in alluvium derived from coastal sediment and are well drained. The surface layer (0.25 to 0.5 meter or 10 to 20 inches) is typically a grayish brown (10YR 5/2) and dark grayish brown (10YR4/2) sandy loam or sandy clay loam. No series designations have been assigned to the canyons and low terrace areas in the area where the Charthouse Mitigation Site is located.

6.2 Study Methodology

6.2.1 Field Methods

Biologists from CH2M HILL and Caltrans conducted a field delineation within the area designated for the Charthouse Mitigation Site. Using the CCC definition for wetlands, wetland areas were mapped in the field using a Trimble Geo-XT Global Positioning Device.

6.2.2 Regulatory Definitions

Wetland delineations at the Charthouse Mitigation Site were conducted in accordance with the classification procedures described in the *Procedural Guidance for the*

Review of Wetland Projects in California's Coast Zone prepared by the California Coastal Commission (CCC, 1994).

The Coastal Act defines wetlands as *...lands within the coastal zone which may be covered periodically or permanently with shallow water....* The definition adopted by the CCC and codified in Section 13577 (b)(1) of Title 14 of the California Code of Regulations defines wetland as *lands where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent or drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salt or other substance in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deepwater habitats. For purposes of this section, the upland limit of a wetland shall be defined as:*

- a. the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;*
- b. the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or*
- c. in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not.*

Although this definition is based on inundation or shallow saturation long enough for anaerobic reducing conditions to develop within the root zone, in practice hydrology is the most difficult wetland indicator to demonstrate. In California, a predominance of hydrophytes or a predominance of hydric soils is taken as evidence that the land was “wet enough long enough” to develop wetland characteristics (refer to Appendix 2, Dixon; memo, 2002).

Dr. John Dixon, Wetland Ecologist for the CCC, states that the CCC has always found that the wetland definition in its Regulations is a one-parameter definition. Dr. Dixon provides the example that, in past actions, the CCC has recognized OBL (obligate wetland plants), FACW (facultative wetland plants), and FAC (facultative plants) species as presumptively “hydrophytic” and, in general, a preponderance of those species has been accepted as presumptive evidence of a wetland. However, he notes that where the wetland character of a site is demonstrably ambiguous because of the presence of substantial upland features, characterizing a species, especially a “FAC” species as “hydrophytic,” requires professional judgment in addition to a demonstration that the species is included on a list of plant species that occur in wetlands. In such cases, the wetland presumption may be falsified where there is strong, positive evidence of upland conditions (as opposed to a lack of evidence, for example, of hydrology) (refer to Appendix 2, Dixon, memo, 2004).

6.2.3 Delineation Methodology

Since no delineation methods or protocols are included in California law, Caltrans biologists followed the standard methods contained in the U.S. Army Corps of Engineers (USACE) 1987 Wetlands Delineation Manual. Sampling locations were established within the Charthouse Mitigation Site to establish the boundary of wetlands. The vegetation, soils, and hydrology were assessed and evaluated for each sampling location. Professional judgment was also employed during the field investigation of sampling locations and considered factors such as topography, adjacency to existing wetland areas, drainage patterns, and soil characteristics. The location of sampling areas and potential wetland boundaries were recorded on project base maps using a GPS.

Plant species were identified in the field with taxonomy according to *The Jepson Manual* (Hickman, 1993) and classified according to *The National List of Plant Species that Occur in Wetlands* (Reed, 1988) for wetland indicator status, revised in 1996 (Kartez, 1996). This list divides plant species into five categories based upon their frequency of occurrence in wetlands. These categories include:

- Obligate wetland plants (OBL) that occur almost always in wetlands under natural conditions (>99 percent of the time in wetlands);
- Facultative wetland plants (FACW) that usually occur in wetlands, but occasionally occur in non-wetlands (67 percent to 99 percent of the time in wetlands);
- Facultative wetland plants (FAC) that are equally likely to occur in wetlands or non-wetlands (34 percent to 66 percent of the time in wetlands);
- Facultative upland plants (FACU) that usually occur in non-wetlands, but occasionally are found in wetlands; and
- Obligate upland plants (UPL) that almost always occur in non-wetlands.

At each sampling point, Caltrans biologists conducted a plot survey, and the relative percent cover of each plant species within the plot was determined for each vegetation layer. Those species, whose cumulative total exceeded 50 percent, plus any species with a relative cover of at least 20 percent, were considered dominants. A predominance of wetland plants was demonstrated when greater than 50 percent of the dominant species present were classified as FAC, FACW, or OBL in the *National List of Plant Species that Occur in Wetlands under Region 0, California*. A list of all plant species identified during the plot surveys is found in Appendix 5.

Caltrans biologists took a soil sample in each sampling location by hand auger, or by digging a soil pit with a tile spade, to a minimum depth of 25.4 cm (10 inches). The soil data was taken at 25.4 cm (10 inches). Soil texture was estimated in the field by means of a texture-by-feel analysis. Soil color was determined using Munsell Soil Color Charts. All soil samples were evaluated for evidence of redoximorphic features such as iron and manganese concentrations, a reduced matrix, or for depletions, all of which are hydric soil indicators. The determination of a hydric soil was generally

based on methods and guidance contained in the USACE 1987 Wetland Delineation Manual, supplemented by criteria developed by the Natural Resource Conservation Service in cooperation with the National Technical Committee for Hydric Soils (NRCS, 2002).

Field indicators of wetland hydrology included, but were not necessarily limited to, visual observations of soil saturation or inundation, drainage patterns, drift lines, sediment deposition, watermarks, and historic records. The degree of inundation or saturation at the Charthouse Mitigation Site can vary widely from year to year depending on rainfall patterns. In Mediterranean climates, where the majority of the precipitation occurs during the fall and winter, many wetland areas may exhibit seasonal hydrology. The amount of monthly precipitation for the project area during summer months is 0.64 and 0.35 centimeters (0.25 and 0.14 inches), respectively, and as would be expected, primary indicators of wetland hydrology were not readily apparent (refer to Appendix 6 for the plot surveys locations and to Appendix 7 for the wetland data sheets.)

6.3 Type, Function and Values of Existing Wetlands and Buffer Zones

The Charthouse Mitigation Site is a highly disturbed site. The current land uses surrounding the site are open space dominated by non-native grassland and a few remnants of coastal scrub to the east, Highway 1 to the west, an active agricultural field to the north, and residential areas to the south. A curved abandoned railroad berm, constituting an upland, runs north-south through the center of the site, disrupting the natural hydrology of the site. There is an old roadway alignment used as a public trail bordering the east side of the Charthouse Mitigation Site. At least two broken culverts appear to funnel flows through the berm.

A large area of fill between the railroad berm and Highway 1, possibly related to either railroad construction or construction of the Highway, further alters the site's topography and hydrology. The fill material has evolved into an upland area that contains some decomposed granite, which no longer supports hydrophytic vegetation. The larger wetland area towards the center of the site also appears to have undergone topographic and hydrological alteration. This area was most likely plowed during former agricultural land use activities, possibly in an attempt to improve drainage in the area or fill the original flow pattern, but instead resulted in fanning out the drainage into a broader wetland area. Pampas grass, a non-native species found typically on disturbed sites, dominates a portion of the area east of the railroad berm.

Further complicating matters, the site disturbance includes the apparent scalping of the 'A Horizon' soils from much of the mitigation site lying east of the old railroad berm (Martel, pers. comm., 2004). A lower clay layer in the soil, containing abundant mottles, is present on the site and provides evidence of a historic lake or pond. East of the railroad berm, the clay layer in the soil contributes to the wetland hydrology of the disturbed and degraded wetland areas. As a result of this clay layer, storm runoff in the soil tends to drain down into the soil until it reaches the clay layer where downward water movement is then slowed or greatly restricted. During the soil investigations, it was found that the clay layer within the upper portion of the slope

just west of the public trail (located at the eastern edge of the site) generally tended to be much closer to the soil surface than the clay layer downslope (immediately adjacent to the railroad berm). Accordingly, soil saturation was generally found within the top 25.4 centimeters (10 inches) of soil on the upper slope and below 25.4 centimeters (10 inches) of the soil on the lower portions of the slope.

The Charthouse Mitigation Site was difficult to delineate for several reasons. First, the topography of the site has been altered over the years by agriculture, the installation of a railroad berm, and the placement of fill in a portion of the area. It can be classified as an atypical situation because significant vegetation changes and the introduction of common non-native species have resulted from past site disturbances. The site should also be considered a problem area, relative to wetland delineation, since it includes dark mollisols where soil chroma is not useful in distinguishing between wetland and upland soils.

As a response to the high level of site disturbance, non-native and invasive species such as Harding grass and velvet grass are found at the Charthouse Mitigation Site. While these species may occur in wetlands (they are listed as FAC), they are also common in upland areas, especially following disturbances. These species are found in and around the Charthouse Mitigation Site in locations such as the railroad berm, which is a highly disturbed upland area.

The soil units associated with the Charthouse Mitigation Site have not been mapped to the series level, but have been classified as Typic Argiustolls. Low chroma colors are common in these soils (NRCS, 1991); however, none of the series described as occurring in this mapped designation are included on the list of hydric soils for California (NRCS, 1995). Due to the presence of dark mollisols, soils in this area were problematic because the low chroma soils, without redoximorphic features such as mottles, were found in upland positions as well as in wetlands (the soil survey description of these soils indicates that low chroma is typical of this area). As a result, the use of low chroma soil as a primary indicator of a hydric soil by itself was not used in this analysis. As mentioned previously, the determination of wetland boundaries required the examination of topography, landscape, site drainage, plant communities, site history and best scientific judgment. Exhibit 7 shows the existing wetlands at the Charthouse Mitigation Site. Appendix 6 shows the locations of field survey data points used to delineate the Charthouse Mitigation Site. Appendix 7 provides vegetation, soils, and hydrology data on each field plot survey.)

In terms of wildlife habitat value, two different types of seasonal wetland areas were identified within the study area. High value, seasonal wetlands were generally found at the flatter, lower elevations on the site. The field plot survey data taken within the high value, seasonal wetlands indicate a preponderance of hydrophytic vegetation, a hydric soil, and wetland hydrology. Hydrophytic vegetation included silverweed, horsetail, bulrush, and willow. The hydric soils possessed redoximorphic features within 30.5 centimeters (12 inches) of the soil surface and anaerobic soil conditions for 15 consecutive days of the growing season. Wetland hydrology was evidenced by soil saturation within 30.5 centimeters (12 inches) of the soil surface. Finally, soil inundation was found in some plots within the high value, seasonal wetlands.

Marginal value, degraded and disturbed seasonal wetlands were found on sloping areas adjacent to the high value seasonal wetlands. In general, the field plot survey data taken within the degraded and disturbed seasonal wetlands revealed a preponderance of FAC plants, but did not always possess a hydric soil or wetland hydrology.

7 Wetland and Buffer Zone Impacts

Under the California Coastal Act, the CCC has jurisdiction over wetlands within the coastal zone. Caltrans used the guidelines provided in the *Procedural Guidance for the Review of Wetland Projects in California's Coastal Zone* (CCC, 1994), which refined and supplemented the *Statewide Interpretive Guidelines for Wetlands and Other Wet Environmentally Sensitive Habitat Areas* (CCC, 1981), to delineate the wetlands, riparian areas and buffer zones. Unavoidable wetland impacts will occur at the Fill Disposal Site Drainage Area, the South Portal Drainage Area, and the North Portal Drainage Area/ Shamrock Ranch as a result of the project. The total area of wetlands that will be affected by the project is approximately 0.40 hectare (0.97 acre). In addition, the project will permanently affect wetland buffer zones totaling approximately 5.13 hectares (12.68 acres). The majority of wetland impacts will occur at Shamrock Ranch. Caltrans will implement wetland mitigation at the Charthouse Mitigation Site, as described in Chapter 8, Mitigation Program, concurrent with the major wetland impacts. These impacts are further discussed below.

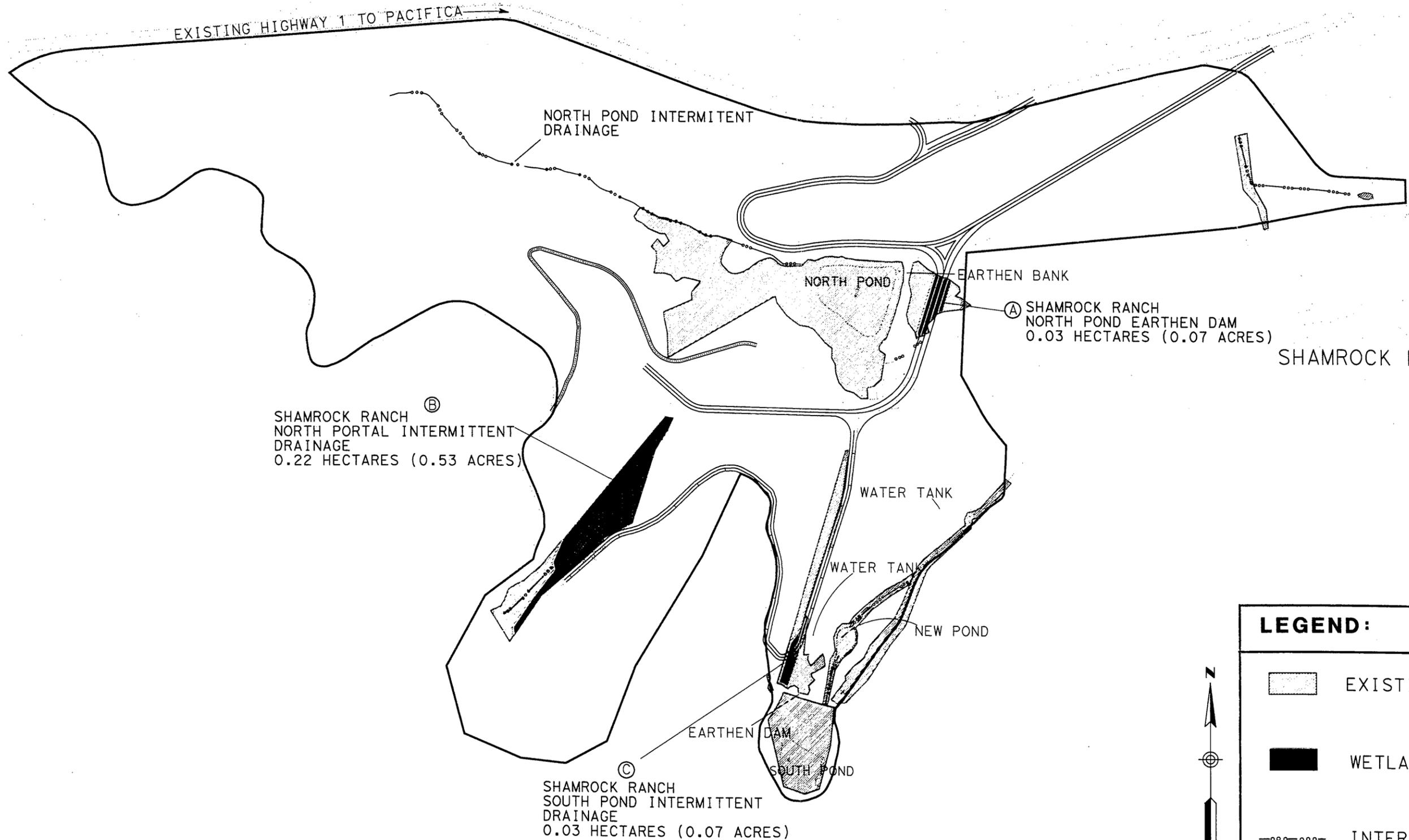
7.1 North Portal Drainage Area/Shamrock Ranch

A total of approximately 0.27 hectares (0.67 acres) of wetlands and 1.63 hectares (4.02 acres) of buffer zones will be impacted at the Shamrock Ranch drainage areas (Refer to Exhibits 8 and 9). This includes the following:

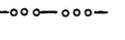
- Approximately 0.03 hectare (0.07 acre) of wetlands and 0.41 hectare (1.02 acres) of buffer zones found on the earthen dam of the North Reservoir Pond and 0.19 hectare (0.47 acre) of buffer zones at the Shamrock Ranch corral will be filled by the construction of a temporary access road (Location A in Exhibit 8 and Locations G and H in Exhibit 9). These wetlands function as habitat for wildlife and contain a high diversity of vegetation. All wetlands associated with the ponds have a high wildlife habitat value because the ponds also provide habitat for the CRLF. The buffer zone is generally of moderate to high habitat value. However, along the south side, the buffer zone consists primarily of a horse pasture characterized by closely cropped annual grasses. Wildlife habitat values in this area are low.
- Approximately 0.22 hectare (0.53 acre) of wetlands and 0.77 hectare (1.90 acres) of buffer zones found in association with the North Portal intermittent drainage will be filled as a result of the project (Location B in Exhibit 8 and Location I in Exhibit 9). The North Portal intermittent drainage habitat value is moderate to high due to the diversity of the cover. The coastal scrub provides habitat value for birds and other wildlife. The North Portal intermittent drainage buffer zone is characterized by dense coastal scrub vegetation with moderate to high habitat value.
- A small portion of a wetland area, approximately 0.03 hectare (0.07 acre) and 0.26 hectare (0.63 acre) of buffer zones, located down slope from the South

Reservoir Pond and immediately adjacent to an existing horse trail, will be permanently filled due to the construction of an access road to the North Portal (Location C in Exhibit 8 and Location J in Exhibit 9). These wetlands function as habitat for wildlife and contain a high diversity of vegetation. All wetlands associated with the ponds have a high wildlife habitat value because the ponds also provide habitat for the CRLF. The buffer zone is characterized by generally high quality habitat with only minimal disturbance.

During construction of the water detention basin within the northeast intermittent drainage at Shamrock Ranch, there will be a temporary loss of 0.006 hectare (0.014 acre) of wetlands (Location WDB-1 in Exhibit 8A). This intermittent drainage is located under a stand of Eucalyptus trees that provides some wildlife habitat. Vegetation includes poison oak, elderberry, and annual grasses. Excavation of the water detention basin (WDB-1) will cause temporary impacts; however, the overall long-term impact will be positive due to the water detention basin's treatment of roadway runoff.



LEGEND:

-  EXISTING WETLAND
-  WETLAND IMPACT
-  INTERMITTENT DRAINAGE



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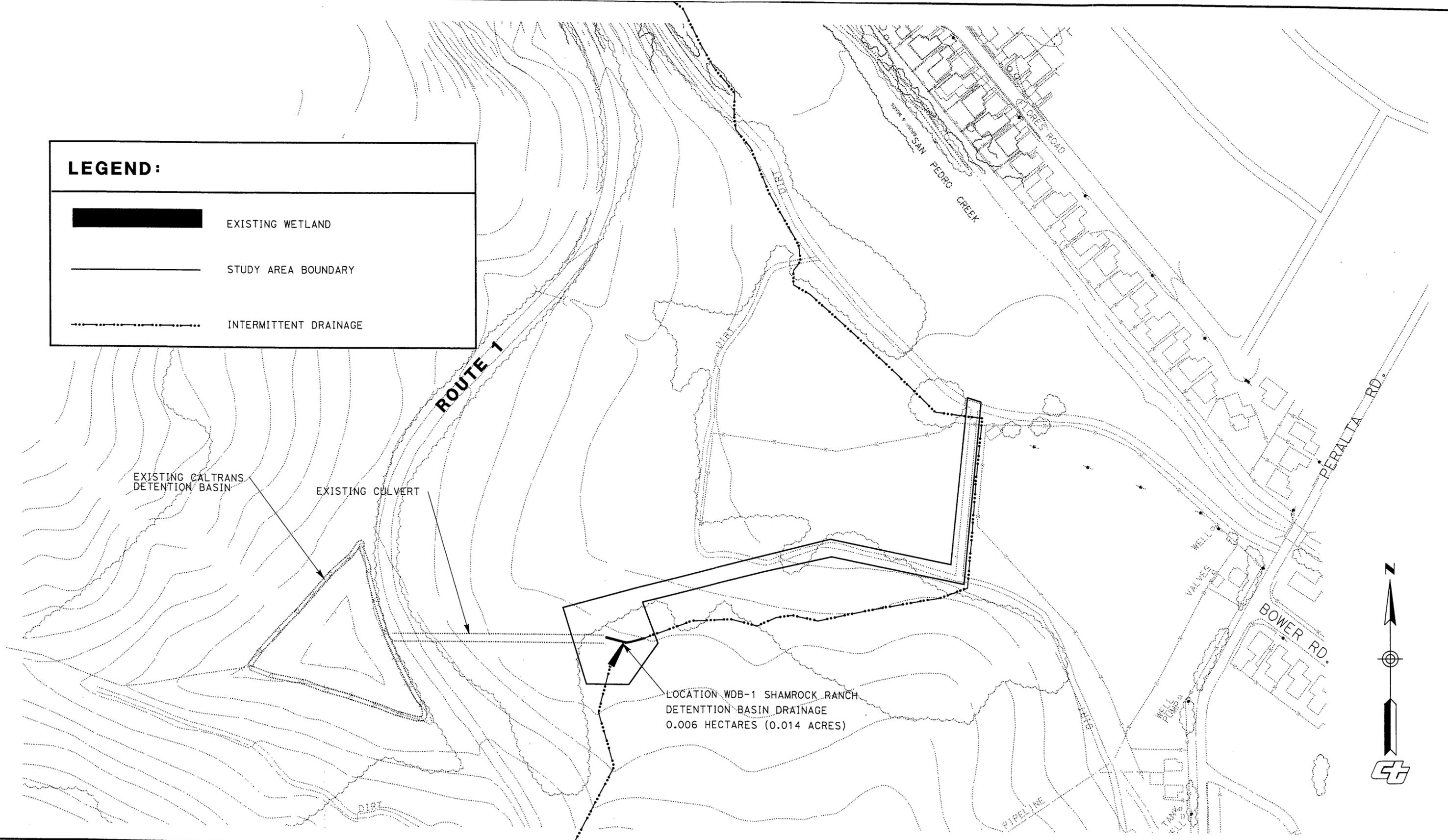
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**DEVIL'S SLIDE TUNNEL PROJECT
 SHAMROCK RANCH NORTH PORTAL DRAINAGE
 WETLAND IMPACTS**

EXHIBIT 8

LEGEND:

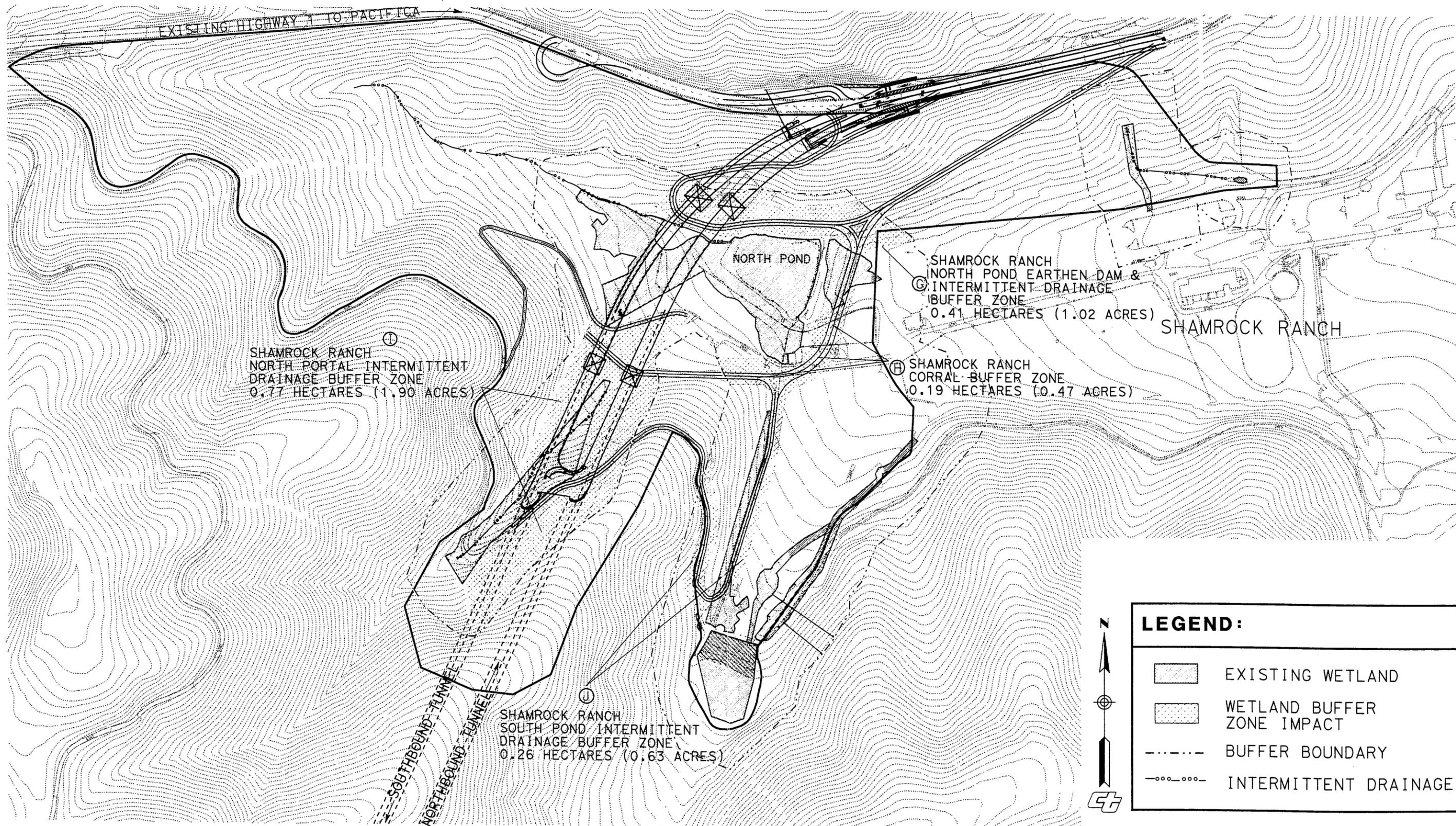
-  EXISTING WETLAND
-  STUDY AREA BOUNDARY
-  INTERMITTENT DRAINAGE



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**DEVIL'S SLIDE TUNNEL PROJECT
SHAMROCK RANCH NORTH PORTAL DRAINAGE
WETLAND IMPACTS**

EXHIBIT 8A



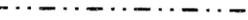
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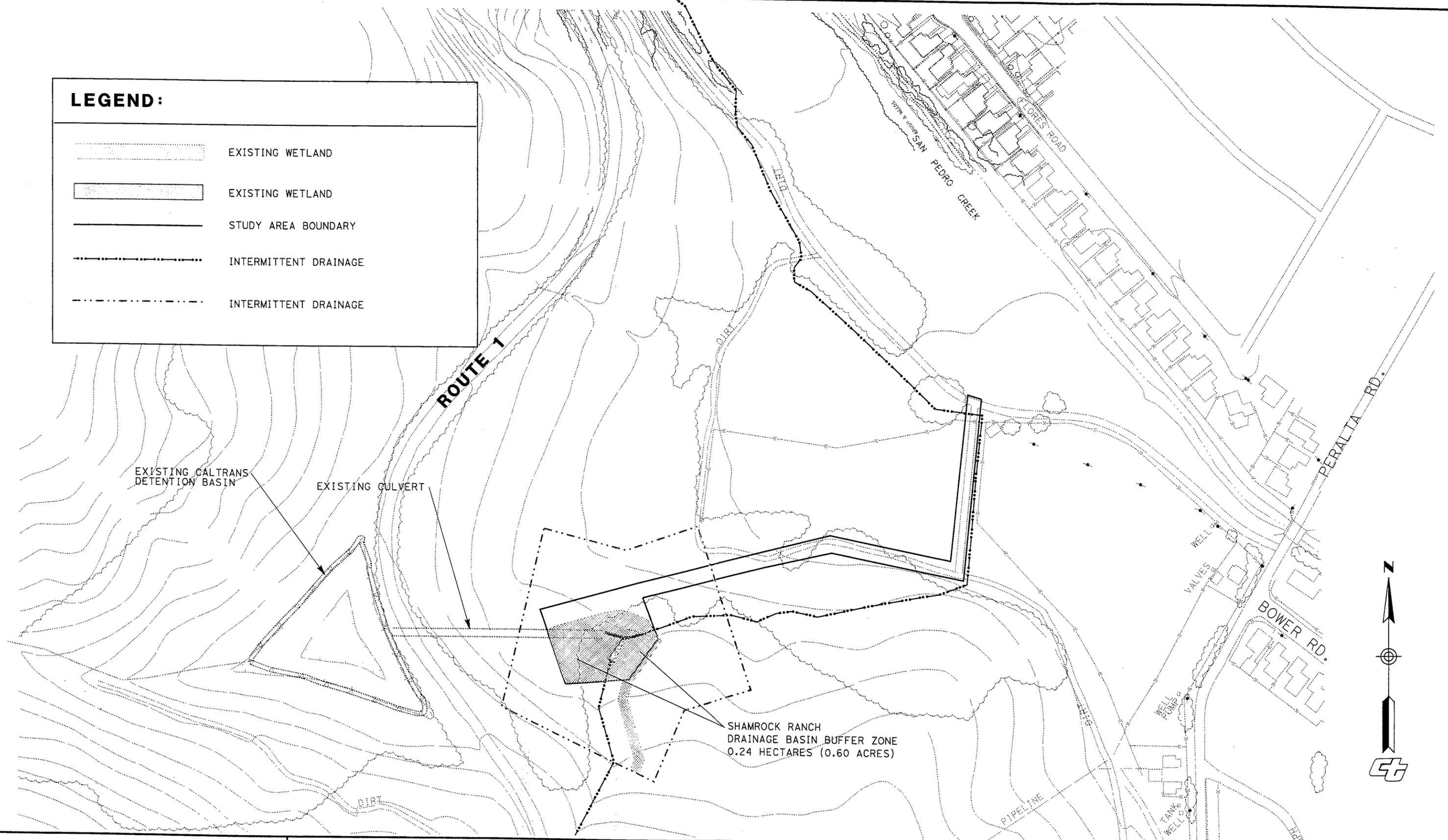
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**DEVIL'S SLIDE TUNNEL PROJECT
 SHAMROCK RANCH NORTH PORTAL DRAINAGE
 BUFFER ZONE IMPACTS**

EXHIBIT 9

LEGEND:

-  EXISTING WETLAND
-  EXISTING WETLAND
-  STUDY AREA BOUNDARY
-  INTERMITTENT DRAINAGE
-  INTERMITTENT DRAINAGE



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**DEVIL'S SLIDE TUNNEL PROJECT
 SHAMROCK RANCH NORTH PORTAL DRAINAGE
 BUFFER ZONE IMPACTS**

EXHIBIT 9A

7.2 South Portal Drainage Area

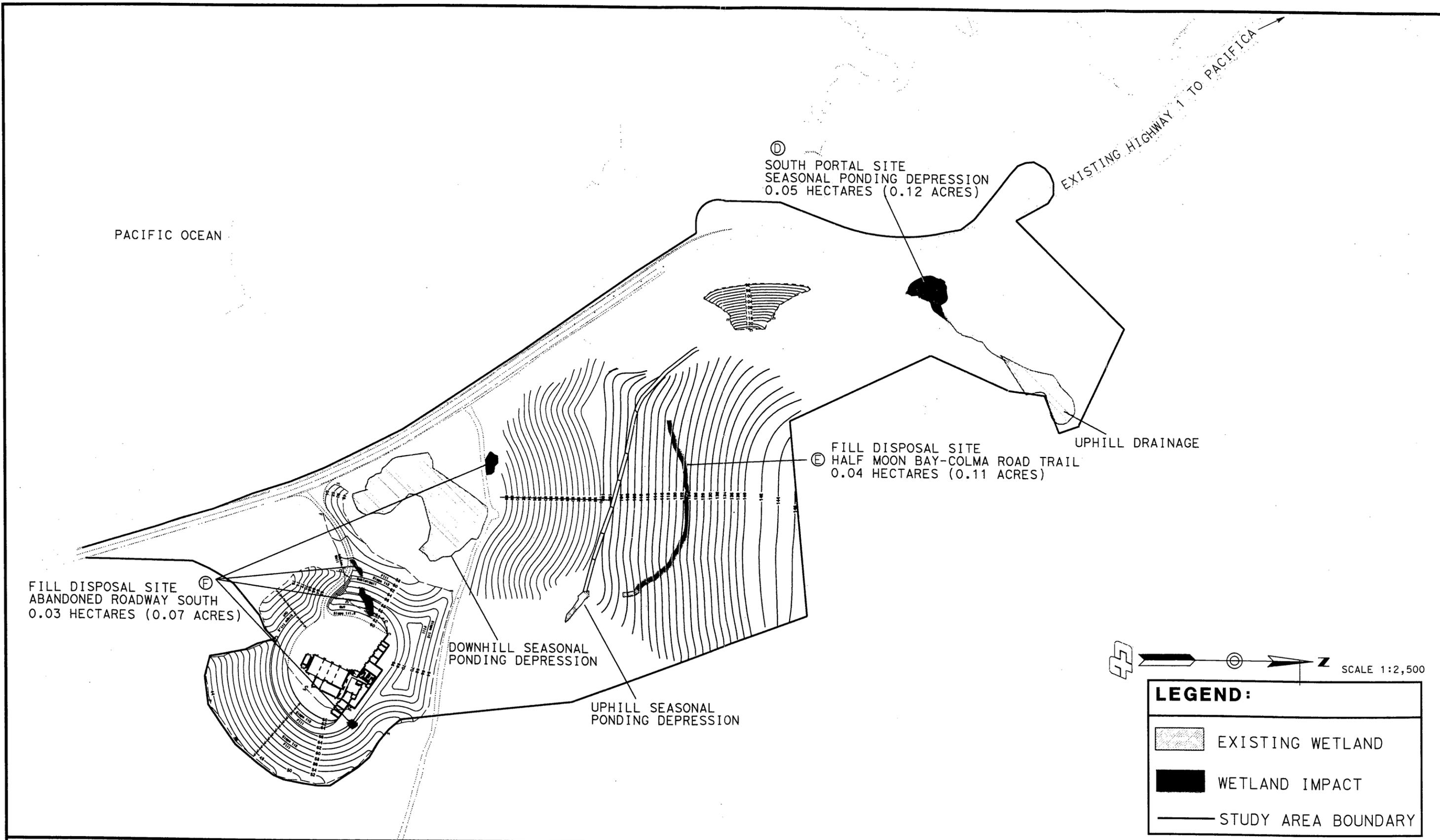
The Seasonal Ponding Depression and Permanent Drainage wetland and buffer zone area will be impacted at the South Portal drainage area. Refer to Exhibits 10 and 11. These impacts are described below.

A total of approximately 0.05 hectares (0.12 acres) of the lower portion of a permanent wetland drainage, which terminates in a seasonal ponding depression will be filled as a result of the planned approach that connects the tunnel's South Portal with the existing Highway 1 roadway (Location D in Exhibit 10). This work will also impact approximately 0.62 hectare (1.53 acres) of buffer zones in this area (Location K in Exhibit 11). This wetland functions as marginal, limited value wildlife habitat for amphibians such as Pacific tree frog and Coast garter snake. The South Portal Drainage Seasonal Ponding Depression buffer zone area is characterized by coastal scrub with relatively high habitat value.

7.3 Fill Disposal Site Drainage Area

A total of approximately 0.07 hectare (0.18 acre) of wetlands and 2.88 hectares (7.13 acres) of buffer zones will be impacted at the Fill Disposal Site drainage area. This includes the following:

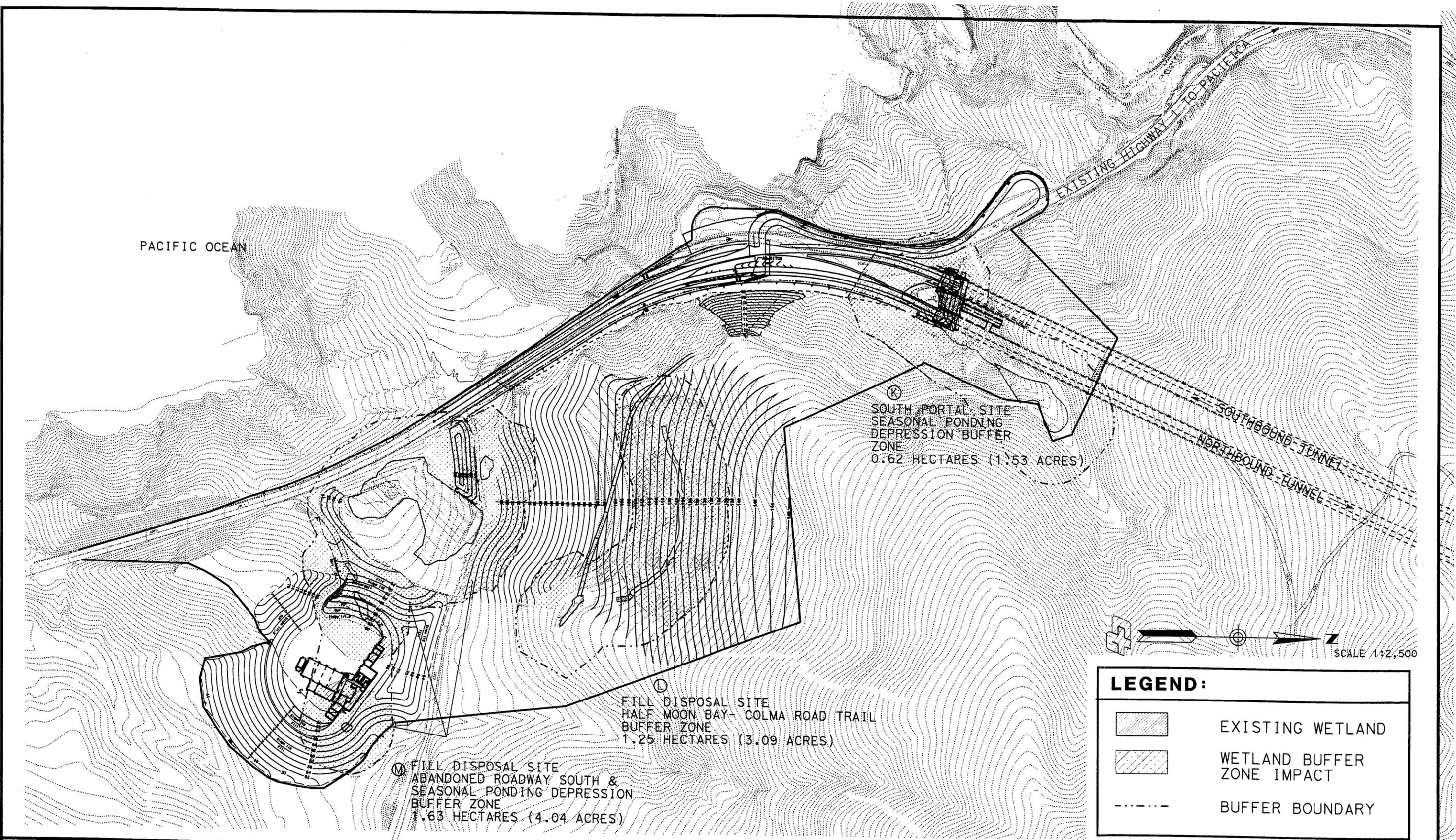
Approximately 0.04 hectare (0.11 acre) (Location E in Exhibit 10) of wetlands will be impacted at the Half Moon Bay Colma Road Trail by the disposal of excavated materials from the tunnel and the South Rock Cut. Approximately 1.25 hectares (3.09 acres) of the Half Moon Bay Colma Road Trail buffer zone (Location L in Exhibit 11) will be impacted. It is important to note that the compacted soil area within the Half Moon Bay Colma Road Trail alignment is dominated by either pampas grass or bare ground; therefore, the wetland does not provide good habitat for wildlife. The buffer zone for the Half Moon Bay Colma Road trail is characterized by coastal scrub habitat of moderate to high value habitat.



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**DEVIL'S SLIDE TUNNEL PROJECT
 OMC/FILL DISPOSAL SITE
 WETLAND IMPACTS**

EXHIBIT 10



PACIFIC OCEAN

EXISTING HIGHWAY 1 TO PACIFICA

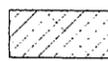
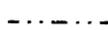
SOUTHBOUND TUNNEL
NORTHBOUND TUNNEL

Ⓚ SOUTH PORTAL SITE
SEASONAL PONDING
DEPRESSION BUFFER
ZONE
0.62 HECTARES (1.53 ACRES)

Ⓛ FILL DISPOSAL SITE
HALF MOON BAY- COLMA ROAD TRAIL
BUFFER ZONE
1.25 HECTARES (3.09 ACRES)

Ⓜ FILL DISPOSAL SITE
ABANDONED ROADWAY SOUTH &
SEASONAL PONDING DEPRESSION
BUFFER ZONE
1.63 HECTARES (4.04 ACRES)

SCALE 1:2,500

LEGEND:	
	EXISTING WETLAND
	WETLAND BUFFER ZONE IMPACT
	BUFFER BOUNDARY

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**DEVIL'S SLIDE TUNNEL PROJECT
 OMC/FILL DISPOSAL SITE
 BUFFER ZONE IMPACTS**

EXHIBIT 11

TABLE 1A: WETLAND IMPACTS DUE TO TUNNEL CONSTRUCTION ACTIVITIES

ID	LOCATIONS	WETLAND IMPACTS	
		HECTARES	ACRES
A	Shamrock Ranch North Reservoir Pond Earthen Dam	0.03	0.07
B	Shamrock Ranch North Portal Intermittent Coastal Drainage	0.22	0.53
C	Shamrock Ranch South Reservoir Pond Intermittent Coastal Drainage	0.03	0.07
WDB-1*	Shamrock Ranch Northeast Intermittent Coastal Drainage	0.006	0.01
D	South Postal Site Seasonal Ponding Depression	0.05	0.12
E	Fill Disposal Site Half Moon Bay Colma Road Trail	0.04	0.11
F	Fill Disposal Site Abandoned Roadway South	0.03	0.07
	TOTAL*	0.40	0.98
TOTAL MITIGATION REPLACEMENT NEEDED	BASED ON 3:1 AREA REPLACEMENT RATIO	1.20	2.94

Notes:

**(1) WDB-1—Temporary impact due to excavation of a water detention basin. The area will be reseeded, and the overall long-term impact will be positive due to the water detention basin's treatment of roadway runoff.*

TABLE 1B RESTORATION IMPLEMENTATION TEMPORARY WETLAND IMPACTS DUE TO WETLAND MITIGATION ACTIVITIES

ID	LOCATIONS	TEMPORARY IMPACTS*	
		HECTARES	ACRES
RI-1	CHARTHOUSE MITIGATION SITE WETLAND AREA EAST OF RAILROAD BERM & WEST OF COUNTY TRAIL Proposed Excavation & Grading Of Soil To Restore The Wetland Elevation Revegetation Planned As Part Of The Mitigation Site Restoration Time Duration Disturbed – Excavation & Grading June 2005; Planting October 2005 Until Success Criteria Are Met	1.17	2.90
RI-2	CHARTHOUSE MITIGATION SITE WETLAND AREA EAST OF HIGHWAY 1 AND WETLAND STRIP EAST OF COUNTY TRAIL Proposed Temporary Bridge And Access Road For Restoration Implementation Activities Revegetation Planned As Part Of The Mitigation Site Restoration Time Duration Disturbed – Installation Of Bridge And Access Road June 2005; Planting And Bridge Removal When Success Criteria Are Met	0.04	0.10

Notes:

**(1) TEMPORARY IMPACTS—Temporary impacts due to implementation activities to restore wetlands. The overall long-term impact will be positive due to the increase in the total wetland area and the increase in wildlife habitat value.*

TABLE 2: WETLAND BUFFER ZONE IMPACTS

ID	LOCATIONS	BUFFER ZONE IMPACTS	
		HECTARES	ACRES
G	Shamrock Ranch North Reservoir Pond Earthen Dam and Intermittent Drainage	0.41	1.02
H	Shamrock Ranch Corral	0.19	0.47
I	Shamrock Ranch North Portal Intermittent Coastal Drainage	0.77	1.90
J	Shamrock Ranch South Reservoir Pond Intermittent Coastal Drainage	0.26	0.63
K	South Portal Site Seasonal Ponding Depression	0.62	1.53
L	Fill Disposal Site Half Moon Bay Colma Road Trail	1.25	3.09
M	Fill Disposal Site Abandoned Roadway South and Seasonal Ponding Depression	1.63	4.04
	TOTAL	5.13	12.68

8 Final Mitigation and Revegetation Plan

Caltrans will provide on-site mitigation at Shamrock Ranch/OMC and off-site mitigation at the Charthouse Mitigation Site. Mitigation at Shamrock Ranch includes the creation of a new frog pond for the CRLF and restoration of some, but not all, of the wetland and riparian areas affected by the project. A total of 0.21 hectare (0.53 acre) of mitigation will be provided at Shamrock Ranch. This includes 0.016 hectare (0.04 acre) of wetland creation for the frog pond and 0.20 hectare (0.49 acre) of wetland restoration elsewhere on-site (refer to Table 3).

The Charthouse Mitigation Site is located within the Montara Mountain watershed, south of the project site and east of Highway 1, just north of the former Charthouse Restaurant. The site is owned by the Peninsula Open Space Trust. Caltrans will use approximately 2.65 hectares (6.46 acres) of the site for mitigation. This includes 0.49 hectare (1.15 acres) of wetland creation, 1.17 hectares (2.91 acres) of wetland restoration and 0.99 hectare (2.40 acres) of buffer zone. The proposal for the mitigation site includes:

- Removal of fill material and re-grading to the appropriate wetland elevations;
- Planting of targeted wetland plant species;
- Elimination of non-native species; and
- Creation of one or more seasonal ponds on a portion of the site.

The Charthouse Mitigation Site has an excellent chance for successful creation, restoration, and enhancement of wetlands. Preliminary evaluations indicate that this site can be readily restored as the disturbed areas were historically wetlands and there is a long-term presence of groundwater within the site at relatively shallow depths. The Charthouse Mitigation Site will result in a direct, beneficial effect for all wildlife using the local area. The steep hillsides and agricultural activities in the vicinity have restricted the formation of freshwater wetlands and ponds in this area. The addition of either seasonal depressions or small ponds included as part of this mitigation proposal will result in a marked increase in wildlife habitat, especially for amphibians and reptiles such as frogs and snakes. In time, the mitigation site will become a self-supporting natural system.

At the project development team meetings, Caltrans and the resource and regulatory agencies agreed that all temporary impacts of the Tunnel Project to wetlands and riparian areas would be considered permanent impacts for mitigation purposes due to the long-term nature of the proposed construction project. It was also agreed that the wetland mitigation replacement ratio would be 3:1 in terms of area.

TABLE 3: WETLAND MITIGATION (IN ACRES)

LOCATION	WETLAND CREATION	WETLAND RESTORATION	ENHANCEMENT	TOTAL MITIGATION
Charthouse Off-Site ²	1.15	2.91	0.00	4.06
Shamrock CRLF Pond On-Site	0.04	0.00	0.00	0.04
Shamrock Ranch On-Site	0.00	0.49	0.00	0.49
Fill Disposal Site ³ On-Site	0.00	0.00	0.50	0.50
Sub Total	1.19	3.40	0.50	5.09

- 2 Areas of *Holcus* and *Phalaris* growing on fill will be excavated to the elevation of adjacent wetland and planted with diverse selection of native wetland species.
- 3 The general area is the Fill Disposal Site with concentrated efforts at the removal of pampas grass along the access road and along abandoned roadway north, below the Fill Disposal Site.

8.1 Mitigation Proposal

8.1.1 Goals

The mitigation goal for the Devil's Slide Tunnel Project is to replace the functions and values of the wetland and riparian habitat affected by the project. There will be no net loss of wetland and riparian areas.

8.1.2 Success Criteria

The determination of success in wetland and riparian habitat creation and restoration requires that measurable criteria and comparisons be established, which are then followed by careful monitoring of the site. Selected reference sites, located adjacent to proposed wetland creation and restoration areas, will be used in establishing success criteria and evaluating success.

Mr. David Yam, the Caltrans Restoration Manager, will provide on-site supervision and be responsible for all phases of the restoration. He is qualified for all phases of the restoration plan and will consult with qualified biologists and other specialists to ensure the success of the mitigation.

8.1.2.1 Wetland, Riparian and Upland Success Criteria

As noted in Section 8.6, Monitoring, of this report, Caltrans will use the fifth year annual monitoring report to determine if the creation and restoration efforts at Shamrock Ranch, the OMC/Fill Disposal Site and the Charthouse Mitigation Site have either met or are trending towards success. As such, the following success criteria have been developed commensurate to the different habitats that will be created and restored.

Wetland Creation and Restoration:

The parameters used for success criteria in relation to the monitoring years in which they are applicable are identified in Table 7. In general, the survivorship of target plant species at the site should be 80 percent in the first and second years following installation, and 71 percent in the third year. In addition, the total cover of the hydrophytic vegetation planted in the newly created and restored wetlands at the Charthouse Mitigation Site should be at least equal to 80 percent of the total cover of the adjacent wetlands. The wetlands will be evaluated for success when:

- The target plant species meet or exceed establishment criteria and survivorship;
- The wetland hydrology has been established in the restored area; and
- The overall ecological trends are positive.

Tables 4 and 5 provide a list of wetland hydrophytic plant species that Caltrans will use in planting wetland areas.

Riparian and Upland Creation and Restoration:

- Year One—50 percent cover of native species.
- Year Two—60 percent cover of native species.
- Year Three to Five—71 percent cover of native species.

Tables 4 and 5 provide a list of riparian and upland plant species that Caltrans will use in planting. If plant cover falls below these percentages or the survival rate for container plants falls below 71 percent, supplemental planting will be provided. Additional container plants (one per 36 square feet of bare ground) will be planted.

The determination of success in wetland and riparian habitat creation, restoration, and enhancement requires that measurable criteria and comparisons be established then followed by careful monitoring of the site. Finally, the actual monitoring survey data results have to be compared to predetermined success criteria.

To obtain a comprehensive picture of mitigation success, Caltrans will evaluate the mitigation sites using a quantitative assessment of measurable components and a qualitative evaluation of the site as a total ecological system, including observable trends, to obtain an overall picture of mitigation success.

Quantifiable success criteria will be primarily based on vegetation, along with hydrology and soils, and will include species composition and percent cover that will

be evaluated in comparison to the adjacent existing habitats. Qualitative criteria, including trends in growth, vigor, and percent cover, will be used to determine success of the mitigation site. Evidence of sufficient wetland hydrology and wildlife usage will provide additional information to determine success.

TABLE 4: ON-SITE SPECIES FOR REVEGETATION

SHAMROCK RANCH-WETLAND RESTORATION SPECIES:	
<i>Juncus spp.</i>	Rush (TB Treeband 2.25 X 5" open bottom, Plant Group I) Depending on the number of plants and the season, 128 cell plug trays could also be used.
<i>Rubus ursinus</i>	California blackberry (DP Deepot – 2.5 X 10", Plant Group I)
<i>Rubus parviflorus</i>	Thimbleberry (DP Deepot – 2.5 X 10", Plant Group I)
<i>Sambucus racemosa</i>	Elderberry (TB Treeband 2.25 X 5" open bottom, Plant Group I)
<i>Salix spp.</i>	Willow (Willow Cuttings – 760 mm to 920 mm, Plant Group W)
FILL DISPOSAL SITE AND SHAMROCK RANCH-RIPARIAN SPECIES:	
<i>Rubus ursinus</i>	California blackberry (DP Deepot – 2.5 X 10", Plant Group I)
<i>Rubus parviflorus</i>	Thimbleberry (DP Deepot – 2.5 X 10", Plant Group I)
<i>Sambucus racemosa</i>	Elderberry (TB Treeband 2.25 X 5" open bottom, Plant Group I)
<i>Salix spp.</i>	Willow (Willow Cuttings – 760 mm to 920 mm, Plant Group W)
FILL DISPOSAL SITE AND SHAMROCK RANCH-UPLAND SPECIES:	
<i>Baccharis piularis</i>	Coyote Bush (DP Deepot – 2.5 X 10", Plant Group I)
<i>Rhamnus californica</i>	Coffeeberry (DP Deepot – 2.5 X 10", Plant Group I)
<i>Polystichum munitum</i>	Western Sword Fern (No. 1 Container – 6 X 6, Plant Group A)
<i>Holodiscus discolor</i>	Creambush (DP Deepot – 2.5 X 10", Plant Group I)
<i>Lupinus arborelis</i>	Yellow Bush Lupin (DP Deepot – 2.5 X 10", Plant Group I)
<i>Artemisia californica</i>	California Sagebrush (DP Deepot – 2.5 X 10", Plant Group I)
<i>Ceanothus thyrsiflorus</i>	Ceanothus Blue Blossom (DP Deepot – 2.5 X 10", Plant Group I)
<i>Mimulus aurantiacus</i>	Sticky Monkeyflower (DP Deepot – 2.5 X 10", Plant Group I)
FILL DISPOSAL SITE AND SHAMROCK RANCH-NATIVE GRASS SPECIES: Seeding	
<i>Elymus glaucus</i>	Blue Wildrye, Berkeley
<i>Nassella pulchra</i>	Purple Needle Grass
<i>Festuca idahoensis</i>	Idaho Festuca
<i>Hordium brachyantherum californicum</i>	Meadow Barley

TABLE 5: OFF-SITE SPECIES FOR REVEGETATION

CHARTHOUSE SITE-WETLAND CREATION AND RESTORATION SPECIES:	
<i>Oenanthe sarmentosa</i>	Water Parsley (DP Deepot 2.5 X 7", Plant Group I)
<i>Scirpus microcarpus</i>	Panicled bulrush (TB Treeband 2.25 X 5" open bottom, Plant Group I)
<i>Potentilla anserine</i>	Silver cinquefoil (LN Liners 2.25 X 3" Rosepots, Plant Group I)
<i>Juncus spp.</i>	Rush (TB Treeband 2.25 X 5" open bottom, Plant Group I) Depending on the number of plants and the season, 128 cell plug trays could also be used
<i>Carex spp.</i>	Sedge (LN Liners 2.25 X 3" Rosepots, Plant Group I) Depending on the number of plants the season, 128 cell plug trays could also be used
CHARTHOUSE SITE-RIPARIAN SPECIES:	
<i>Rubus ursinus</i>	California blackberry (DP Deepot - 2.5 X 10", Plant Group I)
<i>Rubus parviflorus</i>	Thimbleberry (DP Deepot - 2.5 X 10", Plant Group I)
<i>Sambucus racemosa</i>	Elderberry (TB Treeband 2.25 X 5" open bottom, Plant Group I)
<i>Salix spp.</i>	Willow (Willow Cuttings - 760 mm to 920 mm, Plant Group W)
CHARTHOUSE SITE-NATIVE GRASS SPECIES: Seeding	
<i>Elymus glaucus</i> , Berkeley	Blue Wildrye, Berkeley
<i>Nassella pulchra</i>	Purple Needle Grass
<i>Festuca idahoensis</i>	Idaho Festuca
<i>Hordium brachyantherum californicum</i>	Meadow Barley

8.2 On-Site Mitigation

On-site mitigation will occur at Shamrock Ranch and the OMC/Fill Disposal Site. The mitigation includes the creation of a frog pond, wetland restoration, invasive species control, and revegetation of buffer zones.

8.2.1 Protection and Enhancement of CRLF Habitat at Shamrock Ranch

The original proposal was to relocate the entire CRLF population from the North Reservoir Pond to the new frog pond at Shamrock Ranch. However, since it was not possible to relocate the entire CRLF population from the North Reservoir Pond, in 2002, the North Reservoir Pond and its associated wetlands were enclosed in a frog-proof fence. This fence is equipped with one-way entrance funnels that allow wandering frogs to enter the North Reservoir Pond while at the same time prevent them from leaving. Caltrans will carefully maintain this fence through the construction of the Devil's Slide Tunnel Project. The fence will help minimize incidental loss of CRLFs by providing a refuge from construction activities. To prevent mammalian predation at the new frog pond, an electric fence will be installed around the new frog barrier fence.

As previously noted, the North Reservoir Pond wetlands will be enclosed during project construction and any resident CRLFs will be prevented from leaving the pond. The CRLF population will be closely monitored and, should it begin to exceed the carrying capacity of the enclosure, trapping efforts to relocate a portion of the

population may be undertaken in consultation with the USFWS. Caltrans has already constructed a new pond, with wetland habitat, for frog relocation as part of the on-site mitigation. There is a new pond in addition to the two original reservoir ponds, resulting in a net increase of wetlands (0.04 acre) and habitat area for the CRLF and other wildlife.

During construction, Caltrans will implement the measures stipulated by the USFWS in its biological opinion (BO), dated December 18, 2000, and revised by letter from the USFWS dated March 25, 2004. Any proposed revisions to the conditions of the BO will be based on continuing field research and studies and will be made only in consultation with the USFWS. Copies of monitoring reports, which are required pursuant to the BO, will be submitted to the San Mateo County Planning and Building Division.

Caltrans will enhance the North Reservoir Pond by implementing a tule removal program. Since the mid 1990s, the tule stands in the North Reservoir Pond have quadrupled in size and now cover about one half of the high water surface area. These tule stands are now so extensive that they seriously reduce the CRLF larval inshore foraging area and hinder efforts to make valid egg cluster and frog counts during monitoring.

To ensure that the North Reservoir Pond does not continue to dry up in summer, thereby negating successful metamorphosis of the California red-legged frog larval crop, Caltrans will provide the pond with a pressurized water line and a heavy duty float valve system. This will create a permanent pond habitat so that the frog can complete metamorphosis from a tadpole to a frog, even during drought years. In addition, the koi carp population will be removed from the South Reservoir Pond to eliminate predation on red-legged frog eggs and tadpoles.

Caltrans will implement a three-year monitoring plan for the conservation easement area following roadway construction to assess and evaluate the California red-legged frog population and the effects of the proposed mitigation measures. A copy of this plan will be sent to the San Mateo County Planning and Building Division, the CCC, and the USFWS.

8.2.2 Wetland Restoration at Shamrock Ranch

In addition to the on-site CRLF frog enhancement measures, Caltrans will restore some, but not all, of the affected wetland areas at Shamrock Ranch. Wetland restoration at Shamrock Ranch will involve planting higher value wetland plant species in the lower value wetland areas (North Portal Intermittent Drainage, North Reservoir Pond Earthen Dam, and South Reservoir Pond Intermittent Drainage) and controlling invasive plant species. Disturbed wetland areas, dominated by poison hemlock, will be restored with blackberry, thimbleberry, and elderberry (Exhibit 14). Surrounding upland areas that are disturbed during construction will be contour-graded to blend in with the adjacent areas and stabilized with erosion control materials consisting of native grasses and forbs. The control of invasive plant species

and the planting of new native plants will provide higher value habitat than currently exists.

In addition to the above wetland restoration at Shamrock Ranch, the face of the existing earthen dam impoundment at the South Reservoir Pond will also be repaired and restored to ensure the habitat functions associated with the pond will continue in the future. Vegetation will be removed from the dam and spillway area, and the face of the dam will be regraded. Rock slope protection, including the planting of willow cutting poles, will help provide wetland habitat. Slope protection fabric and a system of drainage pipes will also be installed.

During the operational phase of the Tunnel Project, the majority of roadway runoff from the bridges at Shamrock Ranch will be contained and diverted northward to a drainage on the existing Highway 1 roadway. This drainage will include a water quality basin. Importantly, this drainage does not drain to the ponds and their surrounding habitats.

8.2.3 Restoration of Other Disturbed Areas Within Shamrock Ranch

Other areas comprised mostly of grasses will be restored back to grasslands. Construction access roads will impact hillsides covered predominantly with non-native grasses. Once the temporary roads are no longer needed, Caltrans will remove the roads and contour grade the roadway prism to blend in with the surroundings. The soil areas will be stabilized with erosion control materials consisting of native grasses and forbs. Pasture areas will be treated in the same manner.

8.2.4 Restoration of Areas Contiguous to the New Horse Trail Within Shamrock Ranch

Once the new horse trail is constructed, the slopes will be stabilized with biodegradable erosion control netting and fiber rolls. The mechanical surface protection will allow both seeding and planting of container stock to be implemented concurrently. The new trail is located within heavy coastal scrub. Recruitment and colonization from adjacent plants will readily occur.

8.2.5 Onsite Buffer Zone Planting

Shamrock Ranch:

Caltrans will establish 100-foot buffer zones around the North Reservoir Pond, South Reservoir Pond, and newly created frog pond (refer to Section 8.8, Conservation Covenants). Within these buffer zones, riparian planting may be implemented where opportunity permits to enhance the habitat around the wetlands and ponds. Additionally, other wetland areas within the Ranch may be planted with riparian plantings as well (refer to Exhibit 14). As further protection of wetland areas, upland planting and vegetative stabilization (seeding/erosion control) of disturbed areas within the buffer zone areas will also occur to address sedimentation and long term erosion control concerns.

OMC/Fill Disposal Site:

Caltrans will implement riparian buffer zone planting above and around the existing downhill seasonal ponding depression and within the slopes of the proposed water quality basin. An emphasis will be placed on establishing a predominantly willow habitat consistent with what is currently found at the site. Also, to further protect of wetland areas, Caltrans will provide upland planting and vegetative stabilization (seeding/erosion control) of disturbed areas within the buffer zone areas. This will address sedimentation and long-term erosion control concerns.

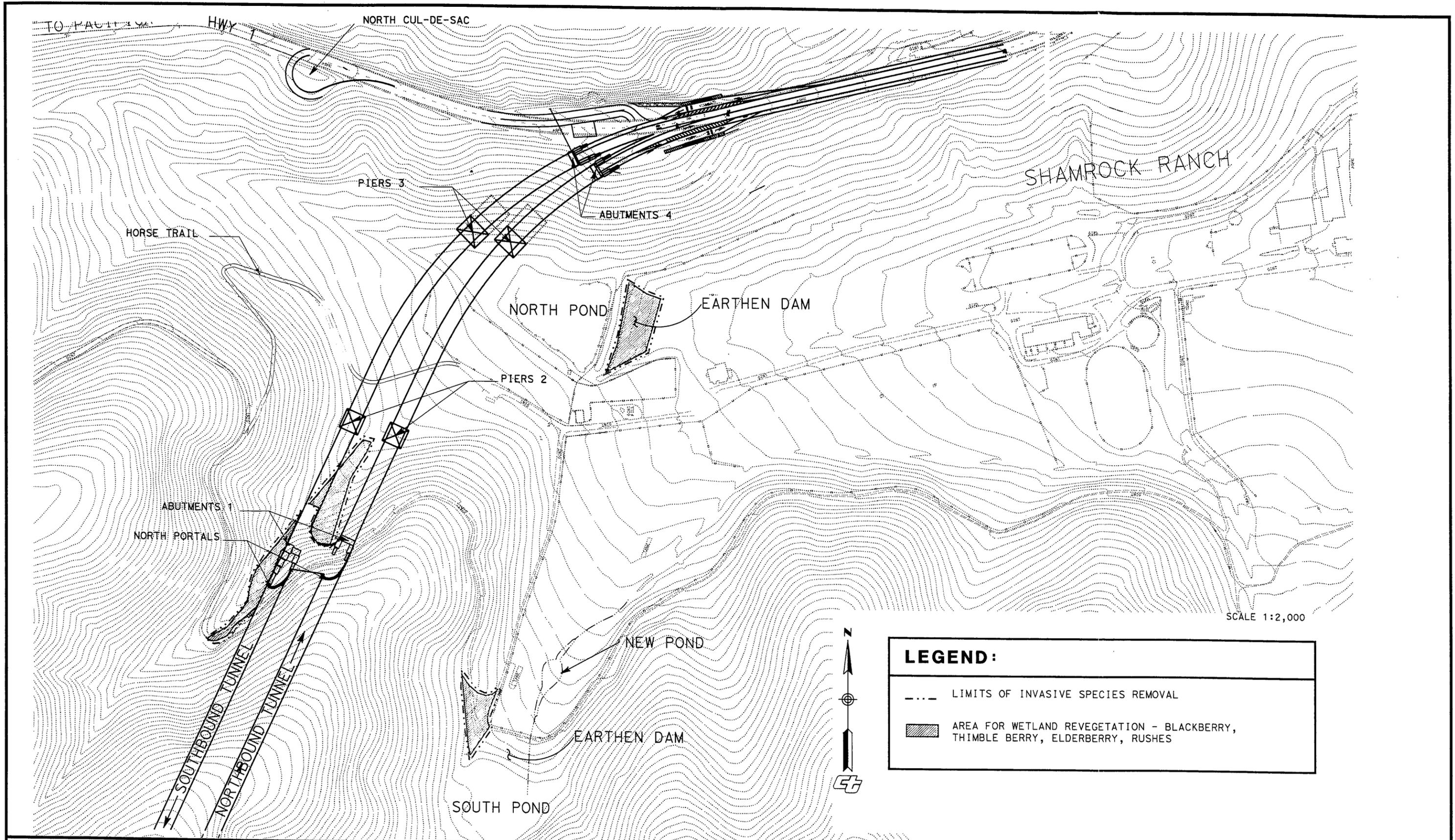
8.2.6 Invasive Species Control

Wetland enhancement of the project site will include the eradication of pampas grass and other invasive plant species at Shamrock Ranch, the OMC Site, and the Fill Disposal Site. Examples of particularly invasive plant species in the project vicinity include pampas grass, poison hemlock, and mustard. Refer to Exhibits 12 and 13 for locations where invasive species removal will be implemented.

The following are general guidelines for the removal process:

- In ESAs, where clumps of pampas grass exist, cut flowering heads and bag for removal from the site. Cut stems to ground level and immediately apply the appropriate herbicide using a wick applicator. Once dead, remove the clump by hand. The actual method used to remove pampas grass will be specific to its stage of growth and the season in which removal takes place; every effort will be made to remove the pampas grass without propagating new plants.
- In areas where removal is possible without disturbing sensitive areas, excavate and remove the entire clump of pampas grass from the site using a backhoe. Take care to follow the removal equipment and bag all seed heads, roots and vegetative material. Where required, back-fill depressions.
- Dispose of all material removed during invasive species control at an approved disposal site.

To inhibit the reoccurrence of invasive species and regrowth of weed species throughout Shamrock Ranch and the OMC/Fill Disposal Site, Caltrans will revegetate all bare soil as soon as possible with desirable native plant species. During the initial five-year maintenance period, any new growth of invasives will be removed by either controlled chemical application or hand digging of root ball during the spring or early summer. Care will be taken to remove all seed heads and plant material from the site.

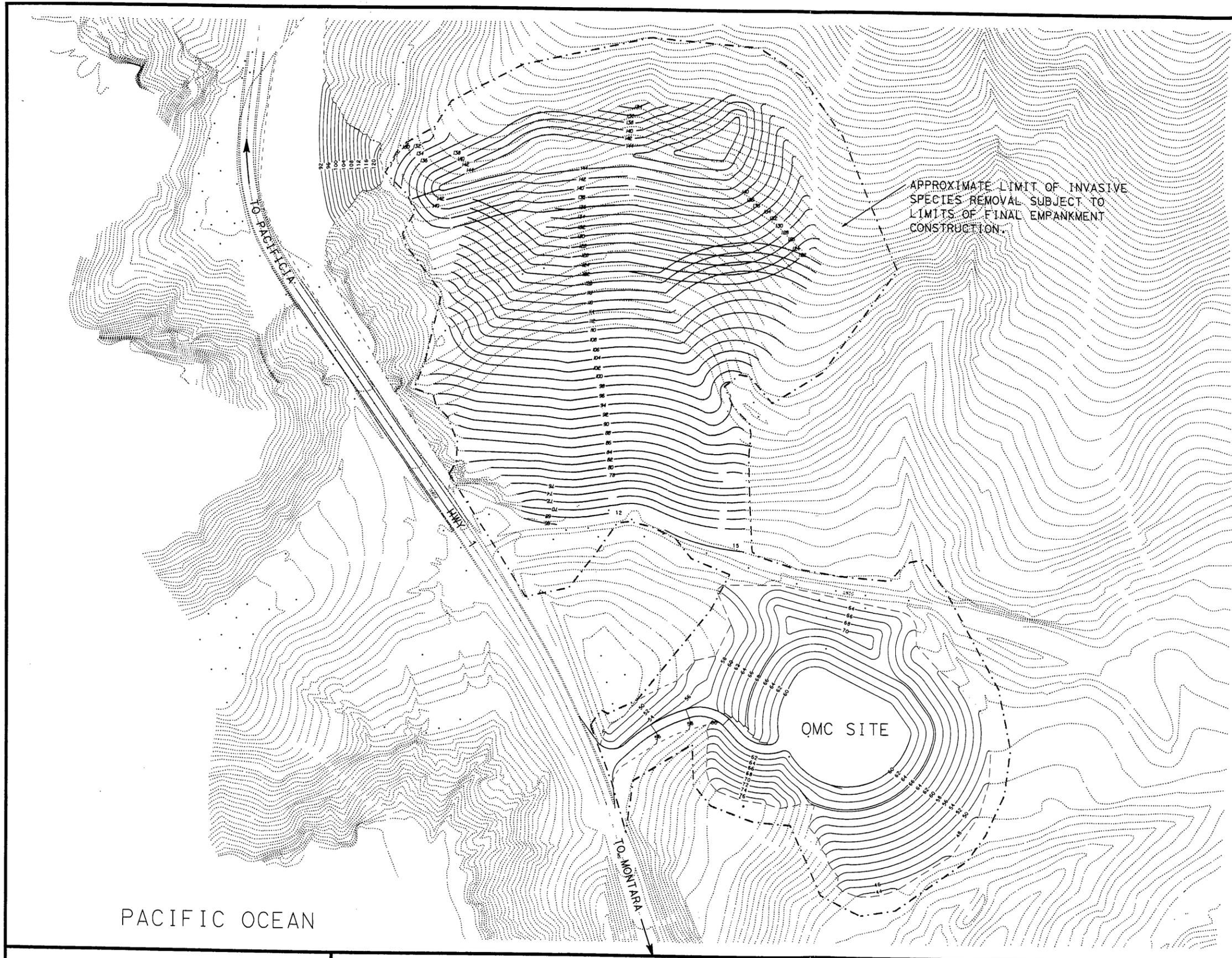


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**DEVIL'S SLIDE TUNNEL PROJECT
SHAMROCK RANCH
INVASIVE SPECIES REMOVAL**

EXHIBIT 12



APPROXIMATE LIMIT OF INVASIVE SPECIES REMOVAL SUBJECT TO LIMITS OF FINAL EMPANKMENT CONSTRUCTION.



SCALE 1:2,000

LEGEND:	
-----	LIMITS OF REMOVAL OF EXOTIC SPECIES
—————	PROPOSED GRADING

PACIFIC OCEAN

OMC SITE

OFFICE OF WATER QUALITY
EROSION CONTROL & MITIGATION

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**DEVIL'S SLIDE TUNNEL PROJECT
OMC/FILL DISPOSAL SITE
INVASIVE SPECIES REMOVAL**

EXHIBIT 13

8.3 Revegetation Plan

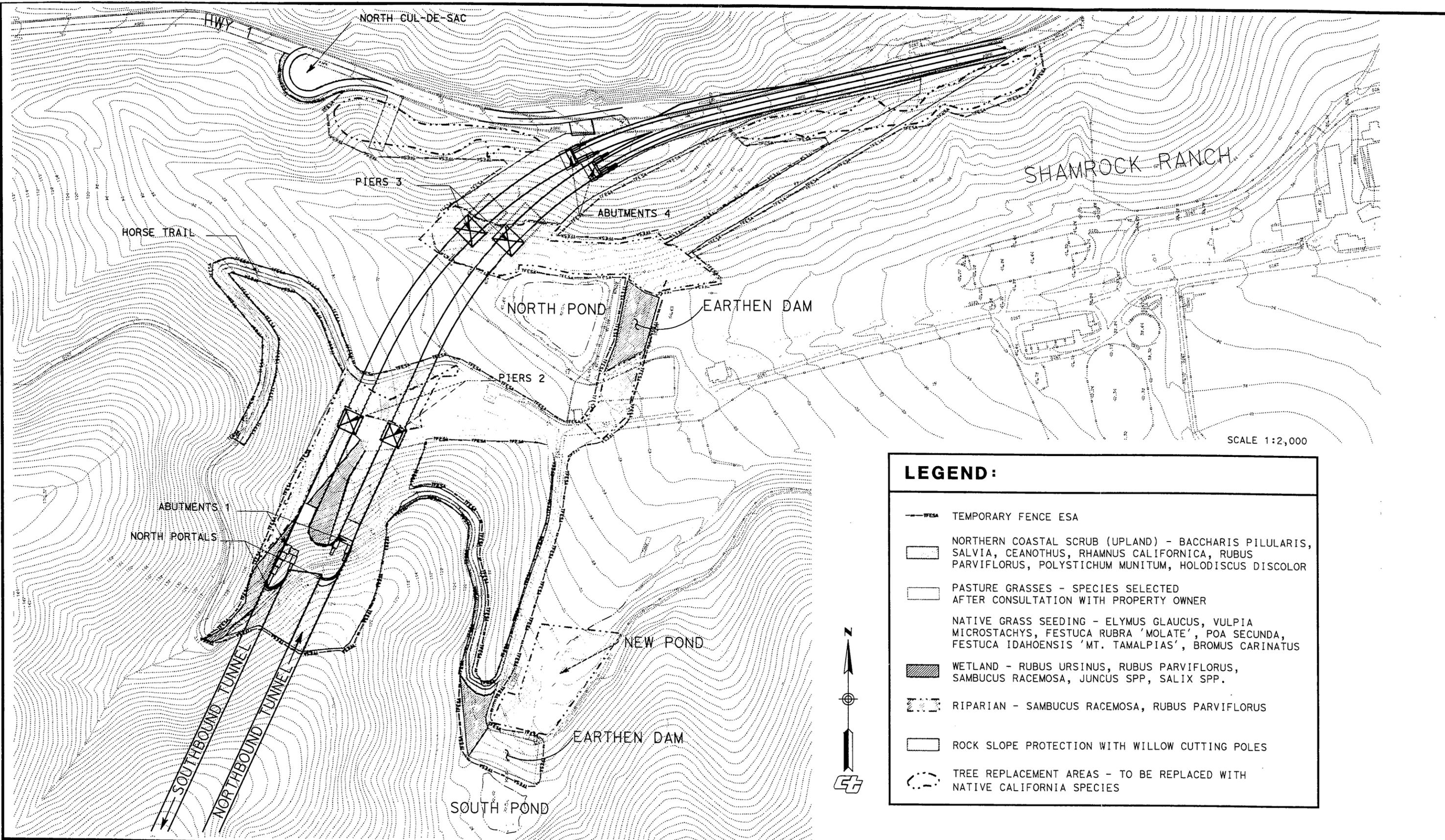
The revegetation plan will consist of creating and restoring wetland and riparian habitat through a combination of seeding and planting. This is the primary goal for revegetation. A second goal will be to restore upland vegetation in and contiguous to buffer zone areas. The upland plantings will target core species found in the surrounding existing vegetation. The upland plantings will serve to restore in-kind those areas disturbed during construction and provide foraging habitat for wildlife and long-term erosion and sediment control. Also, Caltrans will restore in kind with predominantly native grass species the grasslands/pasture areas that are disturbed within Shamrock Ranch. (Exhibits 14 and 15 demonstrate the revegetation that will take place). The revegetation will also include reseeding with native species at the Shamrock Ranch detention basin.

Caltrans shall perform monitoring for revegetation success no later than September 30 of each year for a five-year period. The average total cover for all revegetation sites is 71 percent. This number has been used for the five-year target. Monitoring and supplemental planting guidelines are as follows:

- **Year One = 50 Percent Cover of Native Species.** Should cover fall below this amount, supplemental planting will be required. Caltrans will repair any eroded areas first, then re-seed and mulch by October 15. Caltrans will plant supplemental container plants appropriate for the site in November or December when there is adequate soil moisture. The number of plants per area will be determined by the square feet of bare area. There shall be one container plant installed for every 36 square feet of bare area.
- **Year Two = 60 Percent Cover of Native Species.** Should cover fall below this amount, supplemental planting will be required. Caltrans will repair any eroded areas first, then re-seed and mulch by October 15. If the survival percent of the container plants installed drops below 70 percent where the cover is also below 60 percent, Caltrans will replace all of the dead container plants with native container plants.
- **Years Three to Five = 71 Percent Cover of Native Species.** Should cover fall below this amount, supplemental planting will be required. Caltrans will repair any eroded areas first, then re-seed and mulch by October 15. If the survival percent of the container plants installed drops below 70 percent where the cover is also below 71 percent, Caltrans will replace all of the dead container plants with native container plants.

8.3.1 Wetland Revegetation

In drier wetland areas where vegetation comprises both native and invasive vegetation, the plan will consist of replanting with native species and controlling invasive plants to the maximum extent practicable. This applies mainly to restoration of wetlands at Shamrock Ranch.



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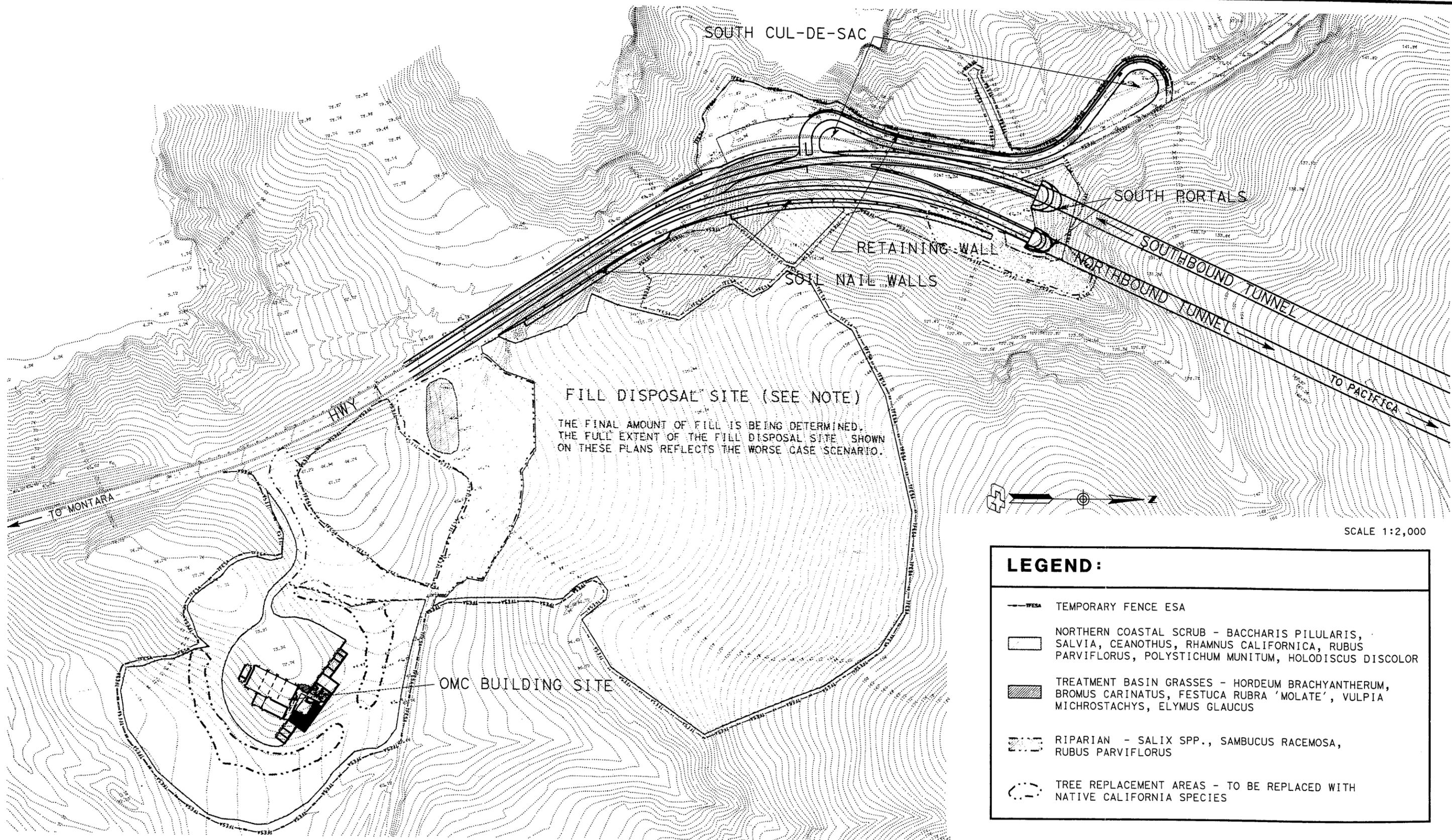
- TEMPORARY FENCE ESA
- NORTHERN COASTAL SCRUB (UPLAND) - BACCHARIS PILULARIS, SALVIA, CEANOTHUS, RHAMNUS CALIFORNICA, RUBUS PARVIFLORUS, POLYSTICHUM MUNITUM, HOLODISCUS DISCOLOR
- PASTURE GRASSES - SPECIES SELECTED AFTER CONSULTATION WITH PROPERTY OWNER
- NATIVE GRASS SEEDING - ELYMUS GLAUCUS, VULPIA MICROSTACHYS, FESTUCA RUBRA 'MOLATE', POA SECUNDA, FESTUCA IDAHOENSIS 'MT. TAMALPIAS', BROMUS CARINATUS
- WETLAND - RUBUS URSINUS, RUBUS PARVIFLORUS, SAMBUCUS RACEMOSA, JUNCUS SPP, SALIX SPP.
- RIPARIAN - SAMBUCUS RACEMOSA, RUBUS PARVIFLORUS
- ROCK SLOPE PROTECTION WITH WILLOW CUTTING POLES
- TREE REPLACEMENT AREAS - TO BE REPLACED WITH NATIVE CALIFORNIA SPECIES



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**DEVIL'S SLIDE TUNNEL PROJECT
 SHAMROCK RANCH NORTH PORTAL DRAINAGE
 REVEGETATION PLAN**

EXHIBIT 14



LEGEND:

	TEMPORARY FENCE ESA
	NORTHERN COASTAL SCRUB - BACCHARIS PILULARIS, SALVIA, CEANOTHUS, RHAMNUS CALIFORNICA, RUBUS PARVIFLORUS, POLYSTICHUM MUNITUM, HOLODISCUS DISCOLOR
	TREATMENT BASIN GRASSES - HORDEUM BRACHYANTHERUM, BROMUS CARINATUS, FESTUCA RUBRA 'MOLATE', VULPIA MICHROSTACHYS, ELYMUS GLAUCUS
	RIPARIAN - SALIX SPP., SAMBUCUS RACEMOSA, RUBUS PARVIFLORUS
	TREE REPLACEMENT AREAS - TO BE REPLACED WITH NATIVE CALIFORNIA SPECIES

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**DEVIL'S SLIDE TUNNEL PROJECT
 OMC/FILL DISPOSAL SITE
 REVEGETATION PLAN**

EXHIBIT 15

8.3.2 Riparian Revegetation (Buffer Zone Areas)

Caltrans will plant riparian vegetation in buffer zone areas contiguous to existing wetlands and new wetland creation and restoration areas. This applies to Shamrock Ranch and the OMC/Fill Disposal Site. Riparian buffer zone planting will be implemented above and around the existing Fill Disposal Site downhill seasonal ponding depression and within the slopes of the proposed water quality basin. An emphasis will be placed on establishing a predominantly willow habitat consistent with the site's present habitat.

8.3.2.1 Upland Revegetation

Upland vegetation will be planted contiguous to riparian buffer zone areas and in areas of existing coastal scrub. Upland vegetation will be used predominantly on excavation and embankment slopes except when these slopes are contiguous to wetland areas. Coastal scrub habitat will be planted above and around areas planted with riparian buffer zone planting. The upland planting will stabilize construction slopes and reduce sedimentation and erosion into the seasonal ponding depression and water quality basin.

8.3.2.2 Revegetation Techniques

Seeding and planting at high densities will help ensure sufficient cover and survival to provide the sites with comparable vegetation representative of the existing wetland and riparian habitat found on the other portions of the mitigation sites. The high density planting effort will also aid in suppressing invasive species and promoting successful competition by the planted species. Topsoil will be used at the Fill Disposal Site to cap embankment areas. Organic compost will be used on steep excavation areas in rocky material to provide an organic medium for growth.

8.3.2.3 Seeding

For areas where seeding is a suitable form of revegetation, seed will be applied by either hand or by hydroseeding. Mulch application will consist of approximately 4 Tonnes of rice straw per hectare secured with 140 kilograms (308.6 pounds) of tackifier. In addition, 1,850 kilograms (4078.6 pounds) of compost and 91 kilograms of mycorrhizal inoculum per hectare (81.2 pounds/acre) will be added to the mix to help ensure germination. Seed mixes will be made up of native herbaceous and shrub species. Sterile, non-invasive annual cereal grains that will not persist or perpetuate may be used to provide quick soil stabilization.

8.3.2.4 Container Planting

Container planting will be used for all planting. Plants will be either contract grown or obtained from plants that are grown locally from seed collected in the coastal range within the County. The actual size of the container will depend on the type of plant and growth characteristics. Caltrans will consult native plant growers in finalizing the type and size of container used in growing plant stock. The objective will be to

implement planting in the fall. Plants will be planted on an average of 1.8 meters by 1.8 meters (6 by 6 feet) spacing in a staggered grid pattern.

8.4 Off-Site Mitigation

8.4.1 Site Description

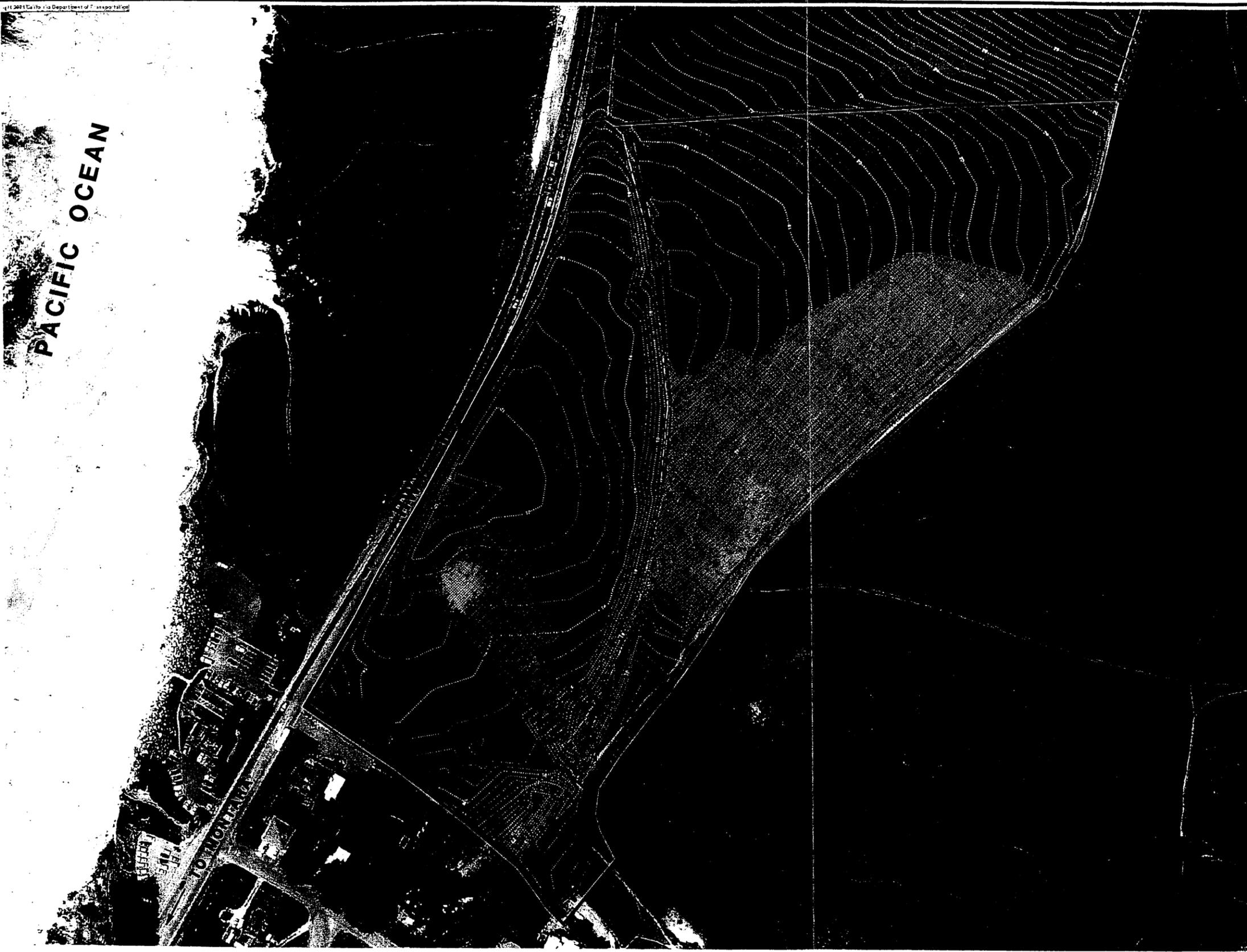
The former land use on the Charthouse Mitigation Site was agricultural. There are row crops grown north of the site and residential land uses on the south side of the site. To the east and west, land uses include open space and recreational uses. The existing Highway 1 roadway separates the Charthouse Mitigation Site from the open space and recreational area to the west. The mitigation parcel and the overall study area have been disturbed by past agricultural activities and by the placement of fill material. The steep hillsides and agricultural activities in the vicinity have contributed to the lack of freshwater wetlands and ponds in this area. Prior plowing and grading have disrupted the northern drainage into the site. Since the site is not currently used for agricultural purposes, wetlands have evolved over time. Wetland plant species on the mitigation site are dominated by Pacific oenanthe (*Oenanthe sarmentosa*), panicled bulrush (*Scirpus microcarpus*), Pacific silver cinquefoil (*Potentilla anserina*), and rushes. Willow and blackberry are the dominant riparian plant species. Based on the plant and wildlife surveys conducted by Caltrans for the project and a literature review, no listed plant or wildlife species are present at the site.

The mitigation site also includes a disturbed drainage in the southern portion of the property. This drainage parallels Highway 1 before crossing under the roadway through a culvert and draining into the Pacific Ocean. A large portion of this drainage area, which is dominated by willow, also contains hydrophytic vegetation that provides good wildlife habitat.

The site is bisected by an abandoned berm which supported the old coastal railroad alignment. The fill material, possibly associated with the railroad berm installation, has evolved into an upland area. This area contains some decomposed granite, which no longer supports hydrophytic vegetation. Caltrans will excavate fill material from approximately 0.46 hectares (1.15 acres) of the site and the area will be re-graded back to the appropriate elevations to establish wetland habitat. In addition, approximately 1.17 hectares (2.91 acres) of lower value wetland areas east of the railroad berm will be graded down to the appropriate wetland elevations to restore the wetlands (Exhibit 16). The wetland creation and restoration areas will be planted with targeted wetland plant species.

The Charthouse Mitigation Site has an excellent chance for successful creation, restoration, and enhancement of wetlands. Preliminary evaluations indicate that this site can be readily restored because the disturbed areas were historically wetlands. The Charthouse Mitigation Site will result in a direct, beneficial effect for all wildlife using the local area. The addition of either seasonal depressions or small ponds included as part of this mitigation proposal will result in a marked increase in wildlife habitat, especially for amphibians and reptiles such as frogs and snakes.

PACIFIC OCEAN



SCALE 1:2,000

LEGEND:

- STUDY BOUNDARY
- - - - - CCC BUFFER ZONE BOUNDARY
- CCC WETLAND BOUNDARY
-  PROPOSED LIMITS OF GRADING FOR WETLAND CREATION - 1.1 ACRES
-  PROPOSED LIMITS OF GRADING FOR WETLAND RESTORATION - 2.9 ACRES

OFFICE OF WATER QUALITY
EROSION CONTROL & MITIGATION

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**DEVIL'S SLIDE TUNNEL PROJECT
CHARHOUSE MITIGATION SITE**

EXHIBIT 16

PACIFIC OCEAN

LOCATION RI-1
IMPACTS - TEMPORARY
BRIDGE AND ROAD



SCALE 1:2,000

LEGEND:

- STUDY BOUNDARY
- - - - - CCC BUFFER ZONE BOUNDARY
- CCC WETLAND BOUNDARY
-  RI-1 TEMPORARY IMPACTS
- PROPOSED LIMITS OF GRADING FOR
WETLAND RESTORATION - 2.9 ACRES
- RI-2 TEMPORARY IMPACTS
- TEMPORARY ACCESS
BRIDGE AND ROAD - 0.11 ACRES

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**DEVIL'S SLIDE TUNNEL PROJECT
CHARTHOUSE MITIGATION SITE
TEMPORARY WETLAND IMPACTS**

EXHIBIT 16A

8.4.2 Contour Grading

The grading design calls for the removal of existing material to elevations required to provide sufficient hydrology and maintain newly created wetlands. A field investigation program, formulated by the Caltrans Office of Engineering Services, to evaluate the soils and the hydrology on the Charthouse Mitigation Site has now been implemented. To aid in the assessment of the present hydrologic cycle, Caltrans installed piezometers. In addition, a water balance study was prepared for the site.

The water balance study was used to fine-tune the design and ensure that final grading elevations were set taking into account evapotranspiration and percolation rates. The information generated from this study and from groundwater monitoring wells has been used to prepare the grading plan. In addition to the wetland creation, the disturbed and degraded lower value wetlands on the eastern portion of the site will also be graded to the specified wetland elevations to restore them to higher value wetlands. The excavation to the west of the railroad berm will re-grade the site to an elevation that will support a seasonal wetland as well.

The final grading plan for the mitigation site is shown in Exhibit 17. Caltrans will be responsible to implement all grading, soil removal, re-grading, planting and erosion control. Grading activities will be limited primarily to the dry season between April 15 and October 15. Requirements of the Caltrans Standard Specifications, Section 7-1.01G, Water Pollution, and the project-specific storm water pollution prevention plan (SWPPP) measures will be implemented in early fall to ensure that erosion in all disturbed areas will be kept to a minimum.

During all grading operations, care will be taken to protect the surrounding wetlands through their designation as ESAs. Temporary sediment control measures will be used at the draining perimeter including, but not limited to, temporary silt fence, fiber rolls, and plastic cover. All temporary measures will be removed at the completion of the revegetation plan. All graded areas will be replanted with native California wetland and riparian species as outlined in this report.

8.4.2.1 Invasive Species Control

For wetland enhancement, Caltrans will eradicate pampas grass and other invasive plant species at the Charthouse Mitigation Site (refer to Exhibit 18 for locations where the invasive species removal will be implemented).

The following are general guidelines for the removal process:

- In ESAs, where clumps of pampas grass exist, cut flowering heads and bag for removal from the site. Cut stems to ground level and immediately apply the appropriate herbicide using a wick applicator. Once dead, remove the clump by hand. The actual method used to remove pampas grass will be specific to its stage of growth and the season in which removal takes place; every effort will be made to remove the pampas grass without propagating new plants.

- In areas where removal is possible without disturbing sensitive areas, excavate and remove the entire clump of pampas grass from the site using a backhoe. Take care to follow the removal equipment and bag all seed heads, roots and vegetative material. Where required, back-fill depressions.
- Dispose of all material removed during invasive species control at an approved disposal site.

To inhibit the reoccurrence of invasive plant species and regrowth of weed species throughout the Charthouse Mitigation Site, Caltrans will revegetate all bare soil as soon as possible with desirable native species. During the five-year mitigation contracts, any new growth of invasives will be removed by either poisoning or hand digging of the root ball during the spring or early summer. Care will be taken to remove all seed heads and plant material from the site.

8.4.3 Revegetation Plan

The revegetation plan will consist of creating and restoring wetland and riparian habitat through a combination of seeding and planting. This is the primary goal for revegetation. A second goal will be to restore upland vegetation contiguous to riparian buffer zone areas. The upland plantings will target core species found in the adjacent vegetated areas. The upland plantings will serve to restore disturbed areas in-kind, provide foraging habitat for wildlife and provide long-term erosion and sediment control (refer to Exhibit 19).

8.4.3.1 Wetland Revegetation

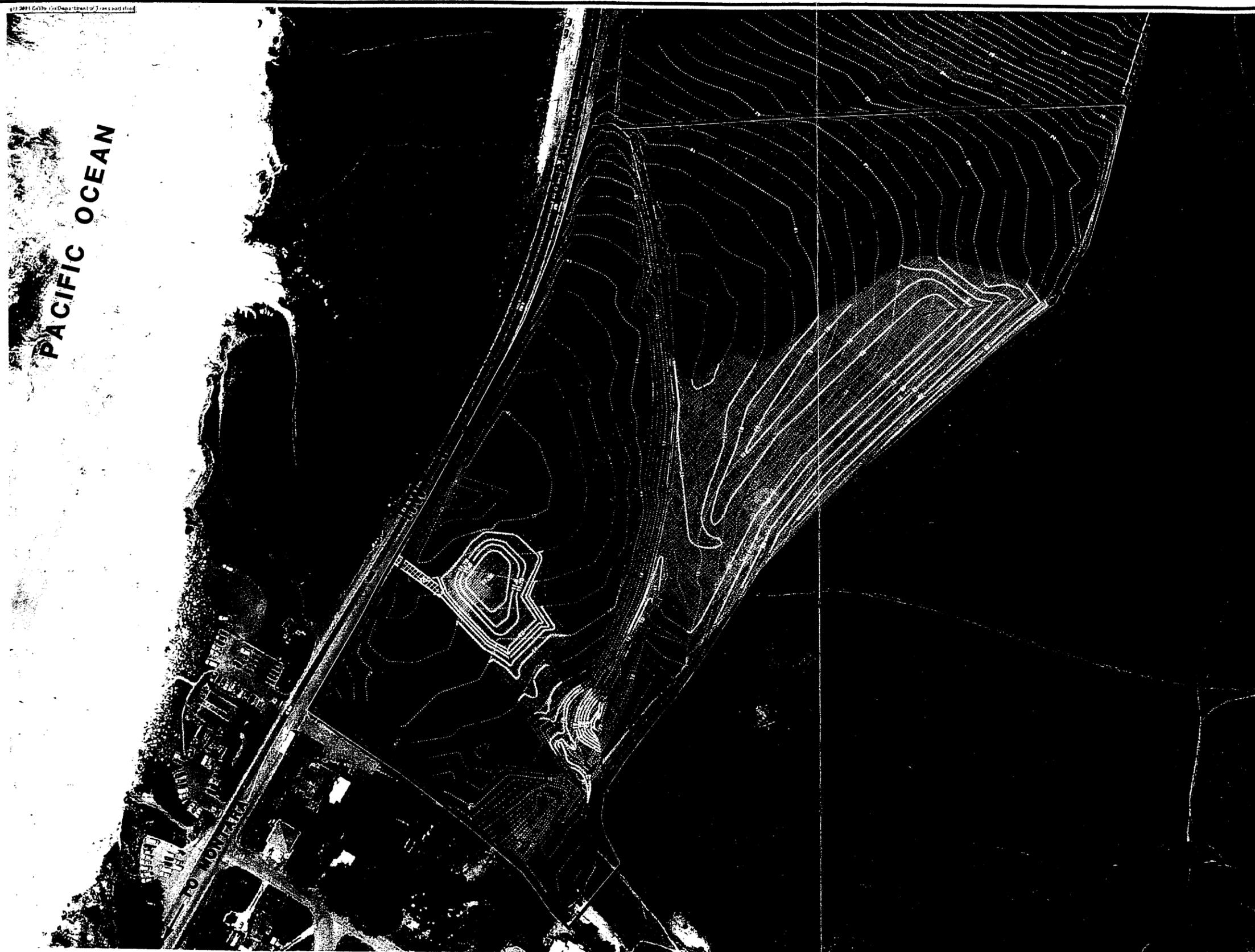
Caltrans will select wetland vegetation used for creation and restoration according to the hydrophytic character of the site and existing species found in the same habitats contiguous to where work will be performed (reference habitats). This applies mainly to the new and restored wetlands at the Charthouse Mitigation Site.

8.4.3.2 Charthouse Site Buffer Zone Planting

Caltrans will establish a 100-foot buffer zone around created and restored wetland areas at the Charthouse Mitigation Site. Riparian planting will be implemented to enhance the habitat around the wetlands. Invasive species control will also be implemented in the buffer zone area as outlined elsewhere in this report.

8.4.4 Upland Revegetation

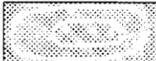
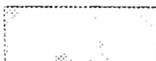
Caltrans will plant upland vegetation contiguous to riparian buffer zone areas and in areas of existing coastal scrub. Upland vegetation will be used predominantly on excavation and embankment slopes except when these slopes are contiguous to wetland areas. Revegetation of upland areas will minimize sediment runoff into wetlands, resulting in higher quality habitat.



PACIFIC OCEAN



SCALE 1:2,000

LEGEND:	
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	PROPOSED BUFFER ZONE BOUNDARY
	CCC WETLAND BOUNDARY
	PROPOSED LIMITS OF GRADING FOR WETLAND CREATION - 1.1 ACRES
	PROPOSED LIMITS OF GRADING FOR WETLAND RESTORATION - 2.9 ACRES
	CONSTRUCTION ACCESS

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**DEVIL'S SLIDE TUNNEL PROJECT
 CHARHOUSE MITIGATION SITE
 GRADING LIMITS**

EXHIBIT 17

PACIFIC OCEAN



SCALE 1:2,000

LEGEND:

- PROPOSED BUFFER ZONE BOUNDARY
- LIMITS OF INVASIVE SPECIES REMOVAL
- CCC WETLAND BOUNDARY
-  PROPOSED WETLAND CREATION - 1.1 ACRES
-  PROPOSED WETLAND RESTORATION - 2.9 ACRES

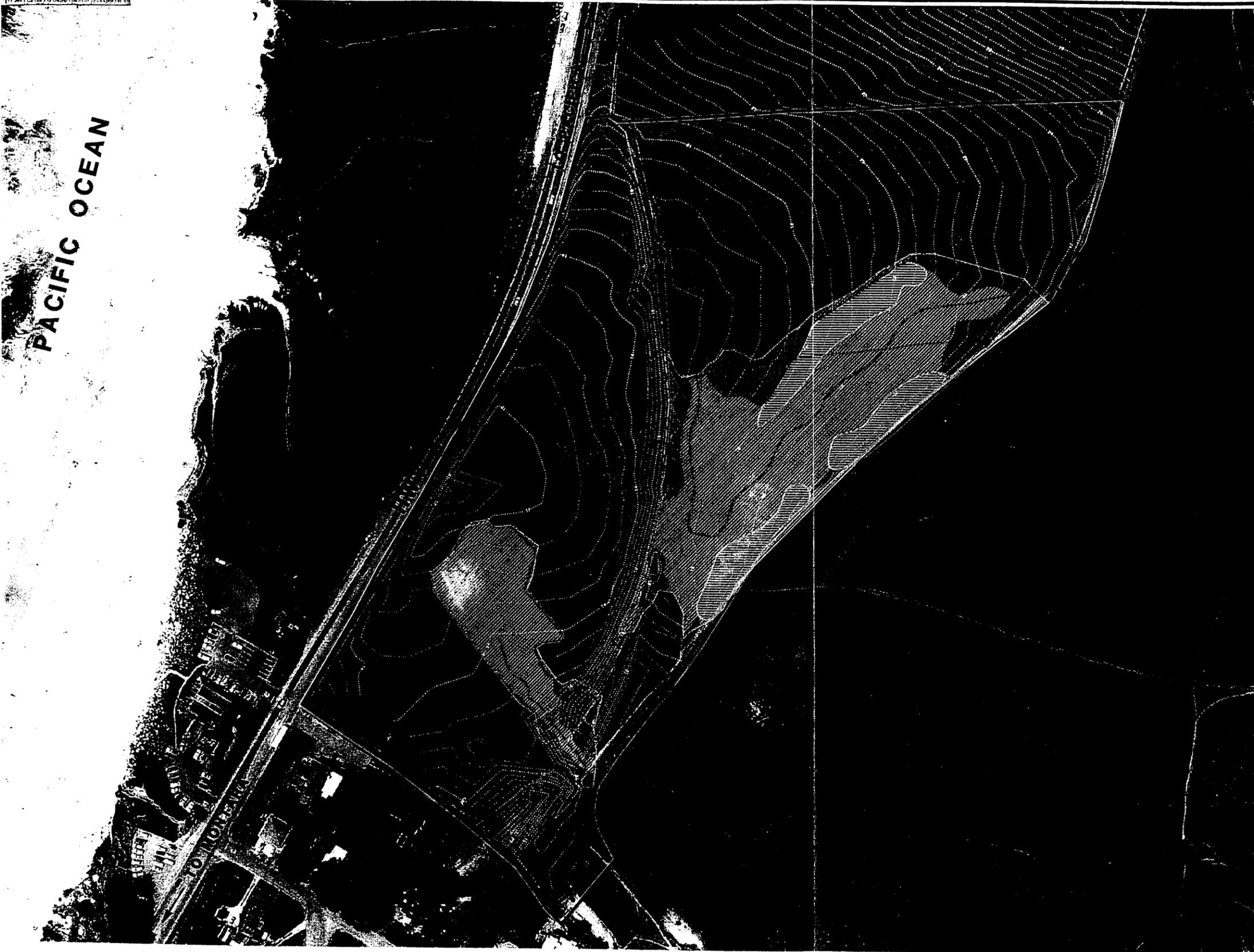
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**DEVIL'S SLIDE TUNNEL PROJECT
CHARHOUSE MITIGATION SITE
INVASIVE SPECIES REMOVAL**

EXHIBIT 18

PACIFIC OCEAN



SCALE 1:2,000

LEGEND:

- STUDY BOUNDARY
- CCC WETLAND BOUNDARY
- PROPOSED BUFFER ZONE BOUNDARY
- WETLAND PLANTING AREA FOR JUNCUS SPP., CAREX SPP., SCIRPUS SPP., AND OENANTHE SARMENTOSA.
- ▨ RIPARIAN PLANTING AREAS FOR RUBUS PARVIFLORUS, SAMBUCUS RACEMOSA, AND SALIX
- UPLAND TRANSITION AREAS FOR RUBUS URSINUS, MIMULAS AURANTIACUS, BACCAHARIS PILULARIS, LUPINUS ARBOREUS, HOLODISCUS DISCOLOR, CEANOOTHUS THYRSIFLORUS

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**DEVIL'S SLIDE TUNNEL PROJECT
 CHARTHOUSE MITIGATION SITE
 REVEGETATION PLAN**

EXHIBIT 19

8.4.4.1 Revegetation Techniques

Seeding and planting at high densities will help ensure sufficient cover and survival to provide the site with comparable vegetation representative of the existing wetland and riparian habitat found on the other portions of the restoration site. The high density planting effort will also aid in suppressing invasive species and promoting successful competition by the planted species. Organic compost will be used on steep excavation areas in rocky material to provide an organic medium for growth.

8.4.4.2 Seeding

For areas where seeding is a suitable form of revegetation, seed will be applied by either hand or by hydroseeding. Mulch applications will consist of approximately 4 Tonnes of rice straw per hectare secured with 140 kilograms (308.6 pounds) of tackifier. In addition, 1,850 kilograms (4078.6 pounds) of compost and 91 kilograms of mycorrhizal inoculum per hectare (81.2 pounds/acre) will be added to the mix to help ensure germination.

8.4.4.3 Container Planting

Caltrans will use container planting for all planting. Plants will be either contract grown or obtained from plants that are grown locally from seed collected in the coastal range within the County. The actual size of the container will depend on the type of plant and growth characteristics. Native plant growers will be consulted in finalizing the type and size of container used in growing plant stock. The objective will be to implement planting in the fall. Plants will be planted on an average of 1.8 meters x 1.8 meters (6 x 6 feet) spacing in a staggered grid pattern (refer to Table 5 for a breakdown of plant materials and the proposed type of container used for out planting).

Caltrans will plant native species at high densities to ensure sufficient cover and survival and to provide the site with comparable vegetation representative of the existing wetland and riparian habitats found on the other portions of the site. The high density planting effort will also aid in suppressing invasive species and promoting successful competition by the planted species. Clean fill material may be imported or exported elsewhere on the project site to provide suitable substrate for revegetation.

Appendix 5 lists the recommended species for the initial establishment and successful habitat restoration and creation. The dominant native hydrophytic plant species currently found on the existing mitigation site are also planned as the dominant species to be planted in the restored areas. The newly created and restored wetland area will be planted with Pacific oenanthe, paniced bulrush, Pacific silver cinquefoil, and rushes. Plant material for the mitigation site will be collected in the project vicinity and contract grown locally to ensure high quality plants adapted for the local climate regime.

8.4.5 Temporary Irrigation-Supplemental Water

After the site is graded, groundwater, coupled with impounded natural runoff, will provide long-term water needs to hydrophytic vegetation. Temporary irrigation will be installed to help establish and nurture both hydrophytic and upland plant materials. As the plants become established, supplemental water provided by the temporary irrigation will be reduced to transition the plant materials to natural conditions. At the end of the initial five-year monitoring period (plant establishment), it is anticipated that additional supplemental irrigation will not be required.

By the end of the second growing season, it is expected that the hydrophytic plant roots will have reached the groundwater and become established. The supplemental water may be discontinued as early as the end of the second year pending successful plant growth according to the criteria established in this plan.

8.5 Mitigation Construction and Maintenance

8.5.1 Preliminary Construction Schedule Charthouse

For the Charthouse Mitigation Site, Caltrans will commence all excavation, soil removal, grading, control of invasive species, planting and erosion control as early as June of 2005, depending on the end of the rainy season. It is estimated that these activities will take approximately two to three months.

Grading activities will be limited primarily to the dry season between April 15 and October 15. Planting will occur after the grading and just prior to the winter rains. As noted, Caltrans will provide temporary irrigation as needed to establish and nurture planted materials.

TABLE 6: RECOMMENDED SCHEDULE FOR MITIGATION IMPLEMENTATION

ACTIVITY	MONTH											
	J	F	M	A	M	J	J	A	S	O	N	D
Plant Collection				X	X	X						X
Sediment Removal							X	X	X	X		
Minor Grading & Excavation						X	X	X				
Planting								X	X	X		
CONTRACT DESCRIPTIONS	ACTIVITY		BEGIN DATE		END DATE							
EA1123G1–Mitigation Contract A: Off-site Charthouse	Plant Collection		04/05		Continuous							
	Grading		07/05		09/05							
	Planting		09/05		11/05							
EA1123H1–Mitigation Contract A: OMC Disposal Site B: North & South Portals	Plant Collection		04/05		Continuous							
	Planting		08/10		10/10							
EA1123J1–Mitigation Contract A: Shamrock Ranch	Plant Collection		04/05		Continuous							
	Minor Grading		06/07		08/07							
	Planting		08/07		10/07							

8.5.2 Maintenance Program

Caltrans will perform maintenance activities for up to ten years or until the sites have been deemed successful and self-sustaining by the resource and regulatory agencies, whichever is earliest. Maintenance activities will begin when construction of each of the mitigation sites is completed. Maintenance of all plant materials begins following completion of planting work. During this period, Caltrans will conduct periodic inspections, routine repair, and general upkeep of the site. Ultimately, maintenance of each site will be provided until each site has been deemed successful by the regulatory agencies in accordance with the success criteria outlined in this report.

Primarily, the maintenance work will emphasize the establishment and nurturing of plant material. Plant establishment begins once all planting activity at any one location has been completed. Maintenance not only ensures plant establishment, but the overall integrity of the mitigation program.

Typical maintenance activities include, but are not limited to, the following:

- Control of on-going weeds and invasive species;

- Use of supplemental water for irrigation if required;
- Removal and replacement of dead plants;
- Repair and upkeep of erosion and water pollution control BMPs;
- Repair of failed slopes;
- Repair and maintenance of irrigation systems;
- Removal of trash and debris;
- Control of public access into the mitigation sites; and
- Implementation of contingency measures.

Weeding will be continuous throughout the monitoring period. Weeding will target invasive species that are identified in surrounding areas where revegetation efforts take place. The weeding will be required once a month for the first six months, once every other month for months 7 to 12, and then quarterly throughout the duration of the monitoring. Weed presence at final monitoring will be limited to no more than 10 percent of the total area revegetated.

Once the site is deemed successful, final maintenance will include the removal of all temporary irrigation facilities, water pollution control BMPs and any other temporary improvements necessary to leave the site in a final condition such that it is self-sustaining. The mitigation site will then be fenced to prevent damage to the site.

8.5.3 Maintenance Oversight

Caltrans will oversee implementation of the maintenance program. Scheduled maintenance inspections, coupled with biological monitoring, will continue throughout the mitigation effort until the site is deemed successful. Caltrans will also document maintenance activities in the annual monitoring reports to identify problems and the corrective measures.

8.6 Biological Monitoring

8.6.1 Monitoring Summary

Caltrans will conduct existing baseline, construction, and post-construction mitigation monitoring to:

- Determine pre-project conditions;
- Check Environmentally Sensitive Area (ESA) compliance during construction of the mitigation sites;
- Evaluate the as-built conditions following construction (grading and planting);
- Identify compliance with success criteria; and
- Determine if remedial or contingency measures are necessary.

If necessary, Caltrans will conduct monitoring for up to ten years and will be responsible for monitoring the mitigation sites. The first few years of monitoring are the most important given that the newly created and restored wetland areas are adjusting and adapting to site conditions. During this period, parameters for vegetation mortality, hydric soil development, species composition, total plant cover, and other parameters will be important for the development of the plants (refer to Table 7). Caltrans will prepare annual monitoring reports each year during the first five-year period and provide them to the resource and regulatory agencies. These reports are important in tracking wetlands establishment and trends towards success. At the end of the first five-year monitoring period, the fifth year annual monitoring report will be prepared documenting the success of the mitigation. Caltrans will forward the fifth year report to the responsible resource agencies with a request in writing to schedule a field review of the mitigation site. If the sites are found not to be successful at the end of the five-year period, then success of the mitigation efforts will be re-evaluated in consultation with the responsible resource agencies, and monitoring will continue each year thereafter for up to ten years until success is achieved.

Success will be based on measurable criteria and comparisons with reference sites. Measurable criteria will include survivorship of planted species, composition of species, and percentage cover. Statistical criteria will be provided to support success determinations and will be included in the annual monitoring reports. A sampling plan will be developed that outlines the methodology, frequency, and number of samples taken during the course of monitoring. Species diversity and composition data will be provided for each plant community and will be representative of those native species found in both the reference sites and the surrounding areas where mitigation efforts are implemented. The species composition will reflect the dominant native species found on-site. The distribution and cover percentage of any one species in the reference site will serve as a basis for determining similar distribution and cover percentage in the planting proposal for the mitigation sites.

Quarterly mitigation monitoring reports will be submitted, outlining in detail, compliance with the conditions of approval required by the responsible resource agencies. During the monitoring period, Caltrans will work closely with the resource and regulatory agencies to evaluate the site as a whole for performance of functions and values. Success criteria developed at the initiation of mitigation will be used as a target in determining final success. Following the fifth year, if annual monitoring data results show that the overall trend of the mitigation site is to a stable and viable wildlife habitat that otherwise satisfies the mitigation goals, then the site may be deemed successful and Caltrans may discontinue monitoring. If monitoring shows that additional measures are necessary to meet success criteria, then Caltrans will implement contingency measures in coordination with the resource and regulatory agencies.

Ultimately, the success of the mitigation sites as a whole will be measured against the success criteria described in this report, the terms and conditions of project permits and authorizations, and the requirements of the responsible resource and regulatory agencies involved.

8.6.2 Construction Monitoring/Evaluations

Prior to the beginning of any construction associated with the coastal development permit, Caltrans will meet with the San Mateo County Planning and Building Division for "pre-construction mitigation compliance" meetings. The purpose of these meetings will be to review and determine if all applicable conditions of approval have been met, prior to commencement of construction.

Caltrans will establish a post-approval inspection deposit account in the amount of \$5,000 with the San Mateo County Planning and Building Division. This deposit will be used to offset all costs incurred by the San Mateo County Planning and Building Division staff resulting from inspections, plan reviews, field meetings, etc., during construction and implementation of this project. The unused balance of the deposit will be released only upon satisfactory completion of the work and acceptance of the work by San Mateo County. Additional deposits may be required and the account shall never be less than \$1,000 at any time. San Mateo County will notify Caltrans when the balance approaches \$1,000. At such time, additional deposits will be made to San Mateo County within thirty days of notice.

During project construction, including the excavation and grading at the mitigation site, Caltrans will conduct inspections to ensure that the adjacent, existing wetlands are not disturbed and that the ESAs are intact. If there are disturbances, Caltrans will notify the resource and regulatory agencies and take appropriate remedial action if deemed necessary based on the level of disturbance.

A SWPPP and a water quality management plan have been prepared for the Tunnel Project and include the mitigation and revegetation sites. These plans contain measures to prevent and minimize water quality impacts. During construction, the Caltrans resident engineer will perform regular monitoring of the SWPPP measures that are implemented.

During construction, within the wetland areas that are either known as or are potential habitat for the California red-legged frog, Caltrans will monitor and inspect the frog barrier fences everyday for openings and breaks in the fences that would result in potential wetland disturbance and the possibility for frogs to enter the construction area. The exception to this is when construction activities are occurring solely on the bridges. Any openings in the fences will be repaired within 12 hours.

Before any construction activities begin on the project, a USFWS-approved biologist will conduct a training session for all construction personnel. At a minimum, the training will include a description of the natural history of the red-legged frog and its habitat, a discussion of the importance of the red-legged frog and its habitat, the general measures that are being implemented to conserve the red-legged frog as they relate to the project, the penalties for non-compliance, and the boundaries (work area) within which the project may be accomplished. Training sessions will be repeated for all new employees before they access the project site. Sign-up sheets identifying attendees and the contractor or company they represent will be provided to the USFWS within one week of such training.

8.6.3 Baseline Monitoring

The baseline monitoring will document the post-construction condition of the mitigation sites. The as-built plans will be the basis for the monitoring. The permanent photo sites will be selected and taken from fixed points on fixed azimuths during each monitoring period. Any deviation from the original planting plan will be discussed and explained. Biological observations of the site will be included. Construction monitoring will be summarized in the baseline report.

8.6.4 Interim Monitoring Plan

After construction of the mitigation sites, Caltrans will monitor the mitigation sites for up to ten years. During this period, Caltrans will conduct informal monitoring evaluations on a regular basis. Monitoring will be monthly until plants are established and then quarterly thereafter. Each monitoring evaluation will consist of a general site assessment to help determine if there are any major problems with plant health, any necessary irrigation system, maintenance requirements and repairs to fencing.

Caltrans will submit quarterly mitigation monitoring reports, outlining in detail compliance with the conditions of approval contained in the coastal development permit, and any conditions that may be attached to this project by subsequent reviewing bodies. The quarterly monitoring reports will be submitted for the duration of the project (construction plus restoration period) to the San Mateo County Planning and Building Division.

8.6.5 Annual Monitoring Reports

Caltrans will conduct an annual monitoring field survey in September at the end of the growing season. An annual monitoring report will be prepared based on the results of the annual field survey and will be sent to the resource and regulatory agencies no later than December 31 each year for review and comment. The annual monitoring reports will be completed during the five-year plant establishment period. The annual reports for the first four years will be interim monitoring reports. The annual monitoring reports will include:

- Estimation and documentation of the survival rate of all planted species;
- Assessment of plant species vigor and of the overall vigor of the restoration site;
- Site photographs from the permanent photo station;
- Recommendations for any corrective action needed if the plants show signs of wilting or other deficiencies requiring remedial measures or contingencies;
- Notation of other factors affecting the plants such as herbivore damage, insect infestations, root rot, or any other special conditions;
- Discussion of the success criteria related to the progress of the site;
- Explanation of any significant factors affecting the plantings;

- Summarization of significant or recurring problems noted during the informal monitoring evaluations;
- Revegetation monitoring of the buffer zone;
- Water quality information, including erosion and sediment control; and
- Description of maintenance and remediation activities as listed in Section 8.4.2.

Caltrans will conduct a wetland field survey at the beginning of April in the fifth growing season to determine what portions of the mitigation site have developed evidence and characteristics of a successful wetland hydrology. Wetland delineations will be made of the newly created wetlands. The site will be surveyed in terms of hydrophytic vegetation, hydric soils, and wetland hydrology development.

The fifth year annual monitoring report will include a discussion of the results of all field surveys and the data collected to determine whether the restoration has been successful. The success criteria will be assessed and evaluated based on the results of the field surveys. If plant survivorship meets the targeted goals stipulated in the initial success criteria and other monitoring parameters detailed above indicate positive trends, plant establishment at the mitigation sites will be considered successful.

Following the fifth year of monitoring at the end of the plant establishment period, Caltrans will prepare a final annual monitoring report documenting the achievement of the mitigation. If the data results show that the overall trend of the mitigation site is to a stable and viable wildlife habitat that otherwise satisfy the mitigation goals, the site may be deemed successful. The final annual monitoring report will provide an evaluation of site conditions and will include data verifying that specific and relative performance criteria have been met. Documentation will include the topographic contours of restored areas, a summary of plant species composition, and the beginning and final photographs taken at the permanent photo stations. Caltrans will forward the final report to the responsible resource agencies with a request in writing to schedule a final field review of the mitigation site. Ultimately, the success of the mitigation, restoration and enhancement sites as a whole will be measured against the success criteria described in this report, as well as the terms and conditions of the project permits and authorizations by the responsible resource and regulatory agencies.

If after the fifth year, the mitigation sites are not deemed successful and monitoring of the mitigation sites shows that additional measures are necessary to meet success criteria, then Caltrans will implement contingency measures in coordination with the resource and regulatory agencies. Caltrans will also ensure that funding will be available to implement contingency measures (refer to Section 8.6, Contingency Measures). Caltrans will continue monitoring up to an additional five years (up to ten years total) or until the site is deemed successful, whichever is earliest. Caltrans will continue to provide annual monitoring reports as described above.

TABLE 7: MONITORING CRITERIA

Parameters	Years									
	1	2	3	4	5	6	7	8	9	10
Mortality/Survivorship	X	X	X	X	X	*	*	*	*	*
Plant Species Total Cover			X	X	X	*	*	*	*	*
Wetland Hydrology Parameter			X	X	X	*	*	*	*	*
Hydric Soil Parameter	x	x	x	x	x					
Species Composition	x	x	x	x	x					
Wildlife Usage	x	x	x	x	x					

X = Parameters with quantitative success criteria

x = Parameters with qualitative success criteria

* = As required following resource agencies field review at year five

Note: Monitoring will be conducted monthly until plants become established, then quarterly.

8.7 Contingency Measures

If monitoring shows that additional measures are necessary to meet success criteria or mitigation performance standards, then Caltrans will implement contingency measures. In addition, if at the end of the five-year monitoring period, success criteria and mitigation performance standards are not achieved, then a contingency plan will be prepared in consultation with the resource and regulatory agencies. An approved coastal development permit amendment will be required to implement the contingency plan.

Types of contingency measures may include, but will not be limited to, the following:

- Provide maintenance in response to problems not specifically detailed in this report;
- Ensure the revegetation of any areas disturbed by construction activities;
- Implement other improvements recommended by the agencies during the monitoring period or the final review to ensure that the mitigation program is successful; and

- Remedy catastrophic or unanticipated events, including major flooding, die-off from infestations, damage from outside disturbances, etc., if practicable.

8.8 Responsible Parties

Caltrans will be responsible for funding all work to create, protect and preserve newly created and restored wetland areas. Caltrans will obtain conservation easement agreements that run with the land to protect the CRLF habitat and their buffer zones at Shamrock Ranch and wetlands and buffer zones at the Charthouse Mitigation Site.

Caltrans will also be responsible for the mitigation and monitoring program in accordance with the stipulations and success criteria described in this report. Caltrans will also be responsible to remedy any site deficiencies or to implement any necessary contingency measures for up to ten years or until the resource and regulatory agencies deem the mitigation site successful and self-sustaining, whichever is earliest.

POST and the owners of Shamrock Ranch will be responsible for abiding by the terms of the conservation easement agreement and for ensuring that any future owners of these sites are made aware of these agreements as well.

8.9 Conservation Easement Area and Endowment Agreements

Pursuant to the requirement of the BO and the coastal development permit, Caltrans will obtain conservation easement agreements to preserve and protect the following wetland areas:

- Existing South Reservoir Pond;
- Existing North Reservoir Pond;
- Newly Created Frog Pond; and
- Charthouse Mitigation Site

The conservation easement agreements will also include buffer zones that surround each of these areas. Prior to impacts to wetlands greater than 0.18 acre, an endowment or similar guarantee will be provided for the management of the conservation easements, and a copy of the endowment agreement or similar guarantee will be sent to the USFWS for review and approval. The agreement or guarantee will contain specific information to manage the site for the red-legged frog in perpetuity. In addition, prior to implementation, future bridge maintenance activities and remedial actions that may impact the red-legged frog habitat will be reviewed and approved by the USFWS.

Caltrans will prepare and implement a detailed habitat monitoring and protection plan within the proposed Shamrock Ranch conservation easement area. The plan will provide, but not be limited to, specific performance standards, monitoring methods and requirements, exotic species control (plant and animal), and contingency measures for habitat to be restored and managed for red-legged frogs. The site will

provide hydrologic stability, habitat complexity, and food production potential. Caltrans will submit the final plan to the USFWS for review and approval prior to initiation of any bridge construction.

Pursuant to the conditions required for the coastal development permit, Caltrans will submit evidence, in a form and content acceptable to the San Mateo County Planning and Building Division, that it is pursuing legally binding conservation easements with the owners of the North and South Reservoir Ponds, the new frog pond, and the Charthouse Mitigation Site. Caltrans will either maintain the conservation easements in perpetuity or will execute an irrevocable maintenance agreement with a public agency or private entity that is acceptable to the San Mateo County Planning and Building Division, in consultation with the California Coastal Commission. In the case of the three ponds, this evidence will be submitted prior to the commencement of construction of the bridge and, in the case of the Charthouse Mitigation Site, this evidence will be submitted prior to the commencement of construction of the tunnel. The conservation easements will provide for habitat restoration, habitat maintenance, open space, view preservation, and habitat protection over each of the four sites. The conservation easement agreements will also:

- Permit the applicant, its agents, and the accepting agency to enter the property when necessary to create and maintain habitat, revegetate portions of the area, and fence the newly created or revegetated area to protect such habitats.
- Restrict all development as defined by the San Mateo County LCP (except any required and approved for habitat restoration and interpretation purposes), vegetation clearance, fuel modification, and grading within the easement area.
- Permit resource and regulatory agency staff to enter and inspect for purposes of determining compliance with agreements, permits, and the BO.

The easement areas will be described in metes and bounds. The offers will be recorded free of prior liens and encumbrances which the San Mateo County Planning and Building Division Director, in consultation with the California Coastal Commission, determines may affect the interest being conveyed. The offers will run with the land in favor of the People of the State of California, binding all successors and assigns, and will be irrevocable for a period of 21 years, such period running from the date of recording.

Caltrans has negotiated with POST to acquire the right to improve the Charthouse Mitigation Site for wetland creation and restoration. The wetland, including buffer zone areas, will be restricted for conservation purposes by a conservation easement agreement that runs with the land. The agreement will ensure that the mitigation site and buffer zones will be protected and preserved in perpetuity even if the land is passed on to future owners.

Caltrans will demonstrate to the satisfaction of the Executive Officer of the California Regional Water Quality Control Board (RWQCB) no later than July 1, 2005, that it has acquired sufficient legal authority over the land at the proposed Charthouse Wetland Mitigation Site to carry out wetland creation and restoration activities

described in this Final Mitigation and Revegetation Plan. If Caltrans fails to meet this requirement, any disturbance or discharges to wetlands, in excess of 0.18 acre to be disturbed during the first year of construction, are prohibited until Caltrans makes that demonstration. If it is determined that the Charthouse Mitigation Site is not available, then Caltrans will identify other potential mitigation sites and will convene an interagency group to determine the acceptability of those sites, including timing and acreage of alternative mitigation and acceptable proposed plans for construction. The alternative mitigation and monitoring plan will be brought before the RWQCB for its approval. Construction may not begin at any alternative mitigation sites until the sites and the plans have received approval by the RWQCB.

The monitoring and maintenance work tasks for the Shamrock Ranch conservation easement area will include the following during the three-year monitoring period after construction:

Monitoring Work Tasks:

- Regular monitoring of the water levels in the new frog pond, the North Reservoir Pond, and the South Reservoir Pond from mid-spring through mid-fall: to maintain full, permanent water levels for the California red-legged frog metamorphosis during this time period, all necessary adjustments to their respective water supply systems will be made; if needed, supplemental water from an outside source will be used;
- Annual monitoring of the California red-legged frog population in the new frog pond, the North Reservoir Pond, and the South Reservoir Pond: field surveys consisting of a January through March egg cluster survey and a late September USFWS protocol survey for adults and metamorphs; results of field surveys provided in an annual monitoring report.

Maintenance Work Tasks:

- Upkeep and maintenance of the North Reservoir Pond's dry season water supply: installation of a city water pipeline system including a heavy duty float valve to add supplemental water to the reservoir as needed;
- Upkeep and maintenance of the creek junction box system at the new frog pond: from May to October, adjust wooden weirs so that proper amount of creek water flows into the new frog pond as determined by monitoring of water flow level during the dry season;
- Annual monitoring of invasive non-native aquatic wildlife species such as bullfrogs, koi carp, and mosquito larvae: implementation of an eradication program for such invasives if they are found during monitoring; traps will be used to capture koi carp if they are still present in the South Reservoir Pond;
- Annual eradication program for cat-tail and tule: implementation of an annual eradication program for cat-tail and tule in the late summer or early fall at the new frog pond, the North Reservoir Pond, and the South Reservoir Pond that

involves plant cutting below the water level to enhance California red-legged frog habitat and maintain open water areas;

- Weeding program to eliminate invasive species: undertaken as part of the revegetation plan.

The maintenance and monitoring work tasks for the conservation easement areas, which will be carried out in perpetuity, will be developed and finalized in the conservation easement agreements. The conservation easement agreement and the endowment agreement or similar guarantee will be signed and approved before impacts to wetlands in excess of 0.18 acre occur. It is expected that many of the monitoring and maintenance work tasks proposed for the three-year monitoring period after project construction will also be part of the in-perpetuity work tasks for the conservation easements.

8.10 Mitigation Completion

Caltrans will prepare a draft final report within 60 days documenting the achievement of the success criteria established for the mitigation site. Caltrans will forward the draft final report to resource and regulatory agencies with a request in writing to schedule a final field review of the mitigation site. After the final field review and concurrence from the resource and regulatory agencies that the mitigation has been a success, Caltrans will provide a letter and a final report confirming such findings.

8.11 Mitigation Conclusion

With the mitigation measures described herein, there will be no net loss of wetlands and riparian areas affected by the Devil's Slide Tunnel Project. In the long term, the on-site and off-site mitigation measures are expected to improve the overall functional capacity of the wetlands.

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Appendices 1-8

Appendix 1 **Conceptual Mitigation Plan Response to Comments**



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

IN REPLY REFER TO:
PPN 269

November 21, 2002

Mr. Sid M. Shadle
District Branch Chief, Biology
Office of Environmental Planning, South
California Department of Transportation
P.O. Box 23660
Oakland, California 94623-0660

Dear Mr. Shadle:

The U.S. Fish and Wildlife Service (Service) has reviewed the June 13, 2002, California Department of Transportation (Caltrans) *Wetlands and Riparian Conceptual Mitigation Plan* for the State Route (SR) 1 Devil's Slide Project in San Mateo, California. Associated with this project, Caltrans and the Federal Highway Administration (FHWA) analyzed two action alternatives, one would construct a 4,000 foot tunnel between Postmile 39.8 and 37.9, the other a 4.5 mile surface route beginning 0.25 mile north of Montera and ending at Linda Mar Boulevard in Pacifica. The selected alternative is to construct the tunnel which will significantly reduce impacts to sensitive biological resources, including wetlands and listed species habitats.

The Service appreciates Caltrans' and FHWA's diligent effort in avoiding sensitive biological resources. The following is a summation of the proposed project and includes recommendations for mitigating the remaining unavoidable impacts of the Devil's Slide project on wetland and riparian habitats.

SERVICE POLICY

After review of the U.S. Army Corps of Engineers (Corps) Public Notice for this project, our objectives are: "Ensuring that all authorized works, structures, and activities are (1) judged to be the least ecologically damaging alternative or combination of alternatives (e.g., all appropriate means have been adopted to minimize environmental losses and degradations) and (2) in the public's interest in safeguarding the environment from loss and degradation." (Federal Register, Vol. 40, No. 231, December 1, 1975). For impacts to wetlands and aquatic habitats, the Service's goal is no net loss of in-kind habitat values or acreage.

PROJECT IMPACTS AND PROPOSED MITIGATION

Caltrans has identified three areas in which permanent fill material would be placed: 1) South Portal Drainage Area, 2) North Portal Drainage Area, and 3) the Fill Disposal Site Drainage Area. The placement of fill is expected to result in the loss of jurisdictional wetlands as identified by the following agencies.

1) Army Corps of Engineers

Permanent Wetland Impacts - 0.3 acre
Temporary Wetland Impacts - None

Permanent Waters of the U.S. - 0.3 acre
Temporary Waters of the U.S. - 0.08 acre

2) California Coastal Commission (CCC)

Permanent Wetland Impacts - 1.5 acres
Temporary Wetland Impacts - 0.6 acre

Permanent Wetland Buffer Zone Impacts - 8.1 acres
Temporary Wetland Buffer Zone Impacts - 4.6 acres

3) San Mateo County Local Coastal Program (LCP)

Permanent Wetland Impacts - less than 0.1 acre
Temporary Wetland Impacts - None

Permanent Wetland Buffer Zone Impacts - 0.9 acre
Temporary Wetland Buffer Zone Impacts - None

Permanent Riparian Corridor Impacts - 0.7 acre
Temporary Riparian Corridor Impacts - 0.6 acre

Permanent Riparian Corridor Buffer Zone Impacts - 0.9 acre
Temporary Riparian Corridor Buffer Zone Impacts - 0.6 acre

The criteria used to evaluate Corps jurisdictional wetlands are more conservative than the criteria required for CCC or LCP jurisdictional wetlands. While it is assumed Corps wetlands will

include CCC and LCP wetlands, a clear delineation identifying the extent of overlap is not provided. ①

Caltrans proposes to compensate for unavoidable losses through on- and off-site mitigation. On-site mitigation includes: 1) the creation of a 0.02-acre pond at Shamrock Ranch, 2) repair of an existing earthen dam for the continued function of the South Pond, and 3) sediment removal at the North Pond. Off-site mitigation includes the restoration and enhancement of a partially filled wetland known as the Montara mitigation site. The former land use on the 8.3-acre Montara mitigation site was agricultural. While a portion of the site has reverted back to good wildlife habitat, 1.1 acres of this site remains a poor quality decomposed granite fill. Caltrans proposes to restore this 1.1-acre upland area by removing the decomposed granite fill material to create a seasonal wetland. In addition, Caltrans proposes to introduce riparian vegetation adjacent to this newly created wetland (the mitigation plan does not quantify the amount).

DISCUSSION AND RECOMMENDATIONS

As previously stated, for impacts to wetland and aquatic habitats, the mitigation goal is "no net loss of in-kind habitat value;" to achieve this goal, any unavoidable losses of habitat value would need to be replaced in-kind. As defined in the Service's Mitigation Policy, "in-kind replacement" means providing or managing substitute resources to replace the habitat value of the resources lost, where such substitute resources are physically and biologically the same or closely approximate those lost. In order to evaluate equivalency, a quantitative and qualitative analysis of both the proposed fill and compensatory wetland habitat sites will be required.

The mitigation plan quantifies three jurisdictional wetlands, but fails to summarize total project related impacts. While the proposed 1.1 acre compensatory plan may satisfy the Clean Water Act's section 404 legal standard, it may not meet the Services' no net loss standard, which is based on biological criteria. We recommend the development of a clear delineation, quantifying and qualifying, the affected wetland and riparian habitats and proposed compensatory mitigation site. We recognize wetland values do vary, but as a general rule recommend a minimum replacement acreage of between 2:1 and 3:1 (this ratio is based on Habitat Evaluation Procedures conducted on similar habitats in the San Francisco Bay area). ②

ATTACHMENT

**RESPONSE TO COMMENTS ON THE CONCEPTUAL MITIGATION PLAN
DEVIL'S SLIDE TUNNEL PROJECT**

**U.S. FISH & WILDLIFE SERVICE LETTER (Dated 11-21-02 And Signed By
Doug Weinnil For David L. Harlow, Acting Field Supervisor)**

{Comment Number Denoted In Right Margin Of Letter}

Comment #1 Response:

Overlay maps for the three wetland jurisdictional impact areas have been prepared and will be provided at the Devil's Slide Tunnel Project meeting on April 24th. The Final Mitigation Plan will include the overlays and explain the relationship of any overlap between the areas impacted under each jurisdiction.

Comment #2 Response:

The comment is noted. The U.S. Fish and Wildlife Service recognizes that wetland values do vary, but as a general rule recommends a minimum replacement acreage of between 2:1 and 3:1.

**RESPONSE TO COMMENTS ON THE CONCEPTUAL MITIGATION PLAN
DEVIL'S SLIDE TUNNEL PROJECT
COMMENTS PROVIDED BY MICHAEL SCHALLER OF SAN MATEO COUNTY AT
THE SEPTEMBER 10TH PDT MEETING**

Comment #1:

The report, "Preliminary Local Coastal Program Wetland Delineation", which was prepared for the San Mateo County Planning and Building Division should be added as an appendix to the Final Mitigation Plan.

Comment #1 Response:

The San Mateo County LCP wetland delineation report, "Preliminary Local Coastal Program Wetland Delineation" will be included as an appendix in the Final Mitigation Plan.

Comment #2:

The Final Mitigation Plan should provide a separate San Mateo County LCP wetland delineation of the mitigation site options.

Comment #2 Response:

The Final Mitigation Plan will include a separate San Mateo County LCP wetland delineation of the mitigation site options.

Comment #3:

Caltrans should coordinate with the local water and sewer district regarding improvements that are now taking place on the Charthouse wetlands mitigation site to determine whether or not the groundwater in the area is being affected in any way.

Comment #3 Response:

Regarding the Charthouse mitigation site, Caltrans is currently talking to Montara Sanitary District (MSD) about the location of their existing sewer lines and their ongoing studies to use the groundwater at the proposed mitigation site and neighboring areas as part of their public water system. Caltrans will review the MSD plans and study documents, when they become available, to assess the suitability of the site for our intended mitigation use.

that definition to be more stringent. Other than small areas of County-defined riparian areas, the Coastal Act-defined wetlands would subsume most other wetlands definitions.

For clarity, the Plan should reference by title, date and author the wetland delineations used to determine the extent of impacts under each definition. The Plan should attach these delineations with the corresponding field data record sheets as appendices. ③

The Plan should also define the term "temporary impacts," as it is used in the Plan, both as to the nature and duration of such impacts. To the extent that either nature or duration of such impacts varies at different locations on the project site, the Plan should more particularly specify the impact by type and length for each location temporarily affected. ④

Proposed Mitigation Measures

The Plan includes restoration of 1.1 acres of wetland and riparian habitat at an offsite, 8.3 acre property located in Montara. In addition, proposed mitigation measures in the Plan include (1) increasing habitat value at the offsite property by the construction of one or more ponds, (2) removing invasive species at the offsite property, (3) the new frog pond created in Fall 2000, (4) wetland enhancement of the North Pond at Shamrock Ranch, and (5) wetland enhancement of the South Pond. The proposed mitigation measures are based on mitigation of permanent impacts to ACOE jurisdictional wetlands of 0.3 acres at a 3:1 ratio and mitigation of impacts to some wetlands of a "lesser habitat value" at a 2:1 ratio.

The Coastal Commission policy generally requires mitigation of wetland impacts at a ratio of 3:1 or greater, a ratio which takes into account temporal losses and the difficulty of successful creation and restoration of functioning wetlands. In applying this policy, the Commission has generally not differentiated based on perceived habitat value of impacted wetlands. Thus, the 3:1 mitigation ratio applies equally to impacts to degraded wetlands and wetlands of "lesser habitat value." Although a detailed mitigation plan was not available at the time, the Commission based its federal consistency certification of the Devil's Slide Tunnel project on mitigation of impacted wetlands assuming a 3:1 mitigation ratio. The Commission's federal consistency review assessed consistency of the tunnel project against the Coastal Act as standard of review and accordingly applied the Coastal Act wetland definition. Any future County (and if appealed Commission) review of a San Mateo County coastal development permit by the Commission would apply the San Mateo County LCP standard. Nevertheless the commitments Caltrans made during the federal consistency review (CC-94-00) are still binding, due to the "phased review" nature of the Commission's federal consistency authorization. As noted in the Commission's adopted findings for CC-94-00: ⑤

III. Phased Review. Caltrans seeks this initial Commission concurrence in order to secure federal funding for the project. In this phase, the Commission is reviewing the concept, goals and objectives of the proposed project. At this stage in the review process, the information submitted to date does not include final plans or detailed mitigation and monitoring plans. Caltrans has not made final design decisions, and several project elements have not been finalized, including:

(1) final detailed habitat configurations; (2) the biological, water quality, and other monitoring plans; [etc.]

Thus, the consistency certification submitted contains only a conceptual plan and conceptual mitigation measures. To the extent mitigation measures have been committed to and described, ... the Commission is able to find the project consistent with the applicable Coastal Act policies. Detailed design will follow and be the subject of a subsequent coastal development permit application submitted by Caltrans to San Mateo County (and, possibly, to the Coastal Commission on appeal).

Moreover, any changes to the project design or mitigation commitments raising Coastal Act policy concerns not previously identified could independently trigger additional federal consistency review under the provisions of Section 930.66(b) and/or Section 930.100(b) of the federal consistency regulations (15 CFR Part 930), which provide for re-review based on "changed circumstances" of federally permitted and federally funded activities in which the Commission has previously concurred (i.e., based on a determination that the project is having coastal zone effects that are substantially different than originally proposed and, as a result, the project is no longer consistent with the applicable coastal management program policies). The commitment made by Caltrans during the federal consistency review was as follows:

Off-Site Mitigation

Off-site mitigation to compensate for temporary and permanent impacts to wetlands, sensitive habitat areas and buffer zones will involve the restoration and enhancement of a filled-wetland, south of the project on Route 1 across from the Charthouse Restaurant As soon as Caltrans is granted permission to enter the property, a preliminary wetland delineation will be made at the site in order to determine the existing conditions of the wetlands. The area is approximately 23,212 square meters (249,761 square ft.) Replacement ratios recommended by the Commission will consider the habitat value and type, and there will be no permanent net loss of wetland habitat as a result of the project. [Emphasis added.]

Moreover, during interagency meetings prior to the publication of the staff report, Caltrans made it clear that it understood that while the plan was still in the formulation process, the Commission would expect mitigation acreage to be based on Coastal Act-defined wetlands and would expect a 3:1 ratio to be applied. Any lesser ratio could be subject to a challenge and would therefore need to be clearly justified to warrant its acceptance.

Based on the Plan's stated permanent wetland impacts of 1.5 acres under the Coastal Act definition, the Plan's proposed mitigation of 1.1 acres of restored wetland falls short of the 3:1 ratio. For permanent wetland impacts under this definition, a 3:1 ratio would require mitigation

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of 4.5 acres of restored wetlands. The Commission could also require additional mitigation based on the extent and duration of temporary impacts. Commission staff recommends that the Plan at minimum be revised to include additional mitigation satisfactory to mitigate wetland impacts based on the more inclusive Coastal Act definition at the 3:1 ratio. ⑦

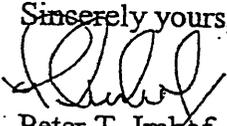
In accounting for required mitigation and determining the area of created wetlands pursuant to the Plan, the Plan should also evaluate the existing state of the mitigation site using the Coastal Commission definition. At our meeting, Caltrans stated that a wetland delineation using ACOE criteria had been prepared for the offsite mitigation property. Since the ACOE delineation may not include all wetlands under the Coastal Act wetland definition, a delineation using the Coastal Commission criteria should also be prepared and this delineation should be used in accounting for required mitigation. ⑧

Wetland Monitoring and Success Criteria ⑨

The Plan should include a five-year monitoring program. The plan should also specify clear performance standards for evaluating the success of the restoration project and should identify the tests that will be applied to determine whether the performance standards have been met. If the performance standards require a comparison to a control or reference site, the latter should also be identified. To help insure that the restored wetlands are self-sustaining, the final assessment of success will be made after at least three years without any maintenance or remediation activities other than weeding. Siting of newly created wetlands should provide for an adequate buffer zone to existing development, consistent with the County's LCP.

We apologize again for the delay in providing you these comments. Please call me at (415) 904-5268 if you have any questions.

Sincerely yours,


Peter T. Imhof
Coastal Program Analyst

cc: Skip Sokow
Project Engineer, Caltrans

Stefan Galvez
Caltrans/Coastal Commission Liaison

Michael Schaller
San Mateo County Planning Department

Tami Grove
Deputy Director, Coastal Commission

ATTACHMENT

**RESPONSE TO COMMENTS ON THE CONCEPTUAL MITIGATION PLAN
DEVIL'S SLIDE TUNNEL PROJECT
CALIFORNIA COASTAL COMMISSION LETTER (Dated 12-16-02 And Signed
By Peter T. Imhoff, Coastal Program Analyst)**

{Comment Number Denoted In Right Margin Of Letter}

Comment #1 Response:

Overlay maps for the three wetland jurisdictional impact areas have been prepared and will be provided at the Devil's Slide Tunnel Project meeting on April 24th. The Final Mitigation Plan will include the overlays and explain the relationship of any overlap between the areas impacted under each jurisdiction.

Comment #2 Response:

The comment is noted and will be included in the Final Mitigation Plan. Since the Coastal Act definition is broader, the California Coastal Commissions' wetlands definition is considered more stringent than the wetlands definitions used by the U.S. Army Corps of Engineers and the San Mateo County (LCP).

Comment #3 Response:

The Final Mitigation Plan will include the three jurisdictional wetland delineation reports with the corresponding field data sheets as appendices, and for clarity, the plan will reference each jurisdictional wetland delineation by title, date, and author.

Comment #4 Response:

The Final Mitigation Plan will contain a separate section for temporary impacts and include an assessment of each type of temporary impact and the time length involved for each location temporarily affected. Appropriate mitigation measures for temporary impacts will be discussed at the April 24th meeting.

Comment #5 Response:

The comment is noted: However, Caltrans has identified three off-site mitigation site options for the project: Daffodil Canyon mitigation site, Deer Canyon mitigation site, and the Charthouse wetlands mitigation site. Caltrans is planning to design and construct the mitigation site/s prior to the start of the Tunnel Project in order to mitigate the total wetland impacts and wetland acreage loss. As a result of implementing these mitigation measures ahead of the project construction, Caltrans would like the California Coastal

Commission to consider a lesser replacement ratio than the proposed 3:1. The conceptual plans for the mitigation site options will be presented at the April 24th meeting.

Comment #6 Response:

The comment is noted. During interagency meetings prior to the publication of the staff report, Caltrans understood that while the plan was still in the formulation process, the Commission would expect mitigation acreage to be based on Coastal Act-defined wetlands and would expect a 3:1 ratio to be applied and that any lesser ratio could be subject to challenge and would therefore need to be clearly justified to warrant its acceptance. However, Caltrans plans to complete some of the mitigation measures ahead of the project construction and would like CCC to consider a lesser replacement ratio than 3:1

Comment #7 Response:

As stated in Response #4, the Final Mitigation Plan will contain a separate section for temporary impacts and include an assessment of each type of temporary impact and the time length involved for each location temporarily affected. Appropriate mitigation measures for temporary impacts will be discussed at the April 24th meeting. It is understood that the Commission expects a 3:1 mitigation replacement ratio.

Comment #8 Response:

Three individual jurisdictional wetland delineations (CCC, COE, and SM Co LCP) will be conducted at each of the mitigation site options. These delineations will be included in the Final Mitigation Plan.

Comment #9 Response:

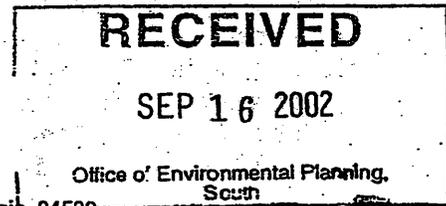
The Final Mitigation Plan will contain the following in regard to monitoring and success criteria: a) clear performance standards with applied tests for evaluating success of the restoration, b) the final assessment of success will be made after at least 3 years without any maintenance or remediation activities, and c) siting of newly created wetlands should provide for an adequate buffer zone to existing development, consistent with the County's LCP.



Memorandum

Date: September 12, 2002

Mr. Sid Shadl *[Signature]*
Caltrans
Environmental Planning South
111 Grand Avenue
Oakland, CA 94623-0440



From : Robert W. Floerke, Regional Manager *[Signature]*
Department of Fish and Game - Central Coast Region, Post Office Box 47, Yountville, California 94599

Subject : Conceptual Mitigation Plan, Devil's Slide Tunnel Project, San Mateo County

Department of Fish and Game (DFG) personnel have received the Conceptual Mitigation Plan (Plan) for the Devil's Slide Tunnel Project in San Mateo County and we have the following comments. Caltrans has done an excellent job of reducing impacts to fish and wildlife resources, and we are pleased with the overall direction of the project relative to sensitive resources. However, there are a couple of areas where additional mitigation is necessary to reduce impacts to less than significant levels.

Regarding permanent impacts to wetlands, the document states that 0.3-acre of U. S. Army Corps of Engineers (Corps) jurisdiction wetlands will be lost, 1.5 acres of California Coastal Commission jurisdiction wetlands will be lost, and 0.1-acre of San Mateo County Local Coastal Program (LCP) jurisdiction wetland will be lost. DFG considers a 3:1 replacement ratio the minimum to insure reducing wetland impacts to acceptable levels and to meet the Resources Agency's no net loss of wetlands policy. In the Plan, Caltrans proposes creation of 1.1 acres of wetland for the loss of 1.9 acres of jurisdictional wetlands. At a minimum of 3:1 a total of at least 5.7 acres of wetlands will need to be created to meet DFG levels. We do recognize that wetland values can vary and will consider lower replacement ratios for degraded wetlands. Generally, we consider Corps jurisdiction wetlands high quality and evaluate other jurisdictional wetlands on a case-by-case basis to determine replacement ratios. At an absolute minimum, Caltrans will need to create 2.5 acres of wetlands to meet DFG goals. ①

The Plan also states that 0.5-acre of riparian habitat will be permanently affected by the project while proposing to create 0.3-acre of replacement riparian. DFG again seeks 3:1 replacement for lost riparian habitat. Therefore, a minimum of 1.5 acres of riparian habitat creation is necessary to meet DFG standards. ②

September 12, 2002

The Plan indicated that Storm Water Pollution Prevention Measures and Best Management Practices (BMPs) will be implemented during construction to reduce impacts. We request that these BMPs, as well as all other prevention measures recommended for resource protection, be included as a condition in the Plans, Specifications, and Estimates (PS&Es) document and all costs for such protections factored into project costs. ③

The face of the dam of the south pond at the Shamrock Ranch is currently protected with a waterproof tarp. We recommend that a permanent repair to the face be included in the plans to insure the continuation of the values provided by this mitigation pond. ④

DFG has direct jurisdiction under Fish and Game Code sections 1601-03 in regard to any proposed activities that would divert or obstruct the natural flow or change the bed, channel, or bank of any stream. We recommend early consultation since modification of the proposed project may be required to avoid impacts to fish and wildlife resources. To avoid delays, formal notification under Fish and Game Code Section 1601 should be made after all other permits and certifications have been obtained. Work cannot be initiated until a streambed alteration agreement is executed.

If you have any questions, please contact Mr. Fred Botti, Staff Environmental Scientist, at (707) 944-5571; or Mr. Scott Wilson, Habitat Conservation Supervisor, at (707) 944-5584.

cc: U. S. Army Corps of Engineers
Regulatory Branch, 8th Floor
333 Market Street
San Francisco, CA 94105

U. S. Fish and Wildlife Service
2800 Cottage Way, W2605
Sacramento, CA 95825

California Coastal Commission
45 Fremont Street
San Francisco, CA 94105

Peninsula Open Space Trust
3000 Sand Hill Road, Building 4, Suite 135
Menlo Park, CA 94025

ATTACHMENT

**RESPONSE TO COMMENTS ON THE CONCEPTUAL MITIGATION PLAN
DEVIL'S SLIDE TUNNEL PROJECT
CALIFORNIA DEPARTMENT OF FISH AND GAME (Dated 9-12-02 From
Robert W. Floerke, Regional Manager)**

{Comment Number Denoted In Right Margin Of Letter}

Comment #1 Response:

The comment is noted. CDFG considers a 3:1 replacement to be the minimum to insure reducing wetland impacts to acceptable levels and to meet the Resource Agency's no net loss of wetlands policy.

Comment #2 Response:

The comment is noted. CDFG seeks a 3:1 replacement for lost riparian habitat.

Comment #3 Response:

As part of the requirements of Regional Water Quality Control Board and general design practices, Storm Water Pollution Prevention Measures and Best Management Practices (BMP's) will be implemented and incorporated into the final Plans, Specifications, and Estimates to further reduce impacts. The State has factored costs for such protection into the project.

Comment #4 Response:

A permanent repair will be made to the face of the dam of the south pond at Shamrock Ranch. After a Geotechnical study of the failure and the implementation of the recommendations the Erosion Control Branch would include an Erosion Control treatment that would consist of applications of native soil to the repaired area and revegetation with in kind vegetation of the adjacent area. This Erosion Control treatment would insure that the repair would not be visible after revegetation. This treatment would be included in the final project plans, specifications and estimates for the project. In addition, the State will seek conservation easements to protect the north and south as well as the new ponds at Shamrock Ranch in per perpetuity for the California red-legged frogs.

Appendix 2 Dr. Dixon Memoranda

CALIFORNIA COASTAL COMMISSION

FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
PHONE AND TDD (415) 904-5200
FAX (415) 904-5400



MEMORANDUM

FROM: John Dixon, Ph.D.
TO: Pam Emerson & Alex Helperin
SUBJECT: Wetland Delineation for LA-90 project
DATE: May 24, 2002

Site information considered for this memo:

Read, E. & T. Winfield. Jurisdictional evaluation of vacated vehicle storage yard site, in the median between LA-90 eastbound and westbound, west of Culver Boulevard in Marine Del Rey (Coastal development permit application No. 5-01-432). A draft document prepared for Caltrans dated April 18, 2002.

Read, E. & T. Winfield. Addendum to Jurisdictional evaluation of vacated vehicle storage yard site, in the median between LA-90 eastbound and westbound, west of Culver Boulevard in Marine Del Rey (Coastal development permit application No. 5-01-432). A draft document prepared for Caltrans dated May 8, 2002.

PSOMAS. Revised map entitled "Vegetation and Soil Sample Locations" dated May 14, 2002, with a modified delineation of wetlands based on the May 13, 2002 site visit.

Site visit on Monday, May 13, 2002 with Drs. Read and Winfield and Caltrans representatives.

The Coastal Act defines wetlands as "...lands within the coastal zone which may be covered periodically or permanently with shallow water...." The definition adopted by the Commission and codified in Section 13577(b)(1) of Title 14 of the California Code of Regulations defines wetland as, "...land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes...." In discussing boundary determinations, the same section of the Regulations specifies that wetlands have a "predominance" of hydrophytic cover or a "predominance" of hydric soils. Although the definition is based on inundation or shallow saturation long enough for anaerobic reducing conditions to develop within the root zone¹, in practice hydrology is the most difficult wetland indicator to demonstrate. In California, a predominance of hydrophytes or a predominance of hydric soils is taken as evidence that the land was "wet enough long enough" to develop wetland characteristics. How is such "predominance" demonstrated?

No delineation methods or protocols are included in California law. Given this void, delineators rely on methods developed in the context of various Federal laws, including the Clean Water Act

¹ As demonstrated by the definitions of hydric soils and hydrophytes: "A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part." National technical committee for hydric soils, October 18, 1994; A hydrophyte is, "Any macrophyte that grows in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content...." Environmental Laboratory. 1987. Corps of Engineers Wetland Delineation Manual. U.S. Army Corps of Engineers, Washington, D.C.

and the Food Security Act, and on other pertinent scientific works². The Army Corps of Engineers (Corps), the Environmental Protection Agency, and the Natural Resources Conservation Service have developed generally science-based delineation protocols within the context of their governing laws and regulations. These federal procedures generally require positive evidence of all three wetland criteria: wetland hydrology, hydric soils, and a "prevalence"³ of hydrophytes. The indicators of wetland hydrology and hydric soils are conceptually straightforward and generally independent of the other two factors. This is not always the case for indicators of the presence of hydrophytic vegetation.

There are two elements necessary for demonstrating that a community is comprised predominantly of wetland vegetation. First, one must identify those species that are growing as hydrophytes. Second, one must demonstrate that those hydrophytic species make up a predominance (>50%) of the dominant plant species in the community. The latter is generally a simple exercise following the protocols in the 1987 Corps Manual. Identifying hydrophytes is less standard⁴, but under federal regulations also is generally a matter of following written protocols, although professional judgement is sometimes required. Most protocols make use of plant lists produced by federal agencies. The U.S. Fish and Wildlife Service in cooperation with other federal agencies, developed lists of plant species that occur in wetlands⁵. Based on descriptions in state and regional floras and the opinions of regional ecologists, plant species known to occur in wetlands in at least some areas were assigned to one of five categories, depending on the estimated probability of occurring in a wetland⁶. Under federal procedures, species listed as OBL, FACW, or FAC are defined as "hydrophytes," despite the fact that for any individual species the percent of occurrences in upland will actually be between <1% and 66%. However, this causes no conflict because even those FAC species that commonly occur in uplands, can be assumed to be growing as "hydrophytes" where the presence of hydric soils and indicators of hydrology provide independent evidence of wetness⁷. Under the Coastal Act, OBL, FACW, and FAC species are also presumptively "hydrophytic" and, in general, a preponderance of those species is presumptive evidence of a wetland. The strength of this test

² For example: Tiner, R.W. 1999. Wetland indicators. A guide to wetland identification, delineation, classification, and mapping. Lewis Publishers, Boca Raton, FL. 392 pages; Richardson, J.L. and M.J. Vepraskas. 2001. Wetland soils. Genesis, hydrology, landscapes, and classification. Lewis Publishers, Boca Raton, FL. 417 pages; Cronk, J.K. and M. S. Fennessy. 2001. Wetland plants. Biology and ecology. Lewis Publishers, Boca Raton, FL. 462 pages; National Research Council. 1995. Wetlands. Characteristics and boundaries. National Academy Press, Washington, D.C. 308 pages.

³ "Prevalence" and "predominance" are equivalent. According to the 1987 Corp of Engineers Delineation Manual, the "prevalent vegetation" has the character of the majority of the dominant plant species in the community and "Dominant species" are those that define the character of the community because of their high relative ground cover, basal area, or other measure of standing stock.

⁴ "Interpretation of plants as wetland indicators vary (sic) according to the approach taken for wetland delineation." Tiner, 1999, op. cit., page 78.

⁵ Reed, P.B. Jr. 1988. National list of plant species that occur in wetlands: California (Region 0). U.S. Fish and Wildlife Service Biological Report 88 (26.10). 135 pages.

⁶ "Obligate Wetland (OBL) - > 99% of occurrences in wetlands under natural conditions; Facultative Wetland (FACW) - 67-99% of occurrences in wetlands; Facultative (FAC) - 34-66% of occurrences in wetlands; Facultative Upland - 1-33% of occurrences in wetlands; Obligate Upland (UPL) - > 99% of occurrences in uplands under natural conditions within the region, but occurs in wetlands elsewhere.

⁷ The distinction between being included in a list of species that occur in wetlands or being defined by the Corps as a "hydrophyte" for methodological purposes and actually growing as a hydrophyte is an important one. This is clear in the following discussion of wetland indicator plants (Tiner, 1999, op. cit., page 80): "FACU species (plants that are typically found in nonwetlands) are more contentious as wetland species, since by definition they occur more in uplands than in wetlands. The national list of wetland plant species includes about 1400 FACU species (21% of the list)(Tiner, 1991). Some species are quite common in wetlands and when growing under such conditions are hydrophytic." The reverse situation may occur with species that are typically found in wetlands, and a finding that they are not growing as "hydrophytes" is similarly contentious but nevertheless sometimes justifiable.

is greater where most dominant wetland indicator species are classed as OBL or FACW⁸. However, where the wetland character of a site is demonstrably ambiguous because of the presence of substantial upland features, characterizing a species as "hydrophytic" requires professional judgment⁹ in addition to a demonstration that the species is included on a list of plant species that occur in wetlands. In such situations, rote application of the Corps' protocol for identifying hydrophytic vegetation outside the context of the 3-parameter test for which it was developed could potentially result in wrongly categorizing some "uplands" as "wetlands," especially where FAC species comprise a significant portion of the vegetation¹⁰. The subject site presents such a situation based on the substantial evidence presented in the applicant's reports.

The proposed project site is currently a difficult site to delineate for at least four reasons. First, the topography has been substantially altered over the years by agriculture and later by fill and grading. Second, it is an atypical situation because it was used for many years as a vehicle storage yard and was covered with asphalt until November 2000. Therefore, all the vegetation is recent and the vegetative characteristics of the site will continue to undergo successional changes for several years. Third, it is a problem situation because November 2001 through April 2002 was a period of extreme drought (3.98 inches of rainfall compared to the long-term average of 11.33 inches¹¹). Finally, it is a problem situation because the soil is comprised of fill from elsewhere, so soil color and redoximorphic features¹² are not necessarily reliable indicators of hydric soils.

With one exception, the narrative descriptions in the reports and the depictions in the data sheets matched what we observed on the ground¹³. The site has been graded to create a east-west swale in the middle portion of the median strip. The swale slopes down to the west (with about a 4-foot fall) and delivers water to a man-made catchment that drains off the property to the south. The site may receive some freeway runoff at the western half of the property. There, the roadway abuts a broad mowed strip that slopes onto the site. The eastern half of the

⁸ "While both OBL and FACW species are universally recognized as useful indicators of wetlands, FAC and FACU are not reliable wetland indicators and their use in wetland delineation has been contentious (see 56 Federal Register 40446-40480, August 14, 1991). Since they occur in wetlands with some frequency and may even dominate certain types, they have the potential to be hydrophytes...." Tiner, 1999, op. cit., page 78.

⁹ Professional judgement takes into account such factors as recent rainfall patterns, topography, drainage patterns, soil characteristics, technical indicators of hydrology or hydric soils, adjacency to obvious-wetland areas, number of associated FACW or OBL species, and presence of facultative adaptations to inundation such as adventitious roots. However, despite the importance of considering factors related to hydrology and soil characteristics in this process of assessing whether a species is growing as a "hydrophyte," demonstrating the presence of hydric soils or wetland hydrology according to the Corps' rules is not required, i.e., such judgement does not convert the one parameter requirement into a two or three parameter requirement.

¹⁰ In this context, it is worth pointing out that there is no perfect wetland definition or delineation method. For example, the Corps approach risks underestimating the extent of seasonal wetlands in Mediterranean or arid climates because hydrology indicators and vegetation indicators may be seasonally absent. On the other hand, the California approach risks overestimating the extent of seasonal wetlands because of the environmental plasticity of some wetland indicator plants. Professional judgement is usually required.

¹¹ Rainfall data for Los Angeles International Airport from Western Regional Climate Center.

¹² Redoximorphic features, such as "rust"-like concentrations, result from the reduction, translocation, and oxidation of iron and manganese oxides in, at least periodically, saturated soils.

¹³ An exception was sample site P-21. Mulefat was an unrecorded dominant in the shrub layer and the soil had redoximorphic characteristics in the root zone that had not previously been noted. Dr. Winfield dug a series of soil pits west from P-21. Based on the additional data from these pits and the continued presence of mulefat, we agreed that the western boundary of the wetland area characterized in the reports as "Arroyo willow - mulefat association" should be moved west along the swale approximately 20 m. The boundary was subsequently re-surveyed by PSOMAS.

CALIFORNIA COASTAL COMMISSION

45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
TELEPHONE AND TDD (415) 904-5200
(415) 904-5400



MEMORANDUM

FROM: John Dixon, Ph.D.
Ecologist / Wetland Coordinator

TO: Tami Grove

SUBJECT: Devil's Slide wetland delineation

DATE: February 9, 2004

Documents reviewed:

R. Vonarb (Caltrans). 2000. Preliminary Coastal Zone wetland delineation prepared for the California Coastal Commission. A Caltrans report dated June 15, 2000.

CH2MHill. 2003. Preliminary Coastal Zone wetland delineation of the potential wetland mitigation sites for the Tunnel Project. California Coastal Commission Jurisdiction. State Route 1 Devil's Slide Bypass Project, San Mateo County, California. A report dated October 1, 2003.

R. Vonarb (Caltrans). 2003. Addendum to the Coastal Zone wetland delineation prepared for the California Coastal Commission. State Route 1 Devil's Slide Bypass Project, San Mateo County, California. A Caltrans report dated December 12, 2003.

Devil's Slide Project Areas

The wetland delineation conducted by Caltrans was appropriately based on the definitions in the Coastal Act and the Commission's Regulations. Standard methods contained in the Army Corps of Engineers 1987 Wetland Delineation Manual were generally followed¹ and the intensity of sampling was appropriate based on the type and

¹ However, the "Percent of plant species that are OBL, FACW, or FAC (excluding FAC-)" was wrongly calculated in each of the referenced delineations. Wetland vegetation is a community characteristic based on the relative frequency of upland and wetland species among the dominant vegetation. A predominance of wetland plants is demonstrated when greater than 50 percent of the dominant species present are listed as FAC, FACW, or OBL in the U.S. Fish and Wildlife Service List of Plant Species That Occur in Wetlands, Region O - California. This metric was incorrectly calculated by summing the percent ground cover for each species recorded. This is wrong on two counts. First, this calculation properly only applies to dominants, defined as the 5 most abundant species per layer where there is only 1 or 2 vegetation layers, or by application of the 50/20 rule. Second, the calculation properly applies to number of species, not to percent cover. I recalculated this metric by first dividing the cover of each species by the total cover (less bare ground) and summing the resultant relative percent cover in descending rank order of abundance. Those species whose cumulative total immediately exceeds 50% plus any species with relative cover of at least 20% are dominants. If greater than 50% of the dominants are FAC, FACW, or OBL, there is a predominance of hydrophytes.

size of potential wetland areas on the site. The Addendum recommended changing the designation of two sample plots from "wetland" to "upland." Sample plot 43 at the Shamrock Ranch was incorrectly designated wetland due to an incorrect calculation of the percent of dominant plants. Plot 29 at the South Portal Area was located on a steep slope on a roadway embankment that is comprised of permeable gravelly fill. There is no opportunity for saturation or inundation and the facultative plants found there are common in uplands. I concur with the delineations, as revised in the Addendum. Generally, Caltrans depicted 100-foot wide buffers around wetlands. This meets the Commission's usual requirement. However, at the North Portal site there are two wetlands that are used by California Red-Legged Frogs. These wetlands should have 300-foot upland buffers.

Potential Mitigation Areas

Unlike the wetland delineation conducted within the project area, this delineation was based on a two-parameter wetland delineation (hydrology plus hydric soils or hydrophytic vegetation) that the authors of the report assert is the definition followed by the California Coastal Commission. To further confuse the issue, the authors assert on page 7, that they used "the results of the three parameter test."

In fact, the Commission has always found that the wetland definition in its Regulations is a one-parameter definition. For example, in past actions, the Commission has recognized OBL, FACW, and FAC species² as presumptively "hydrophytic" and, in general, a preponderance of those species has been accepted as presumptive evidence of a wetland. However, where the wetland character of a site is demonstrably ambiguous because of the presence of substantial upland features, characterizing a species, especially a "FAC" species, as "hydrophytic" requires professional judgment³ in addition to a demonstration that the species is included on a list of plant species that occur in wetlands. In such cases, the wetland presumption may be falsified where there is strong, positive evidence of upland conditions (as opposed to a lack of evidence, for example, of hydrology).

² "Obligate Wetland (OBL) - > 99% of occurrences in wetlands under natural conditions; Facultative Wetland (FACW) - 67-99% of occurrences in wetlands; Facultative (FAC) - 34-66% of occurrences in wetlands; Facultative Upland - 1-33% of occurrences in wetlands; Obligate Upland (UPL) - > 99% of occurrences in uplands under natural conditions within the region, but occurs in wetlands elsewhere.

³ Professional judgment takes into account such factors as recent rainfall patterns, topography, drainage patterns, soil characteristics, technical indicators of hydrology or hydric soils, adjacency to obvious wetland areas, number of associated FACW or OBL species, and presence of facultative adaptations to inundation such as adventitious roots. However, despite the importance of considering factors related to hydrology and soil characteristics in this process of assessing whether a species is growing as a "hydrophyte," demonstrating the presence of hydric soils or wetland hydrology according to the Corps' rules is not required, i.e., such judgment does not convert the one parameter requirement into a two or three parameter requirement.

The methods employed were generally those contained in the Army Corps of Engineers 1987 Wetland Delineation Manual⁴ and the intensity of sampling was appropriate based on the type and size of potential wetland areas on the site. Data sheets were included for a site in Pillar Point and for Potential Culvert Locations, apparently to no purpose.

DAFFODIL CANYON

Data for Plot AR2 is on one side of a data sheet and data for Plot AR8 is on the other. Apparently, a portion of the data is missing for both plots. There are no data sheets for Plots CK-B2 and AR7. Discrepancies in the data presentations are shown in Table 1. Some areas with a predominance of FAC species were designated upland. Where they occur adjacent to wetter areas they should be considered wetland. The extent of Daffodil Canyon Creek is poorly depicted, which makes it difficult to interpret the map. An access trail is shown that crosses two wetland areas.

The three small wetland areas depicted on the map are probably accurate. Additional areas are designated CCC Wetland Boundary – Willow, with no data, explanation, or discussion. No mitigation areas are explicitly proposed or mapped.

Table 1. Data and wetland determinations submitted by Caltrans for the potential mitigation site at the Daffodil Canyon location. Key: U=upland, W=wetland, *W*=Caltrans designated upland that has wetland vegetation, ?=position ambiguous, **bold**=apparent discrepancies

Plot ID	Delineation on 2003 Map	Table 1 2003 Report	Delineation on Data Sheet*
A-1	W	U	W
A-2	W	W	W
CK-B1	W	W	W
CK-B2	W	U	-
CK-B3	W	U	U
CK-B4	U	U	U
CK-B5	U?	U	U
P1	U	U	U
P2	U?	U	U
P3	W?	U	U
P4	U	U	U
DT-PT1	W	U	U
AR1	W	U	W
AR2	U	U	-
AR3	U	U	<i>W</i>
AR4	U	U	U
AR5	U	W	W
AR6	U	U	<i>W</i>
AR7	U	U	-
AR8	U	U	-

⁴ But see footnote 1. Also, soil pits were only dug to 10 inches rather than the customary 12 inches. Even deeper pits are common in difficult situations.

DEER CANYON

There are no data sheets for Plot B3. Discrepancies in the data presentations are shown in Table 2. Some areas with a predominance of FAC species were designated upland. Where they occur adjacent to wetter areas they should be considered wetland. Some areas with a predominance of wetland species were designated non-wetland waters of the U.S. They should be designated wetlands. An access trail (map) or road (text) is shown along the creek and crossing two wetland areas.

No mitigation areas are explicitly proposed or mapped. However, a riparian corridor is a very poor site for wetland restoration for mitigation purposes. Such areas have strong habitat values and even if degraded would be unlikely to qualify for wetland mitigation.

Table 2. Data and wetland determinations submitted by Caltrans for the potential mitigation site at the Daffodil Canyon location. Key: U=upland, W=wetland, *W*=Caltrans designated upland that has wetland vegetation, ?=position ambiguous, WAT=non-wetland water of the U.S., *WAT*=called water of U.S., but has wetland vegetation, **bold**=apparent discrepancies

Plot ID	Delineation on 2003 Map	Table 2 2003 Report	Delineation on Data Sheet*
A-1	W	W	W
A-2	U	U	U
A-3	-	W	WAT
A-4	U	U	W
A-5	U	U	U
A-6	U	U	W
A-7	U	U	W
A-8	U	U	U
A-9	-	W	WAT
A-10	U	U	U
A-11	W	U	W
A-12	W?	U	U
A-13	W	W	W
A-14	U	W	W
A-15	U	U	U
A-16	U	U	W
A-17	U	U	U
B-3	U?	-	

CHARTHOUSE

There are many discrepancies in the data. The sampling plots and the data are not always the same in the map (Figure 3) in the October 1, 2003 delineation, in Table 1 of that delineation, in the early 2004 revised map, and in the data sheets. These

discrepancies are shown in bold in Table 3. In addition, all areas dominated by willows were designated as wetlands in the 2003 map, but only portions were so characterized in the revised 2004 map. There was no explanation for this change. All willow-dominated areas within the study area should be considered wetlands. There are also many sampling points shown on the revised map for which data have never been submitted. The purpose of the several sample plots (CH01A-D) well outside the study area is not clear; some are designated wetland and some are designated upland in the data sheets.

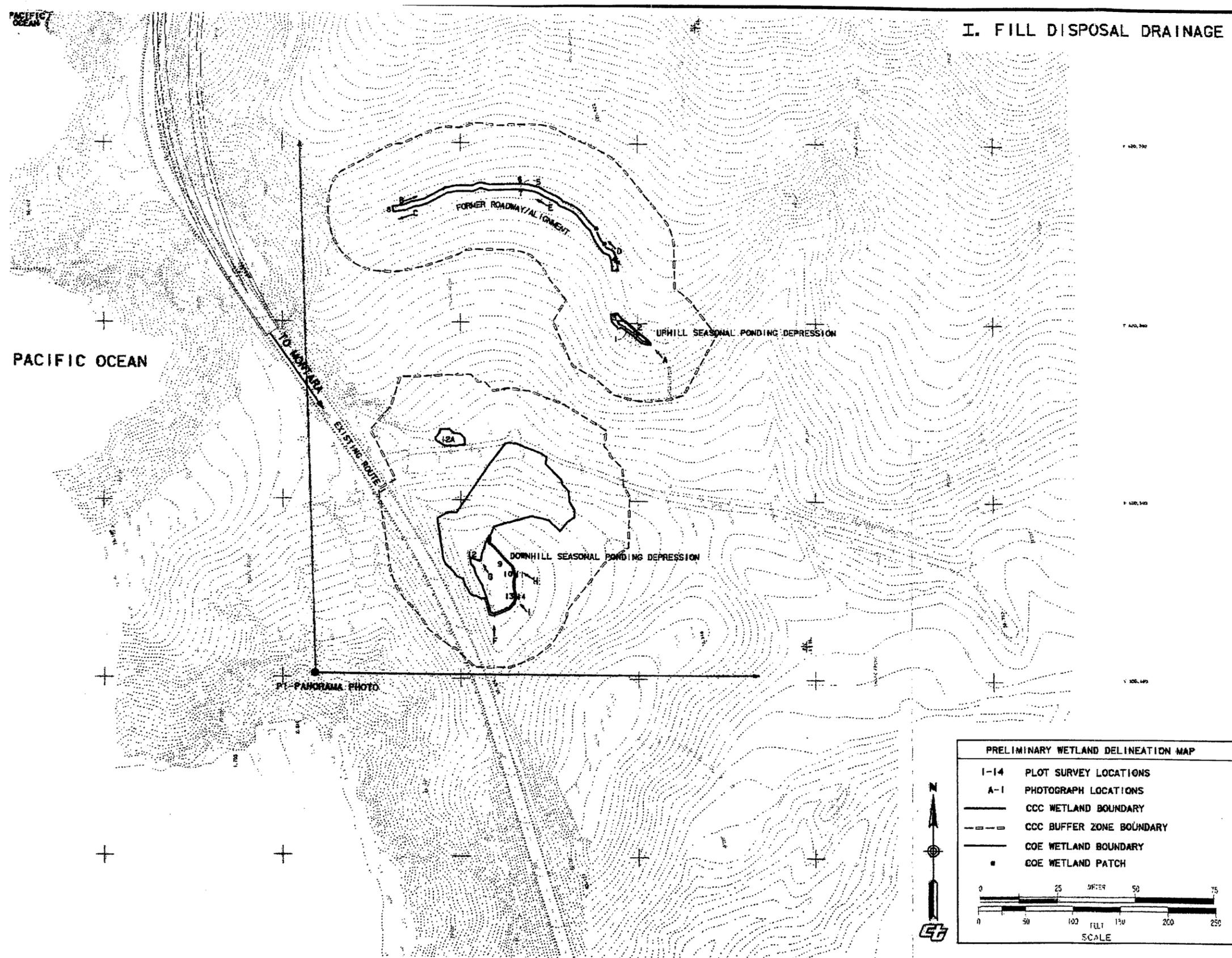
In general, where there is a preponderance of FAC plants immediately adjacent to an area that is an unambiguous wetland, the area of FAC plants should also be designated wetland. Much, but not all, of the area designated upland in the 2003 & 2004 maps probably should be considered wetland under the Coastal Act. However, I think due to the marginal wetland characteristics of those areas and their extremely degraded state, as evidenced by the dominance of non-native weedy species, that they should be considered good candidates for ecological restoration with credit being given at a 1:1 ratio. In order to analyze the site for mitigation purposes, Caltrans should produce a revised map showing areas of wetlands with clear hydrology, marginal disturbed wetland areas, and areas with clear upland characteristics, and the boundary of the areas proposed for mitigation.

Table 1. Data and wetland determinations submitted by Caltrans for the potential mitigation site at the Charthouse location. Key: Y=Yes, N=No, O=outside study boundary, U=upland, W=wetland, W=Caltrans designated upland that has wetland vegetation or hydric soil indicators, WL=willows, ?=position ambiguous, **bold**=apparent discrepancies

Plot ID	On Map in Addendum *	On Map Submitted Early 2004*	On Addendum Data Sheet*	Delineation on 2003 Map	Delineation on 2004 Map*	Table 3 2003 Report	Delineation on Data Sheet*
CH01A	Y	Y	Y	O, U?	O, U?	W	W
CH01B	Y	Y	Y	O, U?	O, U?	W	W
CH01C	Y	Y	Y	O, U?	O, U?	U	U
CH01D	Y	Y	Y	O, U?	O, U?	W	W
CH02A	Y	Y	Y	U	U	W	W
CH02B	Y	Y	Y	W	W	W	W
CH02C	Y	Y	Y	U	U	W	W
CH02D	Y	Y	Y	U?	U?	U	U
CH03A	Y	Y	Y	U	U	W	W
CH03B	Y	Y	Y	U	U	U	U
CH CCC	Y	Y	N	U	U	-	-
CH CCC1	Y	Y	Y	W	W	U	W
CH CCC1A	Y	Y	N	W	W	-	-
CH CCC2	Y	Y	Y	U	U	U	U
CH CCC3	Y	Y	Y	U	U	U	W
CH CCC4	Y	Y	Y	U	U	U	U
T-01	N	Y	N	-	U	-	-
T-01A	Y	N	Y	U	-	-	U
T-01B	Y	N	Y	U	-	-	W
T-01C	Y	N	Y	U	-	-	U
T-02	N	Y	N	-	W	-	-
T-L1	N	Y	N	-	O	-	-
T-L2	N	Y	N	-	U	-	-
T-L3	N	Y	N	-	W	-	-
T-M1	N	Y	N	-	OU	-	-
T-M2	N	Y	N	-	W?	-	-
T-N1	N	Y	N	-	O, U?	-	-
T-N2	N	Y	N	-	W,WL	-	-
T-N3	N	Y	N	-	U	-	-
T-N4	N	Y	N	-	W	-	-
T-N5	N	Y	N	-	U	-	-
T-P1	N	Y	N	-	W?, WL	-	-
T-P2	N	Y	N	-	W?, WL	-	-
T-P3	N	Y	N	-	U	-	-
T-Q1	N	Y	N	-	U	-	-
T-Q2	N	Y	N	-	W	-	-
T-R1	N	Y	N	-	U?	-	-
T-R2	N	Y	N	-	W	-	-
T-S1	N	Y	N	-	W, WL	-	-
T-S2	N	Y	N	-	U	-	-
T-T1	N	Y	N	-	U?	-	-
T-T2	N	Y	N	-	W	-	-

Appendix 3 Project Site Plot Survey Locations

I. FILL DISPOSAL DRAINAGE AREA



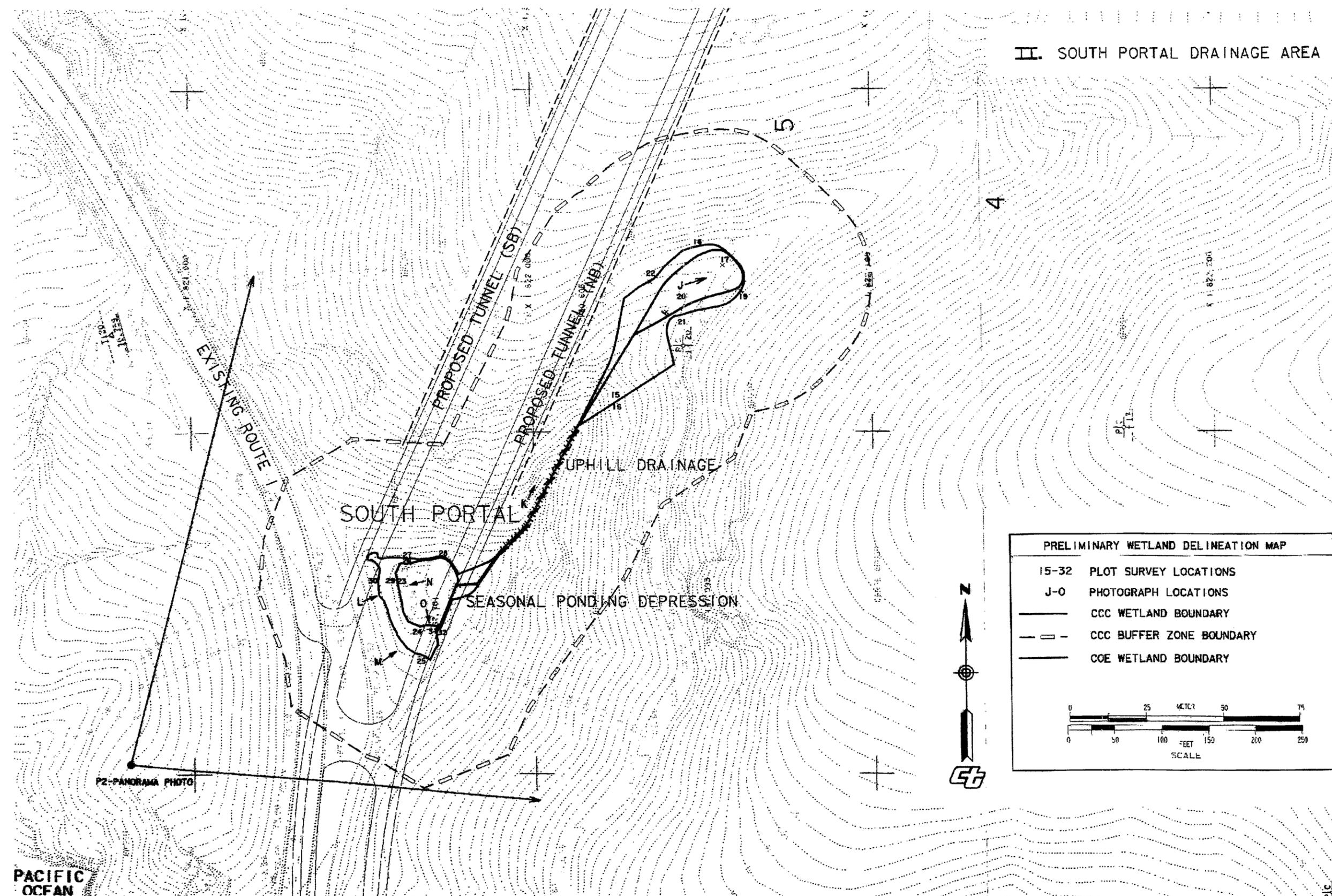
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**DEVIL'S SLIDE TUNNEL PROJECT
 SHAMROCK RANCH NORTH PORTAL DRAINAGE
 PLOT SURVEY LOCATION**

APPENDIX 3A

II. SOUTH PORTAL DRAINAGE AREA



PRELIMINARY WETLAND DELINEATION MAP

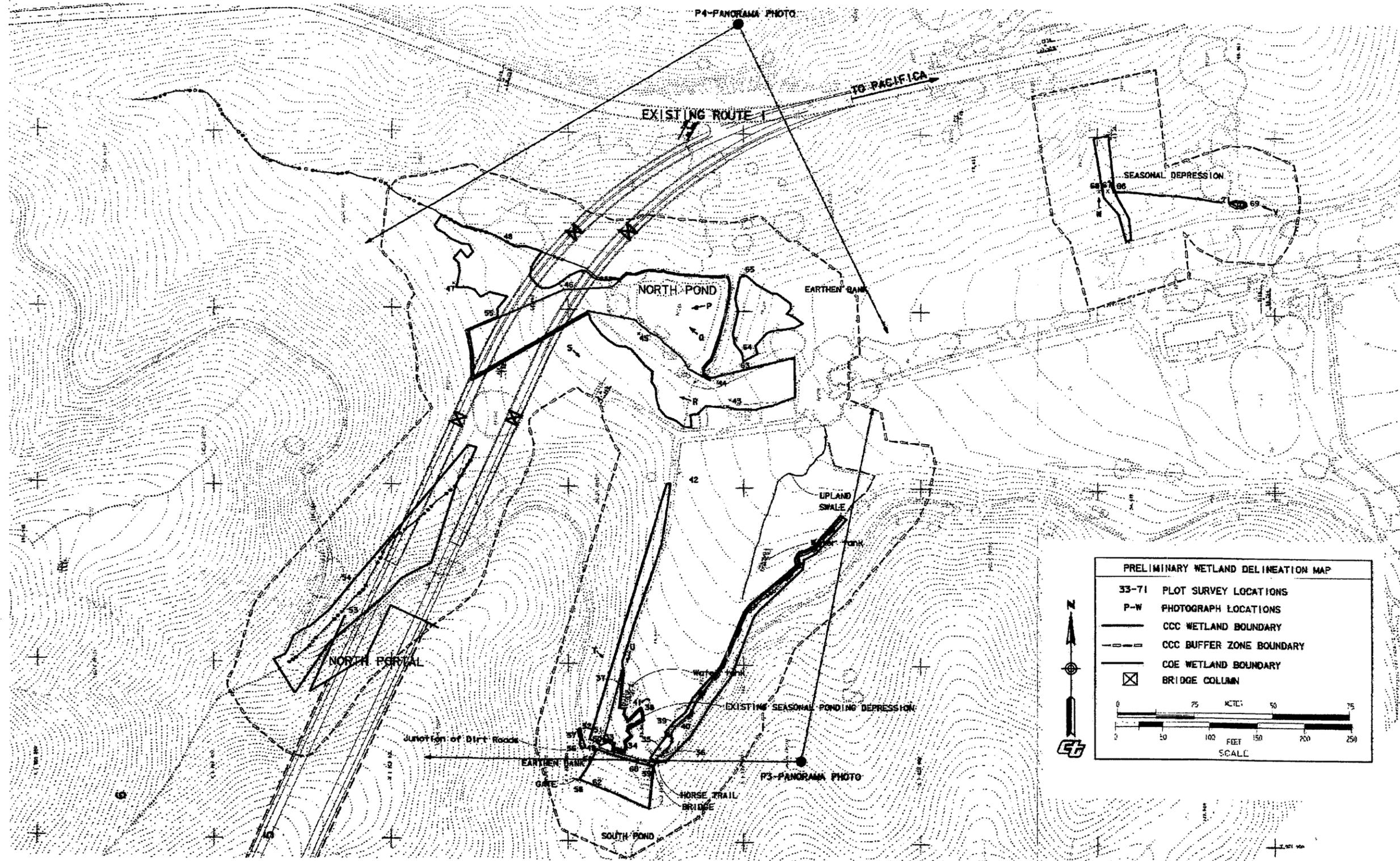
- 15-32 PLOT SURVEY LOCATIONS
- J-O PHOTOGRAPH LOCATIONS
- CCC WETLAND BOUNDARY
- - - CCC BUFFER ZONE BOUNDARY
- COE WETLAND BOUNDARY

0 25 50 75 METERS
0 50 100 150 200 250 FEET
SCALE

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**DEVIL'S SLIDE TUNNEL PROJECT
 SHAMROCK RANCH NORTH PORTAL DRAINAGE
 PLOT SURVEY LOCATION**

APPENDIX 3B



OFFICE OF NATURAL SCIENCES/PERMITS

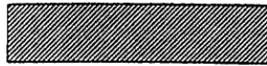
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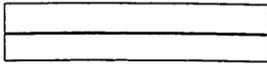
APPENDIX 3C

LEGEND:

PRELIMINARY WETLAND DELINEATION MAP



POTENTIAL WATERS OF THE U.S.
SECTION 404



STUDY AREA BOUNDARY



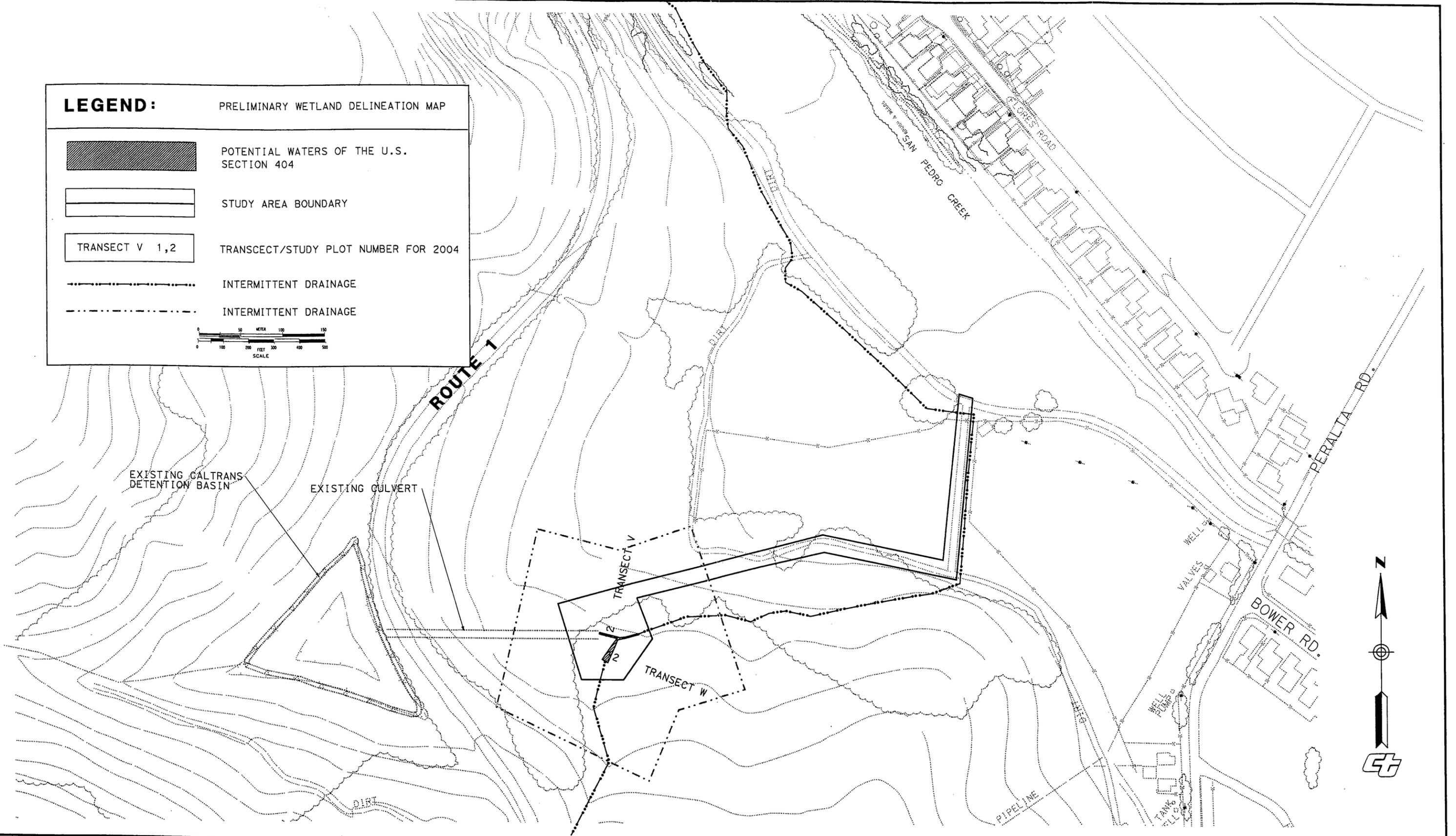
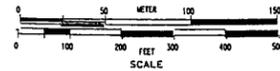
TRANSECT/STUDY PLOT NUMBER FOR 2004



INTERMITTENT DRAINAGE



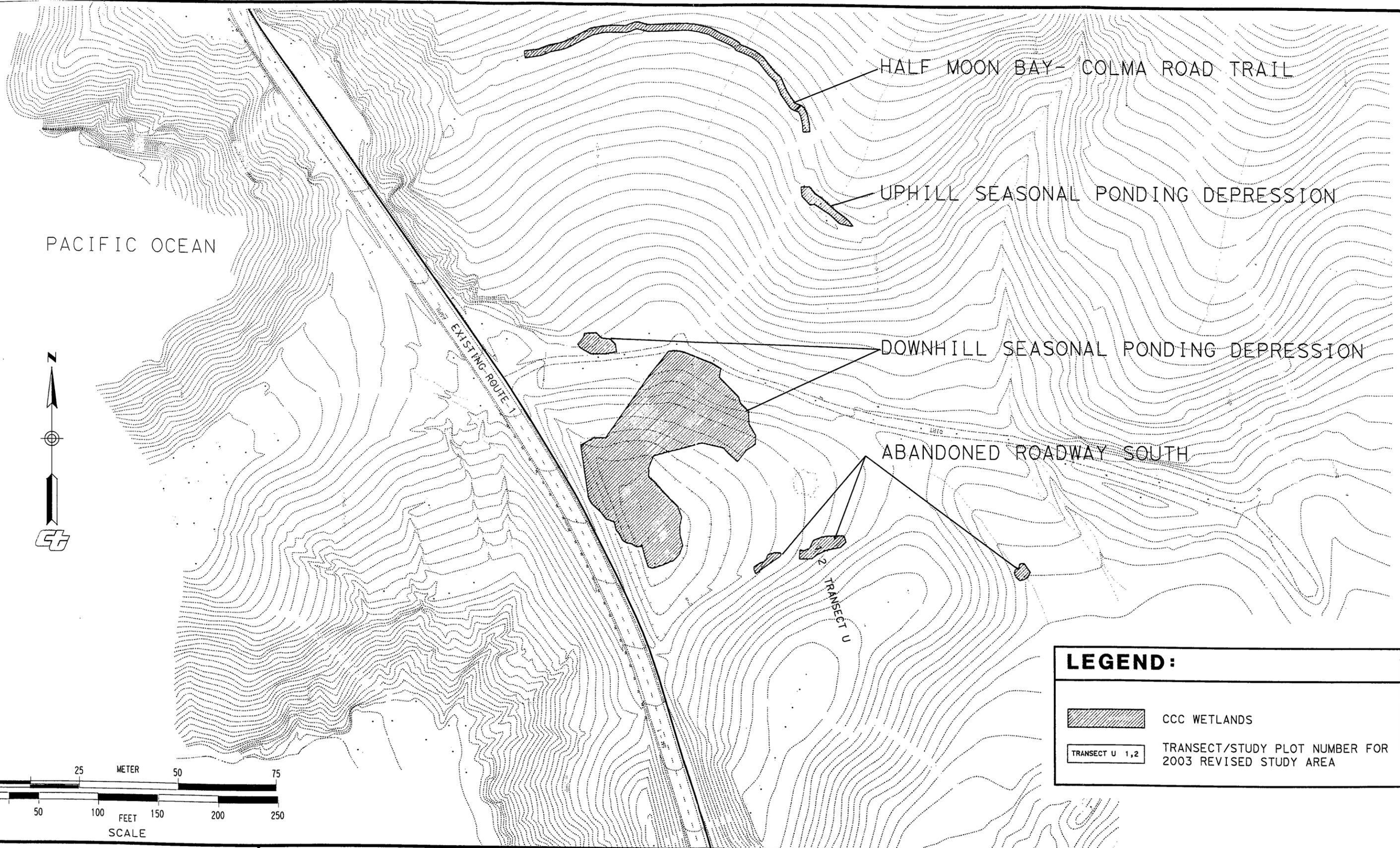
INTERMITTENT DRAINAGE



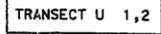
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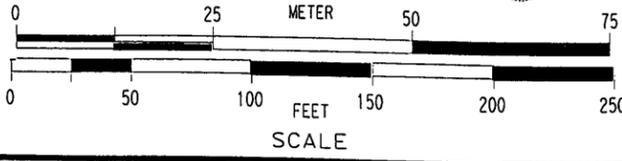
**DEVIL'S SLIDE TUNNEL PROJECT
SHAMROCK RANCH NORTH PORTAL DRAINAGE
PLOT SURVEY LOCATIONS**

APPENDIX 3D



LEGEND:

	CCC WETLANDS
	TRANSECT/STUDY PLOT NUMBER FOR 2003 REVISED STUDY AREA



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**CALIFORNIA COASTAL COMMISSION
 SUPPLEMENTAL PLOT SURVEY LOCATION MAP
 OMC SITE**

APPENDIX 3E

Appendix 4 Project Site Wetland Data Sheets

The following plot surveys were taken within the North Portal Drainage Area/Shamrock Ranch:

PLOT SURVEY 33 (April 12, 2000)

Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Juncus spp.* (FACW) Herbaceous

*The species could not be identified because it was too early in the growing season

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: silt loam; chroma 10YR 2/1

HYDROLOGY: soil saturation

PLOT SURVEY 34 (April 12, 2000)

Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Achillea millefolium FACU Herbaceous
Festuca californica FACU Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: silt loam; chroma 10YR 3/2

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 35 (April 12, 2000)

Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Salix spp. FACW Tree
Festuca californica FACU Herbaceous
Conium maculatum FAC Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 67%

SOILS: silt loam; chroma 10YR 3/1

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 36 (April 12, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Salix spp. FACW Tree
Rhus diversiloba NL Shrub
Rubus vitifolius FACW Vine
Equisetum hyemale FACW Herbaceous
Heracleum lanatum FACU Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 60%

SOILS: creek sediment; anaerobic soil conditions > 15 cons. days per growing season

HYDROLOGY: creek water level 2-4"

PLOT SURVEY 37 (April 12, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Baccharis pilularis NL Shrub
Festuca californica FACU Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: loam; chroma 10YR 3/2

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 38 (April 12, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Poa annua FACW- Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: loam; chroma 10YR 2/2; anaerobic conditions > 15 cons. days per growing season

HYDROLOGY: soil saturation

PLOT SURVEY 39 (April 12, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Salix spp. FACW Tree
Rubus vitifolius FACW Vine
Festuca californica FACU Herbaceous
Conium maculatum FAC Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 75%

SOILS: silt loam; chroma 10YR 2/2

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 40 (April 12, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Salix spp. FACW Tree
Rhus diversiloba NL Shrub
Rubus vitifolius FACW Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 67%

SOILS: creek sediment

HYDROLOGY: creek water level 1-3"

PLOT SURVEY 41 (April 12, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Festuca californica FACU Herbaceous
Poa annua FACW- Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%

SOILS: silt loam; chroma 10YR 3/2

HYDROLOGY: no inundation or saturation

Additional Assessment: Total cover of the plot dominated by non-hydrophytic species (80%) - 70% (FACU) *Festuca californica*, 20% (FACW-) *Poa annua*, and 10% (NL) *Medicago polymorpha*

PLOT SURVEY 42 (April 12, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Baccharis pilularis NL Shrub
Digitaria sanguinalis FACU Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: silt loam; chroma 10YR 3/2

HYDROLOGY: no inundation or saturation

PLOT SURVEY 43 (April 13, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Conium maculatum FAC Herbaceous
Baccharis pilularis NL Shrub

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%

SOILS: loamy clay; chroma 10YR 4/4

HYDROLOGY: no inundation or saturation

Additional Analysis: After an additional field assessment and evaluation of this site was completed on August 19, 2003, it was determined that the site is an upland site. The site is located on agricultural land and is used mainly as an informal parking and storage area. Horse pastures are immediately adjacent to the site. In the summer, the site is mowed. There is no hydric soil or wetland hydrology found on the site. The site is a local drainage area only and is not associated with a larger drainage. Poison hemlock, an invasive species that is typically found growing in disturbed areas of both wetlands and uplands, dominates the total cover with 80% cover.

PLOT SURVEY 44 (April 13, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Rubus vitifolius FACW Vine
Conium maculatum FAC Herbaceous
Phalaris tuberosa FACU Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 67%

SOILS: loamy clay; chroma 10YR 4/3

HYDROLOGY: no inundation or saturation

PLOT SURVEY 45 (April 13, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Conium maculatum FAC Herbaceous
Phalaris tuberosa FACU Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%

SOILS: loam; chroma 10YR 3/2 - 3/3

HYDROLOGY: no inundation or saturation

Additional Assessment: Total cover of the plot dominated by hydrophytic species *Conium maculatum* (85%) - 85% (FAC) *Conium maculatum*, 10% (FACU) *Phalaris tuberosa*, and 5% (NL) *Brassica campestris*

PLOT SURVEY 46 (April 13, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Rhus diversiloba NL Shrub
Rubus vitifolius FACW Vine
Conium maculatum FAC Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 67%

SOILS: loam; chroma 10YR 3/3

HYDROLOGY: no inundation or saturation

PLOT SURVEY 47 (April 13, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Baccharis pilularis NL Shrub
Rubus vitifolius FACW Vine
Conium maculatum FAC Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 67%

SOILS: loam; chroma 10YR 2/2 - 3/3

HYDROLOGY: no inundation or saturation

Additional Assessment: Total cover of plot dominated by non-hydrophytic *Baccharis pilularis* (85%) - 85% (NL) *Baccharis pilularis*, 12% (FAC) *Conium maculatum*, and 3% (FACW) *Rubus vitifolius*

PLOT SURVEY 48 (April 13, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Rhus diversiloba NL Shrub
Senecio mikanoides NL Vine
Rubus vitifolius FACW Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 33%

SOILS: loam; chroma 10YR 3/3

HYDROLOGY: no inundation or saturation

PLOT SURVEY 49 (April 14, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Rhus diversiloba NL Shrub
Rubus vitifolius FACW Vine
Festuca californica FACU Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 33%

SOILS: silt loam; chroma 10YR 3/2 - 3/3

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 50 (April 14, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Rubus vitifolius</i>	FACW	Vine
<i>Festuca californica</i>	FACU	Herbaceous
<i>Juncus spp.*</i>	(FACW)	Herbaceous

*The species could not be identified because it was too early in the growing season

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 67%

SOILS: silt loam; chroma 10YR 2/2; anaerobic soil conditions > 15 cons. days per growing season

HYDROLOGY: Inundation in hoof prints and saturation

PLOT SURVEY 51 (April 14, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Baccharis pilularis</i>	NL	Shrub
<i>Rubus vitifolius</i>	FACW	Vine
<i>Juncus bufonius</i>	FACW+	Herbaceous
<i>Festuca californica</i>	FACU	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%

SOILS: silt loam; chroma 10YR 3/3

HYDROLOGY: no soil saturation or inundation

Comment: Total cover of plot dominated by hydrophytic species (59%) - 25% (FACW+) *Juncus bufonius*, 20% (FACU) *Festuca californica*, 10% (FAC) *Conium maculatum*, 10% (FACW) *Rubus vitifolius*, 8% (FAC) *Erigeron philadelphicus*, 8% (NL) *Baccharis pilularis*, 6% (FAC-) *Plantago lanceolata*, 6% (FAC) *Anagallis arvensis*, 5% (NL) *Gnaphalium californicum*, and 2% (FACU) *Galium aparine*

PLOT SURVEY 52 (April 14, 2000)

Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Rubus vitifolius</i>	FACW	Vine
<i>Baccharis pilularis</i>	NL	Shrub
<i>Artemisia californica</i>	NL	Shrub
<i>Rhus diversiloba</i>	NL	Shrub

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 25%

SOILS: silt loam; chroma 10YR 2/2

HYDROLOGY: no inundation or saturation

PLOT SURVEY 53 (April 14, 2000)

Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Rhamnus californica</i>	NL	Shrub
<i>Baccharis pilularis</i>	NL	Shrub
<i>Rhus diversiloba</i>	NL	Shrub
<i>Rubus vitifolius</i>	FACW	Vine
<i>Urtica dioica</i>	FACW	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 40%

SOILS: loam; chroma 10YR 2/2

HYDROLOGY: no soil saturation or inundation

Additional Assessment: Total cover of plot dominated by hydrophytic species (65%) - 45% (FACW) *Urtica dioica*, 20% (FACW) *Rubus vitifolius*, 15% (NL) *Rhamnus californica*, 10% (NL) *Baccharis pilularis*, and 10% (NL) *Rhus diversiloba*

PLOT SURVEY 54 (April 14, 2000)

Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Baccharis pilularis</i>	NL	Shrub
<i>Rubus vitifolius</i>	FACW	Vine
<i>Plantago lanceolata</i>	FAC-	Herbaceous
<i>Achillea millefolium</i>	FACU	Herbaceous
<i>Erigeron philadelphicus</i>	FAC	Herbaceous
<i>Juncus spp.*</i>	FACW	Herbaceous

*The species could not be identified because it was too early in the growing season

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%

SOILS: silt loam; chroma 10YR 3/3

HYDROLOGY: no soil saturation or inundation

Additional Assessment: Total cover of plot dominated by non-hydrophytic species (75%) - 50% (NL) *Baccharis pilularis*, 15% (FACW) *Rubus vitifolius*, 10% (FAC-) *Plantago lanceolata*, 5% (FACU) *Achillea millefolium*, 5% (NL) *Rhamnus californica*, 5% (NL) *Cytisus scoparius*, 5% (FAC) *Erigeron philadelphicus*, and 5% (FACW) *Juncus spp.*

PLOT SURVEY 55 (April 14, 2000)

Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Baccharis pilularis</i>	NL	Shrub
<i>Conium maculatum</i>	FAC	Shrub
<i>Raphanus sativus</i>	NL	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 33%

SOILS: silt loam; chroma 10YR 3/3 - 4/3

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 56 (April 17, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Rubus vitifolius FACW Vine
*Stachys sp.** (FACW) Herbaceous

*The species could not be identified because it was too early in the growing season

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: loam; chroma 10YR 3/4

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 57 (April 17, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Rhus diversiloba NL Shrub
Baccharis pilularis NL Shrub

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: loam; chroma 10YR 3/4

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 58 (May 16, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Baccharis pilularis NL Shrub
Rubus vitifolius FACW Vine
Scrophularia californica FAC Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 67%

SOILS: loam; chroma 10YR 3/4

HYDROLOGY: no soil saturation or inundation

Additional Assessment: Total cover of plot dominated by non-hydrophytic *Baccharis pilularis* (80%) - 80% (NL) *Baccharis pilularis*, 15% (FACW) *Rubus vitifolius*, and 5% (FAC) *Scrophularia californica*

PLOT SURVEY 59 (May 16, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Salix spp. FACW Tree
Rubus vitifolius FACW Vine
Equisetum hyemale FACW Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: creek sediment

HYDROLOGY: creek water level 1-3"

PLOT SURVEY 60 (May 16, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Salix spp. FACW Tree
Uritica dioica FACW Herbaceous
Equisetum hyemale FACW Herbaceous
Equisetum hyemale FACW Herbaceous
Conium maculatum FAC Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: silt loam; chroma 10YR 3/1 - 3/2

HYDROLOGY: no inundation or saturation

PLOT SURVEY 61 (May 16, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Baccharis pilularis NL Shrub
Rubus vitifolius FACW Vine
Achillea millefolium FACU Herbaceous
Phalaris tuberosa FACU Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 25%

SOILS: loamy clay; chroma 10YR 3/3

HYDROLOGY: no inundation or saturation

PLOT SURVEY 62 (May 16, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Salix spp. FACW Tree
Rubus vitifolius FACW Vine
Heracleum lanatum FACU Herbaceous
Equisetum hyemale FACW Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 75%

SOILS: loam; chroma 10YR 4/2

HYDROLOGY: no inundation or saturation

PLOT SURVEY 63 (May 16, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Rhus diversiloba NL Shrub

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: loam; chroma 10YR 3/2

HYDROLOGY: no inundation or saturation

PLOT SURVEY 64 (May 16, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Rubus vitifolius FACW Vine
Conium maculatum FAC Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: clay loam; chroma 10YR 3/2

HYDROLOGY: no inundation or saturation

PLOT SURVEY 65 (May 16, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Baccharis pilularis NL Shrub
Rubus vitifolius FACW Vine
Conium maculatum FAC Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 67%

SOILS: loam; chroma 10YR 3/2

HYDROLOGY: no inundation or saturation

Additional Assessment: Total cover of plot dominated by non-hydrophytic species (80%) - 80% (NL) *Baccharis pilularis*, 10% (FAC) *Conium maculatum*, and 10% (FACW) *Rubus vitifolius*

PLOT SURVEY 66 (May 16, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Phalaris tuberosa FACU Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: debris, possibly burnt

HYDROLOGY: no inundation or saturation

PLOT SURVEY 67 (May 16, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Rubus vitifolius FACW Vine
Conium maculatum FACW Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: loam; chroma 10YR 4/3

HYDROLOGY: no inundation or saturation

PLOT SURVEY 68 (May 16, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Baccharis pilularis NL Shrub
Rubus vitifolius FACW Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%

SOILS: loam; chroma 10YR 3/2

HYDROLOGY: no inundation or saturation

Additional Assessment: Total cover of plot dominated by non-hydrophytic *Baccharis pilularis* (95%) - 95% (NL) *Baccharis pilularis* and 5% (FACW) *Rubus vitifolius*

PLOT SURVEY 69 (May 16, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Bromus mollis/Annual grasses* NL Herbaceous
Raphanus sativa NL Herbaceous
Picris echioides FAC Herbaceous

*Most grass species could not be identified because it was too early in the growing season

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 33%

SOILS: loam; chroma 10YR 4/3

HYDROLOGY: no inundation or saturation

PLOT SURVEY 70 (May 16, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Pleuropogon californicus OBL Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: clayey silt; chroma 2.5Y 4/3; anaerobic soil conditions > 15 days per growing season

HYDROLOGY: saturation; matted vegetation; algal mats

PLOT SURVEY 71 (May 16, 2000)

Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Bromus mollis/Annual grasses* NL Herbaceous

*Most grass species could not be identified because it was too
early in the growing season

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: recent sandy, gravelly deposit

HYDROLOGY: no inundation or saturation

The following plot surveys were taken within the Uphill Drainage portion of the South Portal Drainage Area:

PLOT SURVEY 15 (April 11, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Salix lasiolepis FACW Tree
Rubus vitifolius FACW Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: rocky cliff; no chroma value

HYDROLOGY: no inundation or saturation

PLOT SURVEY 16 (April 11, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Baccharis pilularis NL Shrub
Artemisia californica NL Shrub
Rubus vitifolius FACW Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 33%

SOILS: rocky soil; no chroma value

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 17 (April 11, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Salix spp. FACW Tree
Rubus parviflorus FAC+ Shrub
Mimulus guttatus OBL Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: El Nino landslide silty sediment; chroma 10YR 2/1-2/2;
anaerobic soil conditions > 15 days per growing season

HYDROLOGY: creek water level max. 1"

PLOT SURVEY 18 (April 11, 2000)

Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Salix</i> spp.	FACW	Tree
<i>Rhus diversiloba</i>	NL	Shrub
<i>Eriophyllum staechadifolium</i>	NL	Shrub
<i>Artemisia californica</i>	NL	Shrub
<i>Anaphalis margaritacea</i>	NL	Herbaceous
<i>Urtica dioica</i>	FACW	Herbaceous
<i>Rubus vitifolius</i>	FACW	Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 43%

SOILS: El Nino landslide silty loam sediment; chroma 10YR 3/5

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 19 (April 11, 2000)

Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Baccharis pilularis</i>	NL	Shrub
<i>Artemisia californica</i>	NL	Shrub
<i>Rubus vitifolius</i>	FACW	Vine
<i>Anaphalis margaritacea</i>	NL	Herbaceous
<i>Scrophularia californica</i>	FAC	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 40%

SOILS: rocky soil; not applicable

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 20 (April 11, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Salix</i> spp.	FACW	Tree
<i>Rubus parviflorus</i>	FAC+	Shrub
<i>Rubus vitifolius</i>	FACW	Vine
<i>Oenanthe sarmentosa</i>	OBL	Herbaceous
<i>Woodwardia fimbriata</i>	FACW+	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: silty loam; chroma 10YR 2/1

HYDROLOGY: creek water level max. 3"

PLOT SURVEY 21 (April 11, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Artemisia californica</i>	NL	Shrub
<i>Baccharis pilularis</i>	NL	Shrub
<i>Rubus vitifolius</i>	FACW	Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 33%

SOILS: rocky soil/bedrock; not applicable

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 22 (April 11, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Rhus diversiloba</i>	NL	Shrub
<i>Baccharis pilularis</i>	NL	Shrub
<i>Rubus vitifolius</i>	FACW	Vine
<i>Scrophularia californica</i>	FAC	Herbaceous
<i>Anaphalis margaritacea</i>	NL	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 40%

SOILS: silty loam; chroma 10YR 3/4

HYDROLOGY: no soil saturation or inundation

The following plot surveys were taken within the Seasonal Ponding Depression and Permanent Drainage portion of the South Portal Drainage Area:

PLOT SURVEY 23 (Feb 18, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Juncus spp.* (FACW) Herbaceous

*The species could not be identified because it was too early in the growing season

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: erosive sandy silt and sediment from hill; chroma 10YR 4/2; anaerobic soil conditions > 15 cons days per growing season

HYDROLOGY: soil inundation 1-2"

PLOT SURVEY 24 (Feb 18, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Conium maculatum FAC Herbaceous
Stachys pycnantha FACW Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: variable silty loam sediment; chroma 10YR 3/3;

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 25 (Feb 18, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Artemisia californica</i>	NL	Shrub
<i>Eriophyllum staechadifolium</i>	NL	Shrub
<i>Conium maculatum</i>	FAC	Herbaceous
<i>Raphanus sativus</i>	NL	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 25%

SOILS: loamy, gravelly sediment; chroma 10YR 4/4

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 26 (Feb 18, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Artemisia californica</i>	NL	Shrub
<i>Eriophyllum staechadifolium</i>	NL	Shrub
<i>Conium maculatum</i>	FAC	Herbaceous
<i>Rubus vitifolius</i>	FACW	Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%

SOILS: loamy, gravelly sediment; chroma 10YR 4/3-4/4

HYDROLOGY: no soil saturation or inundation

Additional Assessment: Total cover of the plot dominated by hydrophytic species (63%) - 60% (FAC) *Conium maculatum*, 10% (NL) *Artemisia californica*, 10% (NL) *Eriophyllum* spp., 10% (NL) *Silybum marianum*, 7% Bare ground, and 3% (FACW) *Rubus vitifolius*

PLOT SURVEY 27 (Feb 18, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Artemisia californica NL Shrub
Eriophyllum staechadifolium NL Shrub
Conium maculatum FAC Herbaceous
Brassica spp. NL Herbaceous
Rubus vitifolius FACW Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 40%

SOILS: erosive, gravelly sediment; chroma 10YR 5/4-5/6

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 28 (Feb 18, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Mesembryanthemum edule NL Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: erosive, rocky soil down to bedrock; no chroma sample due to rocky surface

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 29 (Feb 18, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Conium maculatum FAC Herbaceous
Rubus vitifolius FACW Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: erosive, gravelly sediment of roadway embankment; chroma
10YR 4/3-4/4

HYDROLOGY: no soil saturation or inundation

Additional Analysis: After an additional field assessment and evaluation of this site was completed on August 19, 2003, it was determined that the site is an upland site. The site is a steeply sloping embankment that makes up the east side of the Route 1 roadbed, which consists of foreign fill material. Due to the fill material and the steep slope of the embankment, there is no hydric soil or wetland hydrology. There is no drainage course that provides runoff to the site. Poison hemlock, an invasive species that is typically found growing in disturbed areas of both wetlands and uplands, dominates the total cover of the site with 80% cover.

PLOT SURVEY 30 (Feb 18, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Baccharis pilularis</i>	NL	Shrub
<i>Rhus diversiloba</i>	NL	Shrub
<i>Rubus vitifolius</i>	FACW	Vine
<i>Brassica spp.</i>	NL	Herbaceous
<i>Conium maculatum</i>	FAC	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 40%

SOILS: erosive, gravelly sediment of roadway embankment; chroma
10YR 4/3-4/4

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 31 (Feb 18, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Baccharis pilularis</i>	NL	Shrub
<i>Rubus vitifolius</i>	FACW	Vine
<i>Conium maculatum</i>	FAC	Herbaceous
<i>Brassica spp.</i>	NL	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%

SOILS: erosive, gravelly sediment from hill; chroma 10YR 4/4

HYDROLOGY: no soil saturation or inundation

Additional Assessment: Total cover of plot dominated by hydrophytic species (55%) - 45% (FAC) *Conium maculatum*, 20% Bare ground, 15% (NL) *Brassica spp.*, 10% (FACW) *Rubus vitifolius*, and 10% (NL) *Baccharis pilularis*

PLOT SURVEY 32 (Feb 18, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Baccharis pilularis</i>	NL	Shrub
<i>Eriophyllum staechadifolium</i>	NL	Shrub
<i>Rubus vitifolius</i>	FACW	Vine
<i>Conium maculatum</i>	FAC	Herbaceous
<i>Brassica spp.</i>	NL	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 40%

SOILS: erosive, gravelly sediment from hill; chroma 10YR 4/4-4/6

HYDROLOGY: no soil saturation or inundation

The following plot surveys were taken within the Uphill Seasonal Ponding Depression and Half Moon Bay Colma Road Trail portion of the drainage area at the Fill Disposal Site:

PLOT SURVEY 1 (Feb 11, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Salix lasiolepis FACW Tree
Cortaderia selloana NL Shrub
Juncus spp. FACW Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 67%

SOILS: small erosive granular sediment from old road; chroma 10YR 4/6; anaerobic soil conditions > 15 cons days per growing season

HYDROLOGY: pond water level variable between 1-10"

PLOT SURVEY 2 (Feb 11, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Cortaderia selloana NL Shrub

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: small erosive granular sediment; chroma 7.5YR 5/6

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 3 (Feb 11, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Salix lasiolepis FACW Tree4
Rubus vitifolius FACW Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: small erosive granular sediment; chroma 7.5YR 5/6

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 4 (April 10, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Baccharis pilularis</i>	NL	Shrub
<i>Cortaderia selloana</i>	NL	Shrub
<i>Rubus vitifolius</i>	FACW	Vine
<i>Juncus spp.</i>	FACW	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%
SOILS: clay and erosive, granular bedrock material; chroma 10YR 2/1-2/2; anaerobic soil conditions > 15 cons. days per growing season

HYDROLOGY: saturated soil > 15 cons. days per growing season

PLOT SURVEY 5 (April 10, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Cortaderia selloana</i>	NL	Shrub
<i>Juncus spp.</i>	FACW	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%

SOILS: clay and erosive, granular bedrock material; chroma 10YR 3/3; anaerobic soil conditions > 15 cons. days per growing season

HYDROLOGY: saturated soil > 15 cons. days per growing season

PLOT SURVEY 6 (April 10, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Baccharis pilularis</i>	NL	Shrub
<i>Cortaderia selloana</i>	NL	Shrub
<i>Rubus vitifolius</i>	FACW	Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 33%

SOILS: clay loam and erosive, granular bedrock material;
chroma 10YR 5/6

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 7 (April 10, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Baccharis pilularis</i>	NL	Shrub
<i>Artemisia californica</i>	NL	Shrub
<i>Rubus vitifolius</i>	FACW	Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 33%

SOILS: clay loam and erosive, granular bedrock material;
chroma 10YR 3/3

HYDROLOGY: no soil saturation or inundation

PLOT SURVEY 8 (April 10, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Cortaderia seloana</i>	NL	Shrub
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Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: silt and erosive, granular bedrock material;
chroma 10YR 5/6

HYDROLOGY: no soil saturation or inundation

The following plot surveys were taken within the Downhill Seasonal Ponding Depression portion of the drainage area at the Fill Disposal Site:

PLOT SURVEY 9 (Feb 11, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Plantago coronopus FAC Herbaceous
Gnaphalium palustre FACW Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: small gravelly sediment washed down from the drainage above during heavy rainfall; chroma 10YR 4/4; anaerobic soil conditions > 15 cons days per growing season

HYDROLOGY: soil inundation variable between 1-12"

PLOT SURVEY 10 (Feb 11, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Plantago coronopus FAC Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: small gravelly sediment washed down from the drainage above during heavy rainfall; chroma 10YR 4/3; anaerobic soil conditions > 15 cons days per growing season

HYDROLOGY: soil saturation

PLOT SURVEY 11 (Feb 11, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Cortaderia selloana NL Shrub
Juncus spp. FACW Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%

SOILS: small gravelly sediment; chroma 10YR 3/3

HYDROLOGY: no saturation or inundation

Additional Assessment: Total cover of the plot dominated by pampas grass (60%) - 60% *Cortaderia selloana*, 30% Bare ground, and 10% *Juncus spp.*

PLOT SURVEY 12 (Feb 11, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Salix lasiolepis FACW Tree
Rubus vitifolius FACW Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: small gravelly sediment; chroma 10YR 5/6

HYDROLOGY: no saturation or inundation

PLOT SURVEY 13 (Feb 11, 2000)
Preliminary Determination: Wetland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum
Helenium puberulum FACW Herbaceous
Annual grasses* NL Herbaceous

*The species could not be identified because it was too early in the growing season

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%

SOILS: small gravelly sediment; chroma 10YR 4/3 to 3/3

HYDROLOGY: soil saturation

PLOT SURVEY 14 (Feb 11, 2000)
Preliminary Determination: Upland

VEGETATION: Dominant Plant Species, Indicator Status And Stratum

<i>Baccharis pilularis</i>	NL	Shrub
<i>Artemisia californica</i>	NL	Shrub
<i>Rubus vitifolius</i>	FACW	Vine
<i>Brassica campestris</i>	NL	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 25%

SOILS: small gravelly sediment; chroma 10YR 4/4

HYDROLOGY: no saturation or inundation

The following plot surveys were supplemental surveys taken in 2003 at the Abandoned Access Roadway South location of the Fill Disposal Site Drainage Area:

PLOT SURVEY U-1

Location: OMC Site: Abandoned Access Road

Date: December 30, 2003

Preliminary Determination: Wetland

VEGETATION:

<u>Dominant Plant Species</u>	<u>Indicator Status</u>	<u>Stratum</u>
<i>Myrica californica</i>	FAC+	Tree
<i>Cortaderia selloana</i>	NL	Shrub

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%

SOILS: erosive sediment within gully; 10YR 4/2

HYDROLOGY: no soil saturation or inundation observed

ANALYSIS: This site has been disturbed by an abandoned access road. A gully has formed within the abandoned access road that now serves as an ephemeral drainage for peak storm runoff. The gully width is variable between 4 and 6 feet wide. Due to the gully formation and the channeling of peak runoff, hydrophytic plant species are now growing here.

PLOT SURVEY U-2

Location: OMC Site: Abandoned Access Road

Date: December 30, 2003

Preliminary Determination: Upland

VEGETATION:

<u>Dominant Plant Species</u>	<u>Indicator Status</u>	<u>Stratum</u>
<i>Artemisia californica</i>	NL	Shrub
<i>Baccharis pilularis</i>	NL	Shrub
<i>Cortaderia selloana</i>	NL	Shrub

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: erosive soil on hillside; 10YR 4/3

HYDROLOGY: no soil saturation or inundation observed

ANALYSIS: This site is in an area that has been disturbed by an abandoned access road and is located just above the gully that has formed due to the disturbance

PLOT SURVEY V-1

Location: Shamrock Ranch Detention Basin Drainage

Date: April 29, 2004

Field Team: Kathleen Jenkins and Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status	Stratum
<i>Eucalyptus globulu</i>	NL	Tree
<i>Rhus diversiloba</i>	NL	Shrub

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: creek sediment; 10YR 3/2; anaerobic soil conditions > 15 consecutive days during the growing season

HYDROLOGY: inundation and saturation observed

DETERMINATION: Wetland

PLOT SURVEY V-2

Location: Shamrock Detention Basin Drainage

Date: April 29, 2004

Field Team: Kathleen Jenkins and Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status	Stratum
<i>Eucalyptus globulus</i>	NL	Tree
<i>Rhus diversiloba</i>	NL	Shrub

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: silty loam with some gravel; 10 YR 3/3

HYDROLOGY: no soil saturation or inundation observed

DETERMINATION: Upland

PLOT SURVEY W-1

Location: Shamrock Ranch Detention Basin Drainage

Date: April 29, 2004

Field Team: Kathleen Jenkins and Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status	Stratum
<i>Eucalyptus globulu</i>	NL	Tree
<i>Sambucus racemosa</i>	FACU	Shrub
Annual grasses	NL	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: creek sediment; 10YR 4/3; anaerobic soil conditions > 15 consecutive days during the growing season

HYDROLOGY: inundation and saturation observed

DETERMINATION: Wetland

PLOT SURVEY W-2

Location: Shamrock Detention Basin Drainage

Date: April 29, 2004

Field Team: Kathleen Jenkins and Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status	Stratum
<i>Eucalyptus globulus</i>	NL	Tree
<i>Rhus diversiloba</i>	NL	Shrub

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 0%

SOILS: loam with some gravel; 10 YR 3/3

HYDROLOGY: no soil saturation or inundation observed

DETERMINATION: Upland

Appendix 5 Plant Species List

DEVILS SLIDE MITIGATION SITE WETLAND DELINEATION PLANT LIST

Scientific Name	Common Name	Wetland Indicator Status
<i>Achillea millefolium</i>	Yarrow	FACU
<i>Aira caryophylla</i>	Silver hairgrass	NL
<i>Ambrosia</i> sp.	Ragweed	-
<i>Anagallis arvensis</i>	Scarlet pimpernel	FAC
<i>Anaphalis margaritacea</i>	Pearly everlasting	NL
<i>Artemisia californica</i>	California Sage	NL
<i>Artemisia douglasiana</i>	Mugwort	FAC+
<i>Avena barbata</i>	Slender wild oat	NL
<i>Avena fatua</i>	Wild oat	NL
<i>Baccharis pilularis</i>	Coyote Brush	NL
<i>Brassica nigra</i>	Black mustard	NL
<i>Briza minor</i>	Little quacking grass	FACU
<i>Bromus carinatus</i>	California Brome Grass	NL
<i>Bromus diandrus</i>	Ripgut brome	NL
<i>Bromus hordeaceus</i>	Soft chess	FACU-
<i>Bromus madritensis</i> ssp. <i>rubens</i>	Red brome	NL
<i>Carduus pycnocephalus</i>	Italian thistle	NL
<i>Carpobrotus edulis</i>	Ice plant	NL
<i>Centaureum muhlenbergii</i>	Muhlenberg's centaury	FAC
<i>Silybum maritimum</i>	Milk thistle	NL
<i>Cirsium vulgare</i>	Bull Thistle	FAC
<i>Conium maculatum</i>	Poison Hemlock	FAC
<i>Cortaderia jubata</i>	Pampas grass	NL
<i>Cyperus eragrostis</i>	Nut sedge	FACW
<i>Dactylis glomerata</i>	Orchard Grass	FACU
<i>Danthonia californica</i>	California oatgrass	FACW
<i>Dudleya</i> sp.	Rock lettuce	NL
<i>Elymus glaucus</i>	Blue wild rye	FACU
<i>Epilobium ciliatum</i>	fringed willowherb	FACW
<i>Epilobium</i> sp.	Willowherb	-
<i>Equisetum arvense</i>	Common Horsetail	FAC
<i>Equisetum telmateia</i> ssp. <i>braunii</i>	Giant Horsetail	OBL

DEVILS SLIDE MITIGATION SITE WETLAND DELINEATION PLANT LIST

Scientific Name	Common Name	Wetland Indicator Status
<i>Erigeron glaucus</i>	Purple daisy	FACU
<i>Eriogonum latifolium</i>	Buckwheat	NL
<i>Eriophyllum staechadifolium</i>	Lizard tail	NL
<i>Eschscholzia californica</i>	California Poppy	NL
<i>Festuca californica</i>	California Fescue	FACU*
<i>Foeniculum vulgare</i>	Fennel	FACU-
<i>Fragaria vesca</i>	Strawberry	NL
<i>Galium aparine</i>	Bedstraw	FACU
<i>Geranium molle</i>	Crane's bill geranium	NL
<i>Gnaphalium</i> sp.	Cudweed	-
<i>Grindelia stricta</i>	Gumplant	NL
<i>Helenium puberulum</i>	Rosilla	FACW
<i>Heracleum lanatum</i>	Cow parsnip	FACU
<i>Linum bienne</i>	Pale falx	NL
<i>Holcus lanatus</i>	Velvet Grass	FAC
<i>Hordeum marinum</i> ssp. <i>gussoneanum</i>	Mediterranean Barley	FAC
<i>Hypochaeris radicata</i>	Hairy catsear	NL
<i>Iris douglasiana</i>	Douglas Iris	NL
<i>Juncus bufonius</i>	Toad rush	FACW+
<i>Juncus effusus</i>	Common rush	FACW+
<i>Juncus xiphioides</i>	Iris-leaf rush	OBL
<i>Juncus patens</i>	Spreading Rush	FAC
<i>Lobularia maritima</i>	Sweet alyssum	NL
<i>Lolium multiflorum</i>	Italian rye-grass	NL
<i>Lolium perenne</i>	Perennial ryegrass	FAC*
<i>Lonicera involucrata</i>	Twinberry	FAC
<i>Lotus corniculatus</i>	Bird's-foot trefoil	FAC
<i>Lupinus arboreus</i>	Yellow Bush Lupine	NL
<i>Lythrum hyssopifolia</i>	Hyssop loosestrife	FACW
<i>Madia sativa</i>	Coastal Tarweed	NL
<i>Marah fabaceus</i>	Coast wild cucumber	UPL
<i>Melilotus indica</i>	Sweetclover	FAC

DEVILS SLIDE MITIGATION SITE WETLAND DELINEATION PLANT LIST

Scientific Name	Common Name	Wetland Indicator Status
Mimulus aurantiacus	Sticky monkey flower	NL
Mimulus guttatus	Common monkey flower	FACW+
Monardella villosa	Coyote mint	UPL
Myrica californica	California wax myrtle	FAC+
Oenanthe sarmentosa	Water parsley	OBL
Paspalum dilatatum	Dallisgrass	FAC
Phacelia sp.	Phacelia	--
Phalaris aquatica	Harding grass	FAC
Picris echioides	Bristly ox-tongue	FAC
Pinus radiata	Monterey pine	NL
Plantago lanceolata	English plantain	FAC-
Polygonum hydropiperoides	Water smartweed	OBL
Polypogon monspeliensis	Rabbit's-foot grass	FACW+
Polystichum sp.	Sword fern	FACU or NL
Potentilla anserina	Pacific silverweed	OBL
Pteridium aquilinum	Bracken fern	FACU
Raphanus sativus	Wild radish	UPL
Rhamnus californica	California coffee berry	NL
Ribes sanguineum	Red-flowering currant	NL
Rorippa nasturtium-aquaticum	Yellow cress	OBL
Rubus parviflorus	Western thimbleberry	FAC+
Rubus vitifolius	California blackberry	FAC+
Rumex acetosella	Sheep Sorrel	FAC-
Rumex crispus	Curly-leaved Dock	FACW-
Rumex salicifolius	Willow dock	OBL
Salix lasiolepis	Arroyo Willow	FACW
Salix scouleriana	Scouler willow	FAC
Sambucus racemosa	Red elderberry	FACU
Sanicula laciniata	Coast sanicle	NL
Satureja douglasii	Yerba Buena	NL
Scirpus acutas	Tule	OBL
Scirpus microcarpus	Small-fruited bulrush	OBL

DEVILS SLIDE MITIGATION SITE WETLAND DELINEATION PLANT LIST

Scientific Name	Common Name	Wetland Indicator Status
<i>Scrophularia californica</i>	California figwort	FAC
<i>Senecio mikanioides</i>	German Ivy	NL
<i>Solanum umbelliferum</i>	Nightshade	NL
<i>Sonchus asper</i>	Prickly sowthistle	FAC
<i>Sonchus oleraceus</i>	Common sowthistle	NI*
<i>Sparganium eurycarpum</i>	Bur reed	OBL
<i>Stachys ajugoides</i>	Rigid hedge-nettle	OBL
<i>Toxicodendron diversilobum</i>	Poison oak	NL
<i>Trifolium dubium</i>	Shamrock Clover	FACU*
<i>Trifolium repens</i>	White clover	FAC
<i>Typha latifolia</i>	Common cattail	OBL
<i>Umbellularia californica</i>	California bay	FAC
<i>Urtica dioica</i> ssp. <i>gracilis</i>	Stinging Nettle	FACW
<i>Vicia</i> sp.	Vetch	--
<i>Vulpia microstachys</i>	Small fescue	NL
<i>Woodwardia fimbriata</i>	Chain fern	FACW+

Appendix 6

Charthouse Mitigation Site Plot Survey Locations

PACIFIC OCEAN



SCALE 1:2,000

LEGEND:

- STUDY BOUNDARY
- - - CCC BUFFER ZONE BOUNDARY
- CCC WETLAND BOUNDARY
- UPLAND
- ▨ CCC WETLAND/DEGRADED & DISTURBED
- TRANSECT T1 A B TRANSECT & PLOT SURVEY STUDY PLOT NUMBERS

OFFICE OF NATURAL SCIENCES/PERMITS

USERNAME => kjenkins
DGN FILE => CCC_Appendix 6.dgn
DATE PLOTTED => 30-DEC-2004 09:20

**CHARTHOUSE MITIGATION SITE
CALIFORNIA COASTAL COMMISSION
WETLAND JURISDICTIONAL MAP**

APPENDIX 6

Appendix 7

Charthouse Mitigation Site Wetland Data Sheets

PLOT SURVEY CH-CCC1

Location: Chathouse Mitigation Site

Date: July 10, 2003

Field Team: CH2M Hill Biologists - Russell Huddleston,
Aviva Rossi

VEGETATION:

Dominant Plant Species Indicator Status And Stratum

Holcus lanatus FAC Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/Or FAC =
100%

SOILS: loam; no redoximorphic features observed; chroma
10YR 2/1

HYDROLOGY: no soil saturation observed

DETERMINATION: Wetland

PLOT SURVEY CH-CCC2

Location: Chathouse Mitigation Site

Date: July 10, 2003

Field Team: CH2M Hill Biologists - Russell Huddleston,
Aviva Rossi

VEGETATION:

Dominant Plant Species	Indicator	Status	And	Stratum
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<i>Baccharis pilularis</i>	NL			Shrub
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Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 0%

SOILS: sandy loam; no redoximorphic features observed;
chroma 10YR 2/1

HYDROLOGY: no soil saturation observed

DETERMINATION: Upland

PLOT SURVEY CH-1A

Location: Chathouse Mitigation Site

Date: March 31, 2003

Field Team: CH2M Hill Biologists - Russell Huddleston,
Aviva Rossi

VEGETATION:

Dominant Plant Species	Indicator	Status	And	Stratum
<i>Juncus patens</i>	FAC			Herbaceous
<i>Carex sp.*</i>	(FAC)			Herbaceous

*The species could not be identified at the time of the survey because it was too early in the growing season

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 100%

SOILS: sandy clay loam; redoximorphic features observed below 12 inches of soil surface; chroma 10YR 3/1

HYDROLOGY: soil saturation observed in upper 12 inches; free water observed within 12 inches of the surface

DETERMINATION: Wetland

PLOT SURVEY CH-1B

Location: Charthouse Mitigation Site

Date: March 31, 2003

Field Team: CH2M Hill Biologists - Russell Huddleston,
Aviva Rossi

VEGETATION:

Dominant Plant Species Indicator Status And Stratum

Holcus lanatus FAC Herbaceous

Baccharis pilularis NL Shrub

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 50%

SOILS: sandy clay loam; redoximorphic features observed
below 12 inches of soil surface; chroma 2.5Y 2.5/1

HYDROLOGY: soil saturation observed in upper 12 inches

DETERMINATION: Degraded and disturbed wetland

PLOT SURVEY CH-1C

Location: Chathouse Mitigation Site

Date: March 31, 2003

Field Team: CH2M Hill Biologists - Russell Huddleston,
Aviva Rossi

VEGETATION:

Dominant Plant Species	Indicator	Status And Stratum
<i>Holcus lanatus</i>	FAC	Herbaceous
<i>Baccharis pilularis</i>	NL	Shrub
<i>Rubus vitifolius</i>	FAC+	Vine

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 67%

SOILS: sandy clay; no redoximorphic features observed;
chroma 2.5Y 2.5/1

HYDROLOGY: no soil saturation observed

DETERMINATION: Degraded and disturbed wetland

PLOT SURVEY CH-1D

Location: Chathouse Mitigation Site

Date: March 31, 2003

Field Team: CH2M Hill Biologists - Russell Huddleston,
Aviva Rossi

VEGETATION:

Dominant Plant Species	Indicator	Status And Stratum
<i>Holcus lanatus</i>	FAC	Herbaceous
<i>Picris echioides</i>	FAC*	Herbaceous
<i>Baccharis pilularis</i>	NL	Shrub
<i>Rubus vitifolius</i>	FAC+	Vine

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 75%

SOILS: sandy clay; no redoximorphic features observed;
chroma 2.5Y 2.5/1

HYDROLOGY: no soil saturation observed

DETERMINATION: Degraded and disturbed wetland

PLOT SURVEY CH-2A

Location: Chathouse Mitigation Site

Date: March 31, 2003

Field Team: CH2M Hill Biologists - Russell Huddleston,
Aviva Rossi

VEGETATION:

Dominant Plant Species	Indicator Status	And Stratum
<i>Holcus lanatus</i>	FAC	Herbaceous
<i>Rubus vitifolius</i>	FAC+	Vine

Percent Of Dom Species That Are OBL, FACW, And/Or FAC =
100%

SOILS: sandy clay; no redoximorphic features observed;
chroma 2.5Y 2.5/1

HYDROLOGY: soil saturation observed in upper 12 inches;
free water observed within 12 inches of the surface

DETERMINATION: Wetland

PLOT SURVEY CH-2B

Location: Chathouse Mitigation Site

Date: March 31, 2003

Field Team: CH2M Hill Biologists - Russell Huddleston,
Aviva Rossi

VEGETATION:

Dominant Plant Species Indicator Status And Stratum

<i>Potentilla anserina</i>	OBL	Herbaceous
<i>Equisetum arvense</i>	FAC	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/Or FAC =
100%

SOILS: sandy clay; no redoximorphic features observed;
chroma 2.5Y 2.5/1

HYDROLOGY: 2 inches of surface water observed

DETERMINATION: Wetland

PLOT SURVEY CH-3A

Location: Charthouse Mitigation Site

Date: March 31, 2003

Field Team: CH2M Hill Biologists - Russell Huddleston,
Aviva Rossi

VEGETATION:

Dominant Plant Species	Indicator Status	And Stratum
<i>Holcus lanatus</i>	FAC	Herbaceous
<i>Plantago lanceolata</i>	FAC-	Herbaceous
<i>Phalaris aquatica</i>	FAC	Herbaceous
<i>Carex</i> sp.	(FAC)	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 75%

SOILS: sandy clay; redoximorphic features observed within
12 inches of soil surface; chroma 2.5Y 2.5/1

HYDROLOGY: no soil saturation observed

DETERMINATION: Degraded and disturbed wetland

PLOT SURVEY CH-3B

Location: Chathouse Mitigation Site

Date: March 31, 2003

Field Team: CH2M Hill Biologists - Russell Huddleston,
Aviva Rossi

VEGETATION:

Dominant Plant Species	Indicator Status And Stratum
------------------------	------------------------------

<i>Phalaris aquatica</i>	FAC	Herbaceous
<i>Baccharis pilularis</i>	NL	Shrub

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 50%

SOILS: sandy clay; no redoximorphic features observed;
chroma 2.5Y 2.5/1

HYDROLOGY: no soil saturation observed

DETERMINATION: Degraded and disturbed wetland

PLOT SURVEY CH-CCC3

Location: Chathouse Mitigation Site

Date: March 31, 2003

Field Team: CH2M Hill Biologists - Russell Huddleston,
Aviva Rossi

VEGETATION:

Dominant Plant Species	Indicator Status And Stratum	
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<i>Holcus lanatus</i>	FAC	Herbaceous
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<i>Phalaris aquatica</i>	FAC	Herbaceous
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<i>Plantago lanceolata</i>	FAC-	Herbaceous
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Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 67%

SOILS: sandy clay loam; no redoximorphic features observed;
chroma 10YR 2/1

HYDROLOGY: no soil saturation observed

DETERMINATION: Degraded and disturbed wetland

PLOT SURVEY CH-CCC4

Location: Charthouse Mitigation Site

Date: March 31, 2003

Field Team: CH2M Hill Biologists - Russell Huddleston,
Aviva Rossi

VEGETATION:

Dominant Plant Species	Indicator Status	And Stratum
<i>Plantago lanceolata</i>	FAC-	Herbaceous
<i>Lotus comiculatus</i>	FAC	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 50%

SOILS: sandy clay loam; no redoximorphic features observed;
chroma 10YR 2/1

HYDROLOGY: no soil saturation observed

DETERMINATION: Degraded and disturbed wetland

PLOT SURVEY T-1A

Location: Chathouse Mitigation Site

Date: March 11, 2004

Field Team: Caltrans Biologists - Kursten Sheridan, John Yeakel, and Richard Vonarb,

VEGETATION:

Dominant Plant Species	Indicator Status And Stratum
------------------------	------------------------------

<i>Baccharis pilularis</i>	NL Shrub
<i>Phalaris aquatica</i>	FAC Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 50%

SOILS: sandy clay loam; feint redoximorphic features observed; chroma 2.5Y 2.5/1

HYDROLOGY: soil saturation observed in upper 12 inches

DETERMINATION: Disturbed and degraded wetland

PLOT SURVEY T-1B

Location: Charthouse Mitigation Site

Date: March 11, 2004

Field Team: Caltrans Biologists - Kursten Sheridan, John Yeakel, and Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status And Stratum	
<i>Phalaris aquatica</i>	FAC	Herbaceous
<i>Centaureum muehlenbergii</i>	FAC	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 100%

SOILS: sandy clay loam; feint redoximorphic features observed; chroma 2.5Y 2.5/1

HYDROLOGY: soil saturation observed in upper 12 inches; free water observed within 12 inches of the soil surface

DETERMINATION: Disturbed and degraded wetland

PLOT SURVEY T-2A

Location: Chathouse Mitigation Site

Date: March 11, 2004

Field Team: Caltrans Biologists - Kursten Sheridan, John Yeakel, and Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status	And Stratum
------------------------	------------------	-------------

<i>Holcus lanatus</i>	FAC	Herbaceous
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<i>Rubus vitifolius</i>	FAC+	Vine
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Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 100%

SOILS: sandy clay loam; feint redoximorphic features observed; chroma 2.5Y 2.5/1

HYDROLOGY: soil saturation observed in upper 12 inches

DETERMINATION: Disturbed and degraded wetland

PLOT SURVEY T-2B

Location: Chathouse Mitigation Site

Date: March 11, 2004

Field Team: Caltrans Biologists - Kursten Sheridan, John Yeakel, and Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status	And Stratum
<i>Baccharis pilularis</i>	NL	Shrub
<i>Rhamnus californica</i>	NL	Shrub
<i>Holcus lanatus</i>	FAC	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 33%

SOILS: sandy clay loam; no redoximorphic features observed;
chroma 2.5Y 2.5/1

HYDROLOGY: no soil saturation observed

DETERMINATION: Upland

PLOT SURVEY T-3A

Location: Chathouse Mitigation Site

Date: March 11, 2004

Field Team: Caltrans Biologists - Kursten Sheridan, John Yeakel, and Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status And Stratum	
<i>Holcus lanatus</i>	FAC	Herbaceous
<i>Juncus patens</i>	FAC	Herbaceous
<i>Cortaderia jubata</i>	NL	Shrub

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 67%

SOILS: clay; abundant redoximorphic features observed;
chroma gley 3/10Y

HYDROLOGY: soil saturation and observed in upper 12 inches;
free water observed within upper 12 inches

DETERMINATION: Disturbed and degraded wetland

PLOT SURVEY T-3B

Location: Chathouse Mitigation Site

Date: March 11, 2004

Field Team: Caltrans Biologists - Kursten Sheridan, John Yeakel, and Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator	Status	And Stratum
<i>Achillea millefolium</i>	FACU		Herbaceous
Annual grasses*	NI		Herbaceous

*Annual grasses could not be identified at the time of the survey because it was too early in the growing season

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 0%

SOILS: clay loam; no redoximorphic features observed; chroma 2.5Y 2.5/1 (clay layer found 16" below soil surface)

HYDROLOGY: no soil saturation observed

DETERMINATION: Upland

PLOT SURVEY T-4A

Location: Charthouse Mitigation Site

Date: February 15, 2001

Field Team: Caltrans Biologists - Richard Vonarb

VEGETATION:

Dominant Plant Species Indicator Status And Stratum

Oenanthe sarmentosa OBL Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/Or FAC =
100%

SOILS: loam; no redoximorphic features observed; chroma
10YR 2/1

HYDROLOGY: ground surface inundated with 1" of water

DETERMINATION: Wetland

PLOT SURVEY T-4B

Location: Chathouse Mitigation Site

Date: February 15, 2001

Field Team: Caltrans Biologists - Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status And Stratum
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<i>Rubus ursinus</i>	FACW Vine
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<i>Senecio mikanoides</i>	NL Vine
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Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 50%

SOILS: loam; no redoximorphic features observed; chroma 10YR 3/1

HYDROLOGY: no soil saturation observed

DETERMINATION: Disturbed and degraded wetland

PLOT SURVEY T-5A

Location: Chathouse Mitigation Site

Date: February 15, 2001

Field Team: Caltrans Biologists - Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status	And Stratum
Annual grasses*	NI	Herbaceous

*Annual grasses could not be identified at the time of the survey because it was too early in the growing season

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 0%

SOILS: fill and loam (decomposed granite small gravel-sized pieces found in fill); no redoximorphic features observed; chroma 10YR 2/1 to 2/2 (variable due to fill)

HYDROLOGY: no soil saturation observed

DETERMINATION: Upland

PLOT SURVEY T-5B

Location: Charthouse Mitigation Site

Date: February 15, 2001

Field Team: Caltrans Biologists - Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status And Stratum	
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<i>Conium maculatum</i>	FAC	Herbaceous
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<i>Scirpus macrocarpus</i>	OBL	Herbaceous
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Percent Of Dom Species That Are OBL, FACW, And/Or FAC =
100%

SOILS: loam; no redoximorphic features observed; chroma
10YR 3/1

HYDROLOGY: ground surface inundated with 0.1 inch of water

DETERMINATION: Wetland

PLOT SURVEY T-6A

Location: Chathouse Mitigation Site

Date: February 15, 2001

Field Team: Caltrans Biologists - Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status	And Stratum
<i>Conium maculatum</i>	FAC	Herbaceous
<i>Juncus patens</i>	FAC	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 100%

SOILS: clay loam; no redoximorphic features observed;
chroma 10YR 2/1

HYDROLOGY: soil saturation observed

DETERMINATION: Wetland

PLOT SURVEY T-6B

Location: Charthouse Mitigation Site

Date: February 15, 2001

Field Team: Caltrans Biologists - Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status And Stratum	
<i>Conium maculatum</i>	FAC	Herbaceous
<i>Juncus patens</i>	FAC	Herbaceous
Annual grasses*	NI	Herbaceous

*Annual grasses could not be identified at the time of the survey because it was too early in the growing season

Percent Of Dom Species That Are OBL, FACW, And/Or FAC = 67%

SOILS: clay loam; no redoximorphic features observed;
chroma 10YR 2/1

HYDROLOGY: soil saturation observed, but probably due to recent rains; appears soil saturation occurs less than 15 consecutive days during the growing season at this site

DETERMINATION: Disturbed and degraded wetland

PLOT SURVEY T-7A

Location: Charthouse Trail Access

Date: October 7, 2004

Field Team: Kathleen Jenkins and Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status	Stratum
<i>Holcus lanatus</i>	FAC	Herbaceous
<i>Rubus ursinus</i>	FACW	Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: silty clay-like; 10YR 3/1; faint mottles; anaerobic soil conditions > 15 consecutive days during the growing season

HYDROLOGY: soil saturation and inundation observed in Spring of 2004

ANALYSIS: This site has been disturbed by a county trail used for recreational purposes. The trail area has been compacted due to hikers but is now the normal condition.

DETERMINATION: Disturbed wetland

PLOT SURVEY T-7B

Location: Charthouse Trail Access

Date: October 7, 2004

Field Team: Kathleen Jenkins and Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status	Stratum
<i>Holcus lanatus</i>	FAC	Herbaceous
<i>Juncus species</i>	FACW	Herbaceous
<i>Rubus ursinus</i>	FACW	Vine

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 100%

SOILS: silty clay-like; 10YR 3/1; variable, faint mottles; some fill placement in trail area; anaerobic soil conditions > 15 consecutive days during the growing season

HYDROLOGY: soil saturation and inundation observed in Spring of 2004

ANALYSIS: This site has been disturbed by a county trail used for recreational purposes. The trail area has been compacted due to hikers but is now the normal condition.

DETERMINATION: Disturbed wetland

PLOT SURVEY T-7C

Location: Charthouse Trail Access

Date: October 7, 2004

Field Team: Kathleen Jenkins and Richard Vonarb

VEGETATION:

Dominant Plant Species	Indicator Status	Stratum
<i>Holcus lanatus</i>	FAC	Herbaceous
<i>Daucus carota</i>	NL	Herbaceous

Percent Of Dom Species That Are OBL, FACW, And/or FAC = 50%

SOILS: silty clay-like; 10YR 3/1; faint mottles; gopher burrowing creating bare ground areas; anaerobic soil conditions > 15 consecutive days during the growing season

HYDROLOGY: soil saturation observed in Spring of 2004

ANALYSIS: This site has been disturbed by a county trail used for recreational purposes. The trail area has been compacted due to hikers but is now the normal condition.

DETERMINATION: Disturbed wetland

Appendix 8 Photographs: Figures 1-27



Figure 1: North Portal Drainage Area/Shamrock Ranch Panorama Photo

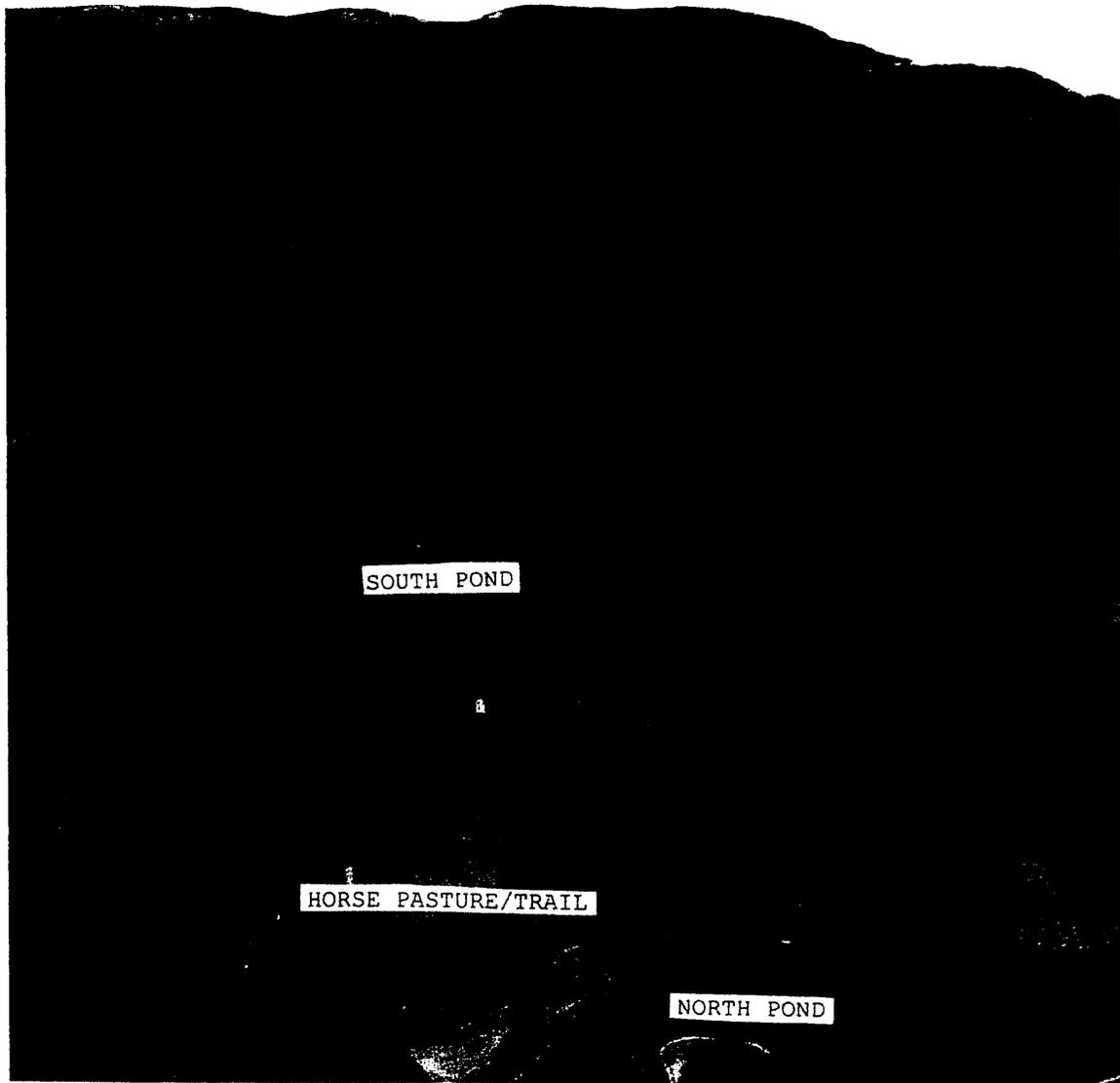


Figure 2: North Portal Drainage Area/Shamrock Ranch Panorama Photo 2 – Horse Pasture/Trail



Figure 3: North Portal Drainage Area/Shamrock Ranch North Pond



Figure 4: North Portal Drainage Area/Shamrock Ranch North Pond



Figure 5: North Portal Drainage Area/Shamrock Ranch Wetland Adjacent to North Pond
Dominated by Poison Hemlock



Figure 6: North Portal Drainage Area/Shamrock Ranch Wetland Adjacent to North Pond
Dominated by Poison Hemlock

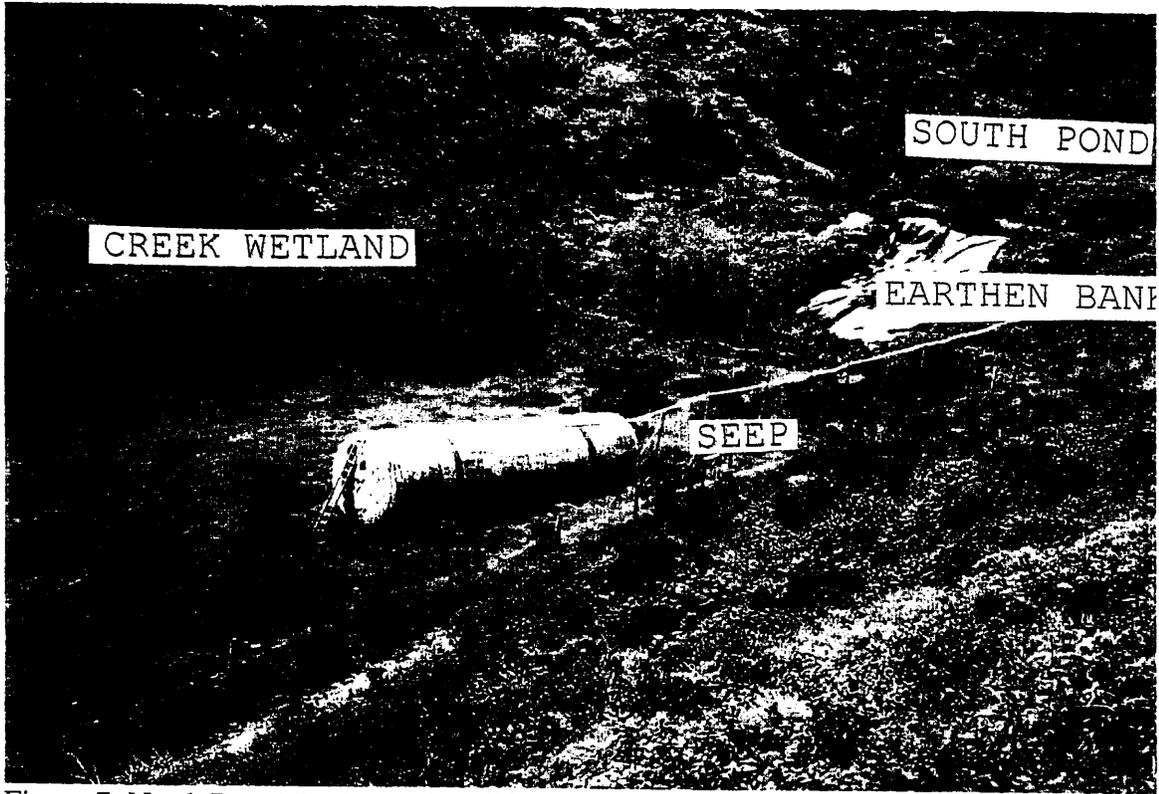


Figure 7: North Portal Drainage Area/Shamrock Ranch Horse Pasture Wetland



Figure 8: North Portal Drainage Area/Shamrock Ranch Horse Pasture/Trail



Figure 9: North Portal Drainage Area/Shamrock Ranch North Seasonal Depression



Figure 10: North Portal Drainage Area/Shamrock Ranch Northeast Hillside Wetland



Figure 11: South Portal Drainage Panorama Photo

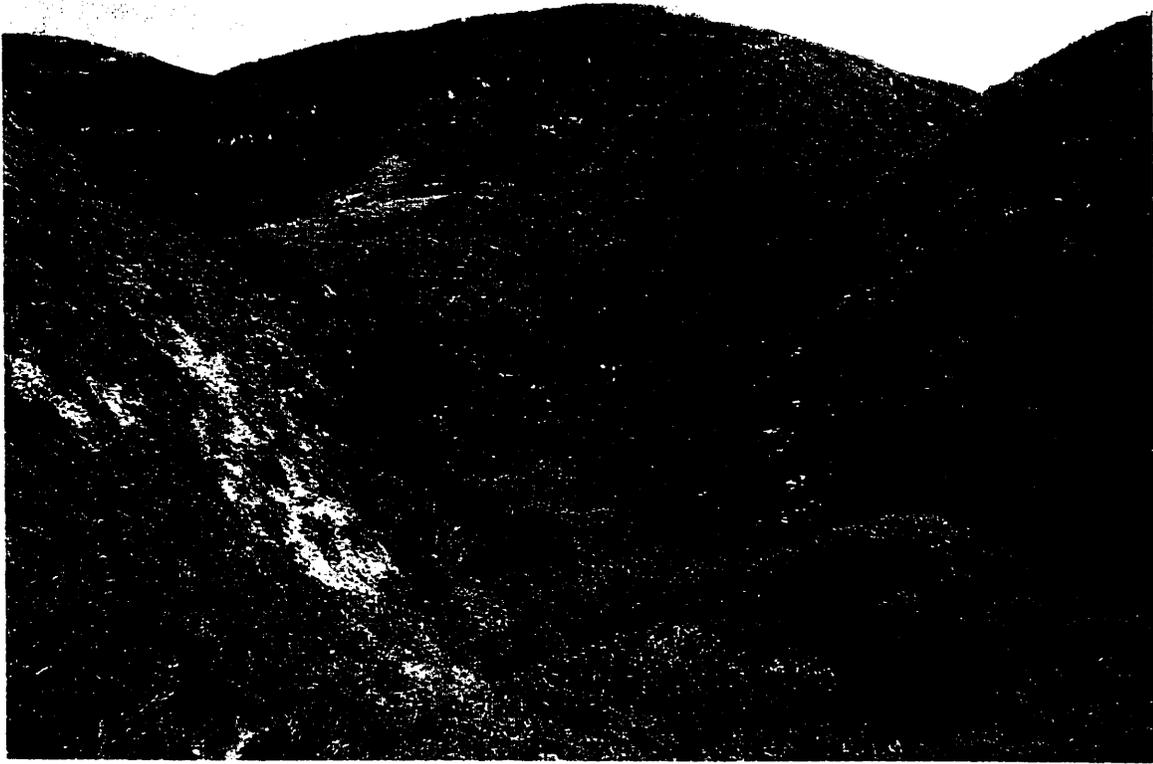


Figure 12: South Portal Drainage Uphill Drainage



Figure 13: South Portal Drainage Uphill Drainage



Figure 14: South Portal Drainage Seasonal Ponding Depression

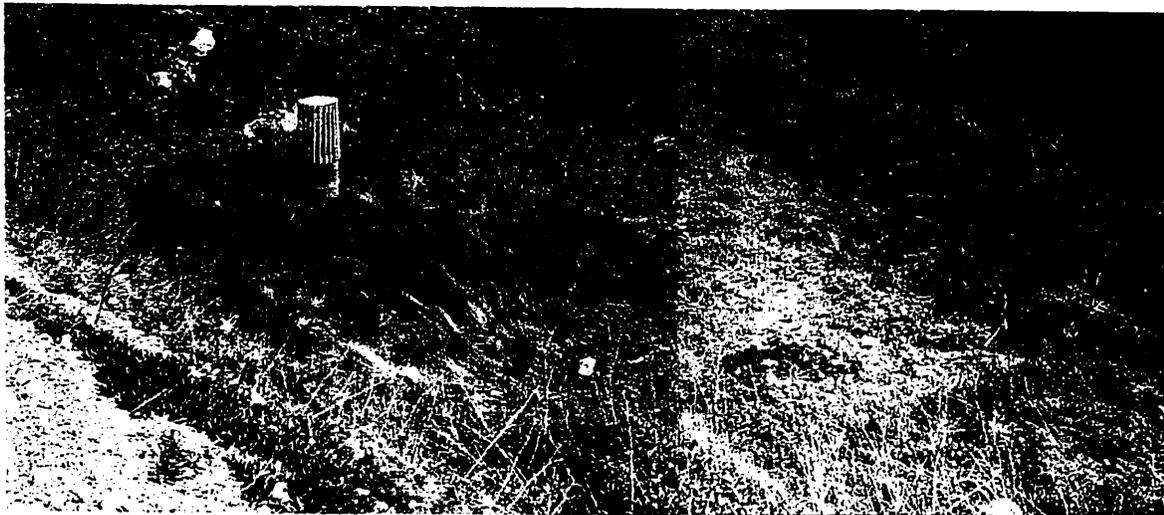


Figure 15: South Portal Drainage Seasonal Ponding Depression

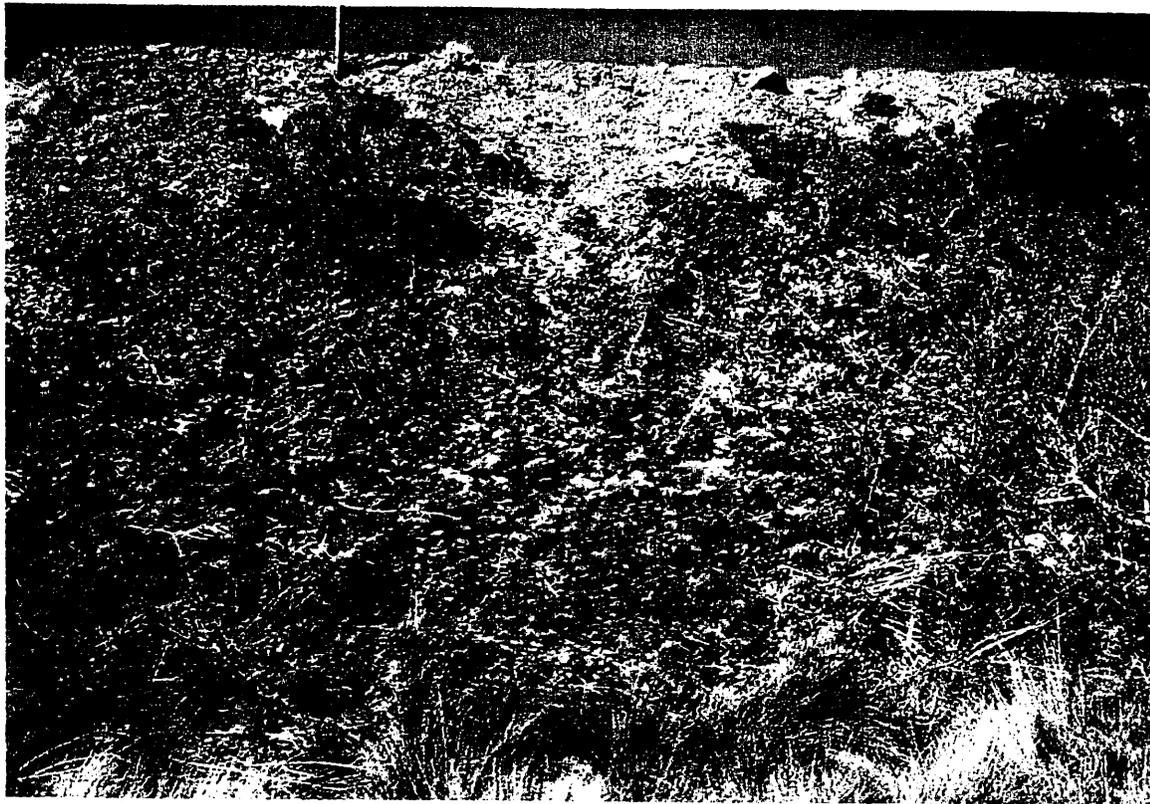


Figure 16: South Portal Drainage Seasonal Ponding Depression



Figure 17: South Portal Drainage Seasonal Ponding Depression

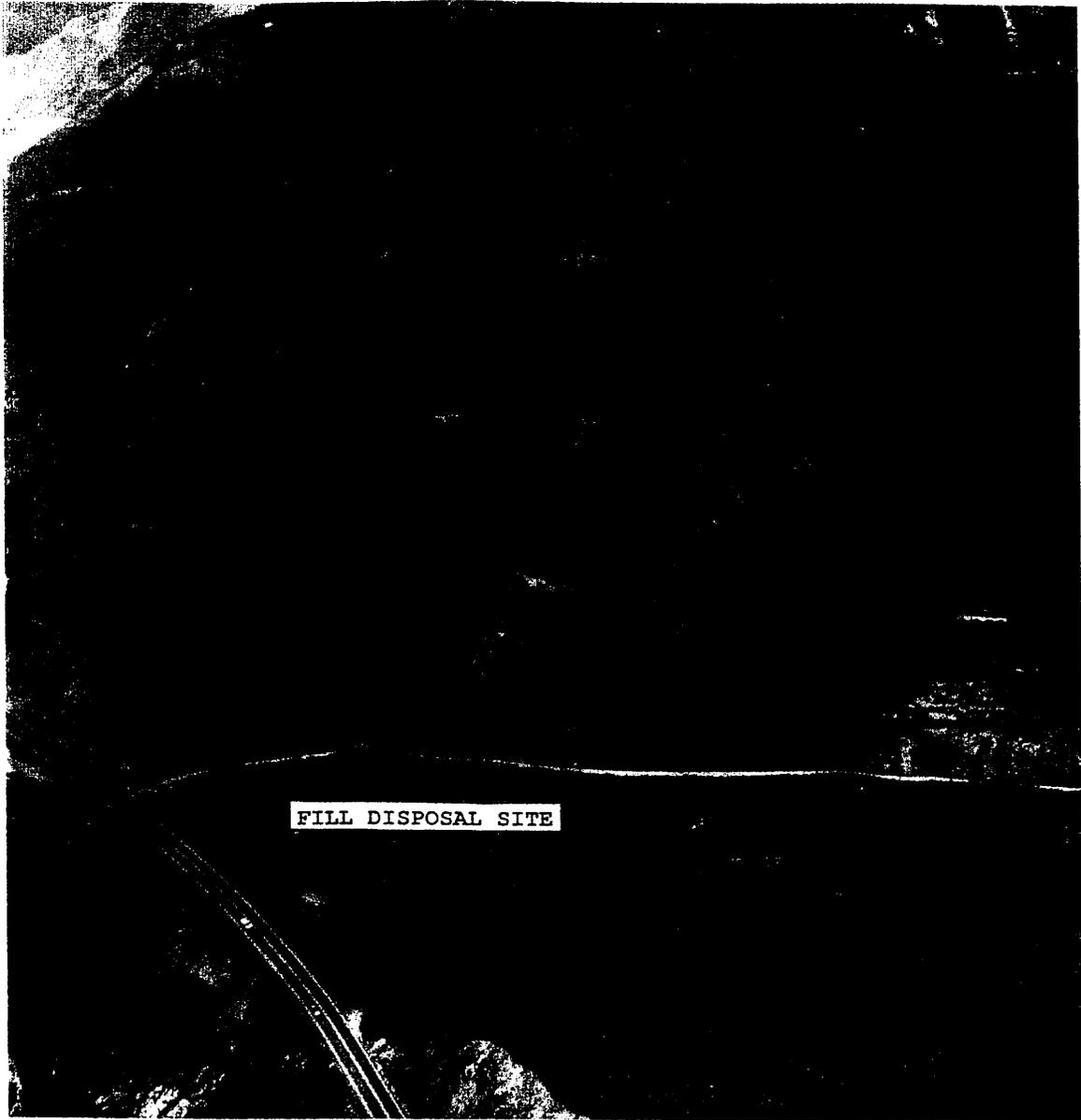


Figure 18: Fill Disposal Site Drainage Area Panorama Photo



Figure 19: Fill Disposal Site Drainage Area Uphill Seasonal Ponding Depression



Figure 20: Fill Disposal Site Drainage Area Half Moon Bay Colma Road Trail



Figure 21: Fill Disposal Site Drainage Area Half Moon Bay Colma Road Trail



Figure 22: Fill Disposal Site Drainage Area Half Moon Bay Colma Road Trail



Figure 23: Fill Disposal Site Drainage Area Half Moon Bay Colma Road Trail

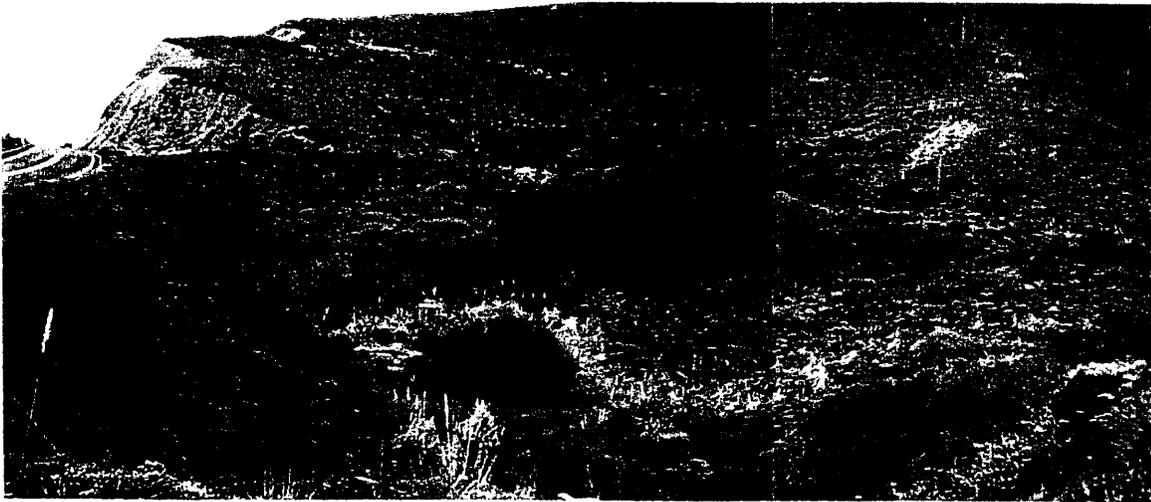


Figure 24: Fill Disposal Site Drainage Area Downhill Seasonal Ponding Depression

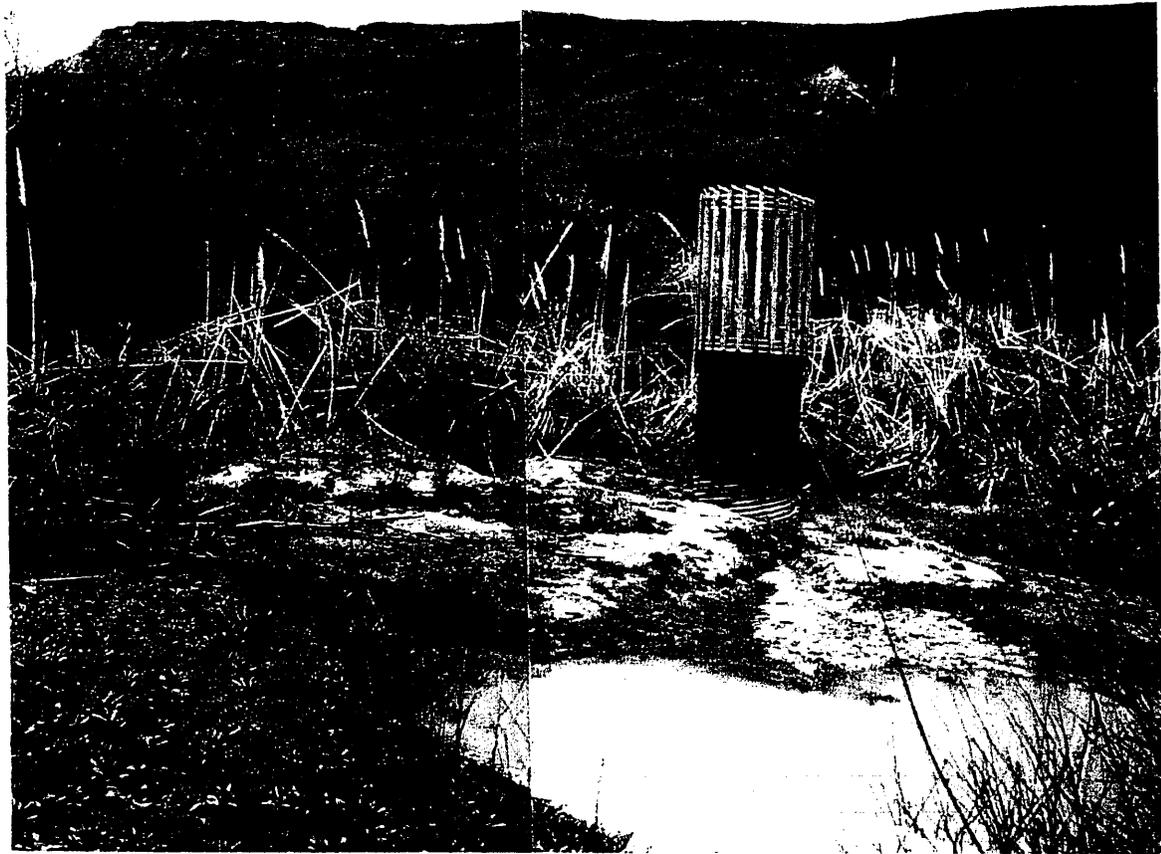


Figure 25: Fill Disposal Site Drainage Area Downhill Seasonal Ponding Depression



Figure 26: Fill Disposal Site Drainage Area Downhill Seasonal Ponding Depression

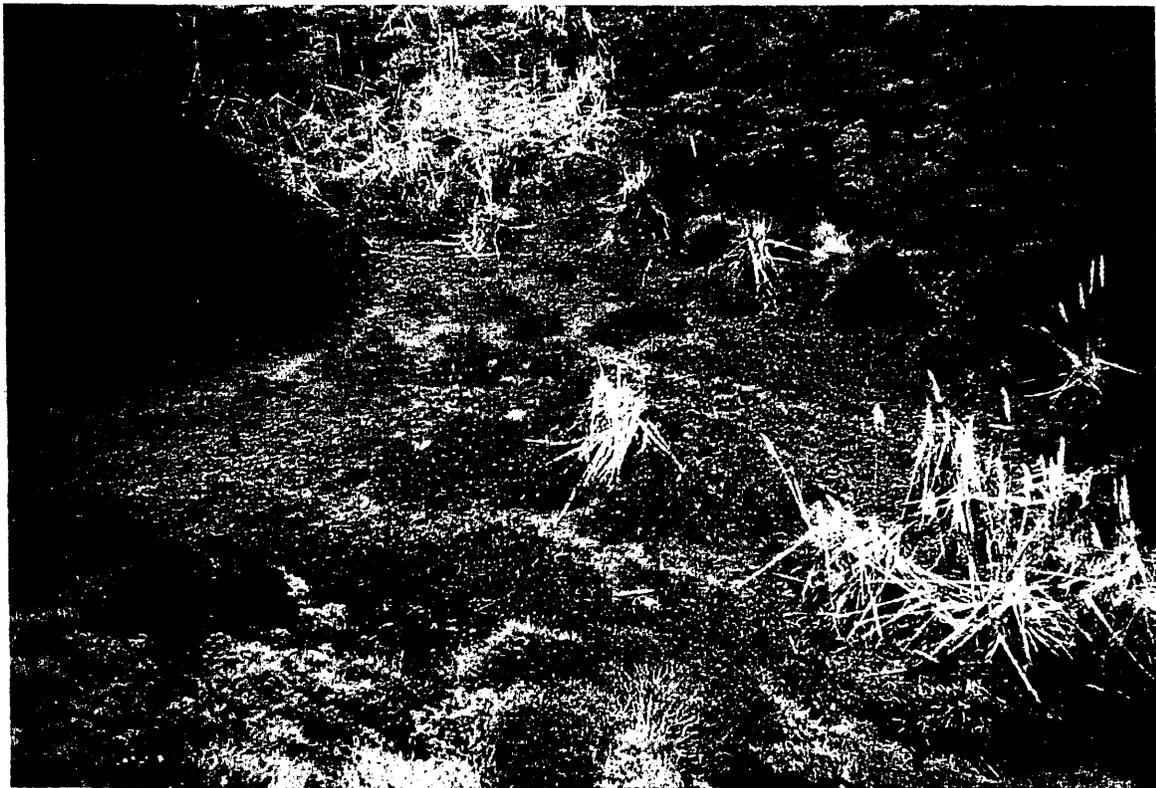


Figure 27: Fill Disposal Site Drainage Area Downhill Seasonal Ponding Depression