La Honda Creek Open Space Preserve Master Plan

Draft Initial Study/Mitigated Negative Declaration

PREPARED FOR:
Midpeninsula Regional Open Space District
330 Distel Circle
Los Altos, CA 94022

July 2, 2012

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ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
Annexation EIR	Coastal Annexation EIR
ARB	Air Resources Board
ASTs	above-ground storage tanks
ATCM	airborne toxics control measures
BAAQMD	Bay Area Air Quality Management District
BMPs	Best Management Practices
CAL FIRE	California Department of Forestry and Fire Protection
CAL FIRE/County Fire	CAL FIRE/County of San Mateo Fire Department
CalEEMod	California Emissions Estimator Model, Version 2001.1.1
Caltrans	California Department of Transportation's
CAPs	criteria air pollutants
CBC	California Building Code
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CMU's	Conservation Management Units
CO_2	carbon dioxide
CO_2e	carbon dioxide-equivalent
CPPA	Coastside Protection Program Area
CRHR	California Register of Historical Resources
CRLF	California red-legged frog
CWA	Clean Water Act
DFG	California Department of Fish and Game
District	Midpeninsula Regional Open Space District
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
ESLs	environmental screening levels
ESU	*Ecological Significant Unit*
FMMP	Farmland Mapping and Monitoring Program

GHG	greenhouse gas
GWP	global warming potential
HRA	human health risk assessment
IPCC	Intergovernmental Panel on Climate Change
IS	initial study
IS/Proposed MND	Initial Study/Proposed Mitigated Negative Declaration
lb/day	pounds per day
LCP	Local Coastal Program
LOS	level of service
LWD	large woody debris
MOU	Memorandum of Understanding
mph	miles per hour
MROSD	Midpeninsula Regional Open Space District
MT/year	metric tons per year
NABP	Native American Burial Plan
NMFS	National Marine Fisheries Service
NOA	Naturally occurring asbestos
NO_X	oxides of nitrogen
NRHP	National Register of Historic Places
PM_{10}	respirable particulate matter with an aerodynamic diameter of 10 micrometers or less
$PM_{2.5}$	fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less
Preserve	La Honda Creek Open Space Preserve
PTSF	Percent Time Spent Following
Regional Board	Regional Water Quality Control Board
RI	Remedial Investigation Report
RM	Resource Management
RM-CZ/CD	Resource Management – Coastal Z
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board

SB	Senate Bill
SFBAAB	San Francisco Bay Area Air Basin
SFGS	San Francisco garter snake
SOD	Sudden Oak Death
SR	State Routes
TPZ	Timberland Preserve Zone
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VMT	vehicle miles traveled
WA	Williamson Act

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1 INTRODUCTION

1.1 INTRODUCTION AND REGULATORY GUIDANCE

This Initial Study/Proposed Mitigated Negative Declaration (IS/Proposed MND) has been prepared by Midpeninsula Regional Open Space District (MROSD) to evaluate the potential environmental effects resulting from implementation of the proposed La Honda Creek Open Space Preserve Master Plan. Ascent Environmental, Inc. has been retained by MROSD to prepare this analysis on their behalf. The 5,759-acre Open Space Preserve is located in the northern Santa Cruz Mountains, in unincorporated San Mateo County, near the communities of Woodside and La Honda.

This document has been prepared in accordance with the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000 et seq.) and the State CEQA Guidelines (California Code of Regulations Section 15000 et seq.). An initial study (IS) is prepared by a lead agency to determine if a project may have a significant effect on the environment (State CEQA Guidelines Section 15063[a]), and the appropriate environmental document in which to conduct an environmental analysis. In accordance with State CEQA Guidelines Section 15070, a "public agency shall prepare…a proposed negative declaration or mitigated negative declaration…when: (a) The Initial Study shows that there is no substantial evidence…that the project may have a significant impact on the environment, or (b) The Initial Study identifies potentially significant effects but revisions to the project plans or proposal are agreed to by the applicant and such revisions would reduce potentially significant effects to a less-than-significant level." In this circumstance, the lead agency prepares a written statement describing its reasons for concluding that the proposed project would not have a significant effect on the environment and, therefore, does not require the preparation of an Environmental Impact Report (EIR). By contrast, an EIR is required when the project may have a significant environmental impact that cannot clearly be reduced to a less-than-significant effect by adoption of mitigation or by revisions in the project design.

1.2 WHY THIS DOCUMENT?

As described in the environmental checklist (Chapter 3), the proposed project would not result in significant environmental impacts. Therefore, an IS/Proposed MND is the appropriate document for compliance with the requirements of CEQA. This IS/Proposed MND conforms to these requirements and to the content requirements of State CEQA Guidelines Section 15071.

Under CEQA, the lead agency is the public agency with primary responsibility over approval of the proposed project. MROSD is the lead agency for the proposed La Honda Creek Open Space Preserve Master Plan. MROSD has directed the preparation of an analysis that complies with CEQA. The purpose of this document is to present to decision-makers and the public the environmental consequences of implementing the proposed project. This disclosure document is being made available to the public for review and comment. The IS/Proposed MND is available for a 30-day public review period from July 2 to August 1, 2012.

Supporting documentation referenced in this document is available for review at the MROSD office:

Midpeninsula Regional Open Space District
330 Distel Circle
Los Altos, CA 94022
Phone: (650) 691-1200

Comments should be addressed to:

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If you have questions regarding the IS/Proposed MND, please call Lisa Bankosh at (650) 691-1200. If you wish to send written comments (including via e-mail), they must be postmarked by August 1, 2012.

After comments are received from the public and reviewing agencies, MROSD may (1) adopt the MND and approve the proposed project; (2) undertake additional environmental studies; or (3) abandon the project. If the project is approved and funded, MROSD may proceed with implementation of the Master Plan.

1.3 SUMMARY OF FINDINGS

Chapter 3 of this document contains the analysis and discussion of potential environmental impacts of the proposed project.

Based on the issues evaluated in that chapter, it was determined that the proposed project would have either no impact or a less-than-significant impact related to all but two of the issue areas identified in the Environmental Checklist, included as Appendix G of the State CEQA Guidelines. These include the following issue areas:

- aesthetics,
- agricultural resources,
- cultural resources,
- geology and soils,
- greenhouse gas emissions
- hazards and hazardous materials,
- hydrology and water quality,
- land use and planning,
- mineral resources,
- noise,
- population and housing,
- public services,
- recreation,
- transportation/traffic,
- utilities and service systems, and
- mandatory findings of significance

Potentially significant impacts were identified in the biological resources and air quality sections; however, mitigation measures included in the IS/Proposed MND would reduce impacts to a less-than-significant level.

1.4 ENVIRONMENTAL PERMITS

In addition to MROSD approval, the project may require a Section 404 Permit from the US Army Corps of Engineers, consultation with the US Fish and Wildlife Service in accordance with the federal Endangered Species Act, Compliance with California Department of Fish and Game Code Sections 1602 and 2080.1, Section 401 certification from the Regional Water Quality Control Board, notification of demolitions and possible approval of an asbestos plan by the Bay Area Air Quality Management District, and issuance of planning entitlement, as well as grading and building permits by San Mateo County.

1.5 DOCUMENT ORGANIZATION

This IS/Proposed MND is organized as follows:

Chapter 1: Introduction. This chapter provides an introduction to the environmental review process. It describes the purpose and organization of this document as well as presents a summary of findings.

Chapter 2: Project Description and Background. This chapter describes the purpose of and need for the proposed project, identifies project objectives, and provides a detailed description of the proposed project.

Chapter 3: Environmental Checklist. This chapter presents an analysis of a range of environmental issues identified in the CEQA Environmental Checklist and determines if each of a range of impacts would result in no impact, a less-than-significant impact, a less-than-significant impact with mitigation incorporated, or a potentially significant impact. If any impacts were determined to be potentially significant, an EIR would be required. For this project, however, none of the impacts were determined to be significant after implementation of mitigation measures.

Chapter 4: References. This chapter lists the references used in preparation of this IS/Proposed MND.

Chapter 5: List of Preparers. This chapter identifies report preparers.

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2 PROJECT DESCRIPTION AND BACKGROUND

2.1 BACKGROUND

Midpeninsula Regional Open Space District (District) was established to acquire and permanently protect a regional greenbelt of open space lands, preserve and restore wildlife habitat, viewsheds, and fragile ecosystems, and provide opportunities for low-intensity recreation and environmental education.

La Honda Creek Open Space Preserve (Preserve) was established in 1984 with the purchase of a 255-acre property. The District has since expanded the Preserve to its current size of 5,759 acres with the acquisition of 20 additional properties. In 2003, with the adoption of the Coastside Service Plan, the District's boundaries were extended to include the San Mateo County coast. The 3,681-acre Driscoll Ranch property was the first coastside property to be acquired by the District, doubling the size of the Preserve in 2006. The Preserve protects unique and diverse vegetation communities and wildlife habitat, protects watersheds and viewsheds, and offers local residents and visitors opportunities for low-intensity recreation and environmental education free of charge. The Preserve also offers numerous opportunities to implement large-scale habitat enhancement projects, rangeland management practices, and public access improvements.

The proposed Master Plan represents the first, long-term, comprehensive planning effort for the Preserve. The proposed Master Plan sets forth a vision for preserving, managing, and enjoying the Preserve that is consistent with the District's mission and directive. This vision establishes stewardship of natural resources as the highest priority, followed by ecological agriculture and ranching, and finally, improved trail connectivity, access, and interpretation. This long-term vision is intended to: guide Preserve use and management decisions; catalog and prioritize future site improvement needs; involve the public and raise awareness of the Preserve as a valuable resource; and uncover and address issues related to land management and use.

The master planning process began in 2004. To facilitate effective and informed public input, District staff began collecting and organizing a wide variety of resource data for the Preserve one year prior to initiating the public input process. Comprehensive resource inventories were conducted to fully understand existing Preserve conditions. As part of this work, staff collected and mapped information on vegetation communities, rare plants, wildlife habitat, geology, and hydrology. Resource conditions assessments were also conducted during the data gathering phase, including a comprehensive assessment of the existing roads and trails to identify drainage and erosion issues, and a preliminary historical significance assessment of key structures. Throughout the master planning process, the District engaged the public via three newsletters, seven public workshops, open houses, hearings, nine stakeholder phone interviews, three focus group meetings, and two public land tours, as well as three project update mailings. Please refer to the La Honda Creek Open Space Preserve Master Plan (pp. 10-11) for a detailed discussion of the five-year public outreach process.

Using existing conditions data and guided by public input, District staff prepared a Master Plan. In 2009, District staff obtained Board tentative approval for the Master Plan that includes a public access option allowing for multiple use (hiking, horses, bicycles) on the future Bay Area Ridge Trail alignment, a new loop trail off Sears Ranch Road, and the connection between Sears Ranch Road and the future Ridge Trail (of two options under Board consideration at the time, this option allowed for expanded multiple use). Prior to seeking a final approval of the Master Plan from the District Board of Directors, the Board must first make a determination regarding the environmental impacts of the proposed Master Plan. This Initial Study/Proposed Mitigated Negative Declaration was prepared by the District's consultants and evaluates, consistent with the California Environmental Quality Act (CEQA), the potential impacts to the environment that would result from implementation of the proposed Master Plan.

2.2 PRIOR CEQA DOCUMENTS

When District boundaries were expanded to include the Coastside Protection Area (also referred to as the "coastal annexation") in 2003, an Environmental Impact Report (EIR) was prepared to analyze the environmental impacts of providing new District facilities on the coast. The Driscoll Ranch portion of the Preserve (Southern La Honda Creek Area) is part of the Coastside Protection Area, while the northern portion of the Preserve is not. For the Driscoll Ranch portion of the Preserve, all mitigation measures and analysis contained in the Coastal Annexation EIR (Annexation EIR) apply to the Preserve. In order to ensure that mitigation measures are appropriately implemented as part of the proposed Master Plan, all applicable measures are included in the Master Plan as Environmental Protection Guidelines (See Appendix A of the Master Plan). Note that several of the Annexation EIR Mitigation Measures that apply only to property purchases or revisions to the Service Plan for the Coastside Area (discussed below) are not included as Environmental Protection Guidelines because the property is already owned by the District and the Service Plan has already been adopted; therefore, these Mitigation Measures do not apply to any aspect of the proposed Master Plan. It should also be noted that the Annexation EIR Mitigation Measures that do apply to the Southern La Honda Creek Area, will be applied and implemented for the entire Preserve (including the Central and Northern La Honda Creek Areas) unless otherwise specified in the Environmental Protection Guidelines.

The proposed Master Plan is consistent with the project analyzed in the Annexation EIR. Therefore, the analysis in the EIR remains adequate for evaluating impacts of the proposed Master Plan. Where appropriate, this IS/MND incorporates by reference the analysis and conclusions of the Annexation EIR. The Annexation Draft EIR is available for review on the District's website at http://www.openspace.org/plans_projects/downloads/cpp/Coastside_Draft_EIR.pdf. The Annexation Final EIR is available at http://www.openspace.org/plans_projects/downloads/cpp/FEIR.pdf. A hard copy of the full EIR is available for review at the District administrative office located at 330 Distel Circle, Los Altos, CA 94022.

2.3 PRIOR PLANNING DOCUMENTS AND STUDIES

A number of existing studies and policy documents apply to the La Honda Creek Open Space Preserve project area and proposed Master Plan. Most of these studies have been formally approved by the District Board of Directors. Key documents and studies are described below.

- **Service Plan for the Coastside Protection Area.** The Service Plan for the Coastside Protection Area (Service Plan) was adopted with the Coastal Annexation EIR in 2003. The Service Plan includes guidelines and implementation actions for the Coastside Protection Area. Many of these guidelines and actions include mitigation measures identified in the Coastal Annexation EIR. The guidelines and implementation actions in the Service Plan apply to the Driscoll Ranch portion of the Preserve. (However, although only the Driscoll Ranch portion of the Preserve is within the Coastside Protection Area, most of the Master Plan's Environmental Protection Guidelines, which are derived from Annexation EIR mitigation measures, are applied to the entire Preserve).
- **Resource Management Policy Document.** The District adopted updated Resource Management Policies in 2011 that define the practices used by the District to protect and manage District lands. These policies apply to all District lands, including the entire Preserve. The Resource Management Policies are available for review on the District's website at http://www.openspace.org/plans_projects/resource_policies.asp.
- **Regulations for Use of Midpeninsula Regional Open Space District Lands.** The District adopted these regulations for use of District lands in 1993, and most recently revised them in 2004. These policies apply to all District lands, including the entire Preserve.
- **Grazing Management Plan for Former McDonald (Weeks) and Dyer Sites, La Honda Creek Open Space Preserve.** As part of the Master Plan process, this report was prepared by Sage Associates in 2007. The

report analyzes the reintroduction of grazing into the upper portion of the Preserve and includes rangeland management recommendations, which are incorporated into the La Honda Creek Preserve Master Plan.

- **Resource Management Plan for the Driscoll Ranch.** Peninsula Open Space Trust, the prior owner of the Driscoll Ranch property, hired a consultant to conduct a resource assessment for the Driscoll Ranch property in 2002, which included a Resource Management Plan. The Resource Management Plan applies strictly to the Driscoll Ranch portion of the Preserve. The plan addresses grazing and vegetation management in detail, including strategies to minimize the potential impacts of grazing on erosion and water quality.

2.4 PROJECT LOCATION

La Honda Creek Open Space Preserve is located in the northern Santa Cruz Mountains within unincorporated San Mateo County, fewer than 5 miles east of the Pacific Ocean (Exhibit 2-1). The Preserve is bounded by Highway 35 (Skyline Boulevard) to the north and by Highway 84 (La Honda Road) to the east and south, and by Bogess Creek to the west. The community of La Honda is located across Highway 84 just southeast of the Preserve. The outer extent of the community of Woodside is located approximately 1.5 miles northeast of the Preserve boundary, on the north side of Highway 35.

2.5 SITE DESCRIPTION

The Preserve comprises former farmsteads, ranches, and former timber land, totaling approximately 5,760 acres, spanning a varied topography of steep hills and ridges, dense woodlands, and rolling grasslands. The northern portion is characterized by redwood and Douglas fir forest, while the southern portion is primarily grassland bisected by lush, riparian-lined drainages. The Preserve offers magnificent views towards the Pacific Coast and colorful wildflower displays during the spring. Preserve highlights include a complex of permanent and seasonal ponds providing high-quality aquatic habitat; several important salmon-bearing creeks; one of the few remaining old-growth redwood trees in the area; the historic and picturesque “Red Barn”; and a long ranching legacy that embodies the coastside lifestyle and values. Exhibit 2-2 provides an aerial photograph of the Preserve, and Exhibit 2-3 is a topographical map of the project site.

The Preserve is comprised of several ranches that can be considered sub-areas, as shown in Exhibit 2-4:

- **Northern La Honda Creek Area (Former Dyer Ranch)** is the original La Honda Creek Open Space Preserve. This area includes the area historically owned by the Dyer family and contains what is known as the “White Barn” (discussed later).
- **Central La Honda Creek Area (Former Weeks Ranch)** has also been called the former McDonald Ranch and “Rocking Martini Ranch.” This area was added to the Preserve in 1990 and contains the Red Barn.
- **Southern La Honda Creek Area (Former Driscoll Ranch)** was acquired in 2005 and comprises the entire southern portion of the Preserve. Driscoll Ranch is subject to a 50-year grazing lease that began in 2002.

Brief descriptions of existing vegetation, streams, watersheds, aquatic habitat, noteworthy structures, and public access are provided below.

2.5.1 ONSITE VEGETATION AND FORESTS

The Preserve includes over 2,400 acres of grassland dominated by non-native annual pasture grasses. Approximately 600 acres of grassland are found in the upper reaches of the Preserve with the remaining 1,800 acres found in the Driscoll Ranch area. The Preserve has a varied history of past land uses that include homesteads, livestock ranching, logging, and recreation. These activities have inevitably disturbed the landscape to varying degrees, resulting in the introduction of non-native and invasive plants. Invasive plants are often

"disturbance-adapted" and are primarily found along roads and at former building sites. However, stands of native grass, as well as rare and protected plant species, are known to exist within non-native grasslands on the Preserve, including California bottlebrush grass (*Elymus californicus*) and Choris's popcorn-flower (*Plagiobothrys chorisianus* var. *chorisianus)*.

Approximately 2,400 acres of forest, including redwood, mixed evergreen, and Douglas fir forests, occur within the Preserve. Redwood and Douglas fir forest have an extensive history of timber production and management, which has left remaining stands of these forest types in varied conditions of recovery and configuration. Under District ownership, these forests are protected from the threat of commercial logging and over time are expected to develop characteristics associated with natural forest regimes. Mixed evergreen forest on the Preserve is less impacted by prior land uses and continues to support rare and endemic plant species, including King's Mountain Manzanita (*Arctostaphylos regismontana*), and Western leatherwood (*Dirca occidentalis*).

ONSITE STREAMS, WATERSHEDS, AQUATIC HABITAT AND WATER QUALITY

Three major watercourses drain the Preserve and flow into San Gregorio Creek just south of the property: Bogess Creek, forming the western Preserve boundary; Harrington Creek, draining the interior portion of the Preserve; and La Honda Creek, on the eastern Preserve boundary. District lands account for approximately 35% of the greater San Gregorio Creek watershed. The District routinely collaborates with local community groups and landowners to address watershed issues. La Honda, Harrington, and Bogess Creeks provide habitat for steelhead trout and potentially coho salmon, both of which are listed salmonid species with special protections. However, the quality of the salmonid habitat is impacted by a number of factors, including embedded sediments and limited vegetative cover. In areas of the former Driscoll Ranch where cattle are able to access streambed and tributary channels, the cattle have denuded the natural vegetation, creating areas that may contribute to creek sedimentation. Several ponds exist within the Preserve, including the dense pond complex in the former Driscoll Ranch area. In addition to streams, the Preserve also has numerous natural springs, many developed for ranch and homestead use. A robust population of the threatened California red-legged frog (CRLF) occurs on the Preserve, and the Master Plan includes pond management actions that will enhance habitat for this species. (Note that at the time the Master Plan was prepared, it was speculated that San Francisco garter snake (SFGS) could also be present within the Preserve; however, extensive multi-year surveys have failed to detect the presence of this endangered, fully-protected species.)

NOTEWORTHY STRUCTURES

Several potentially historic structures are located within the Preserve; however, the following structures are the most prominent.

- **Red Barn.** The Red Barn area is part of the former Weeks Ranch, to which Ronald J. Weeks and his family moved in the 1850s (Stoltz, 2002). None of the original buildings from the ranch, which included a residence, agricultural buildings, and a hotel, are still standing. The Red Barn was built around the turn of the twentieth century and has undergone few major alterations (Stoltz, 2001; 2002). It is the most prominent Preserve monument and an important local landmark visible from Highway 84. In 2002, the District completed a restoration project for the Red Barn that involved structural repairs, re-roofing, and re-painting as well as reconstructing a lean-to on the north side of the barn, which was previously destroyed during the 1989 Loma Prieta earthquake.
- **White Barn.** Ranching began in the vicinity of the former Dyer Ranch in the northern portion of the Preserve in the mid-nineteenth century. The White Barn was likely built in the 1860s. Although it has undergone alterations, it retains good structural integrity.

La Honda Creek Open Space Preserve

Map Projection: UTM Zone 10N, NAD 1927
Data Sources: USGS, County of San Mateo, and MROSD.
Map Printed September, 2008

0 0.75 1.5 Miles

N

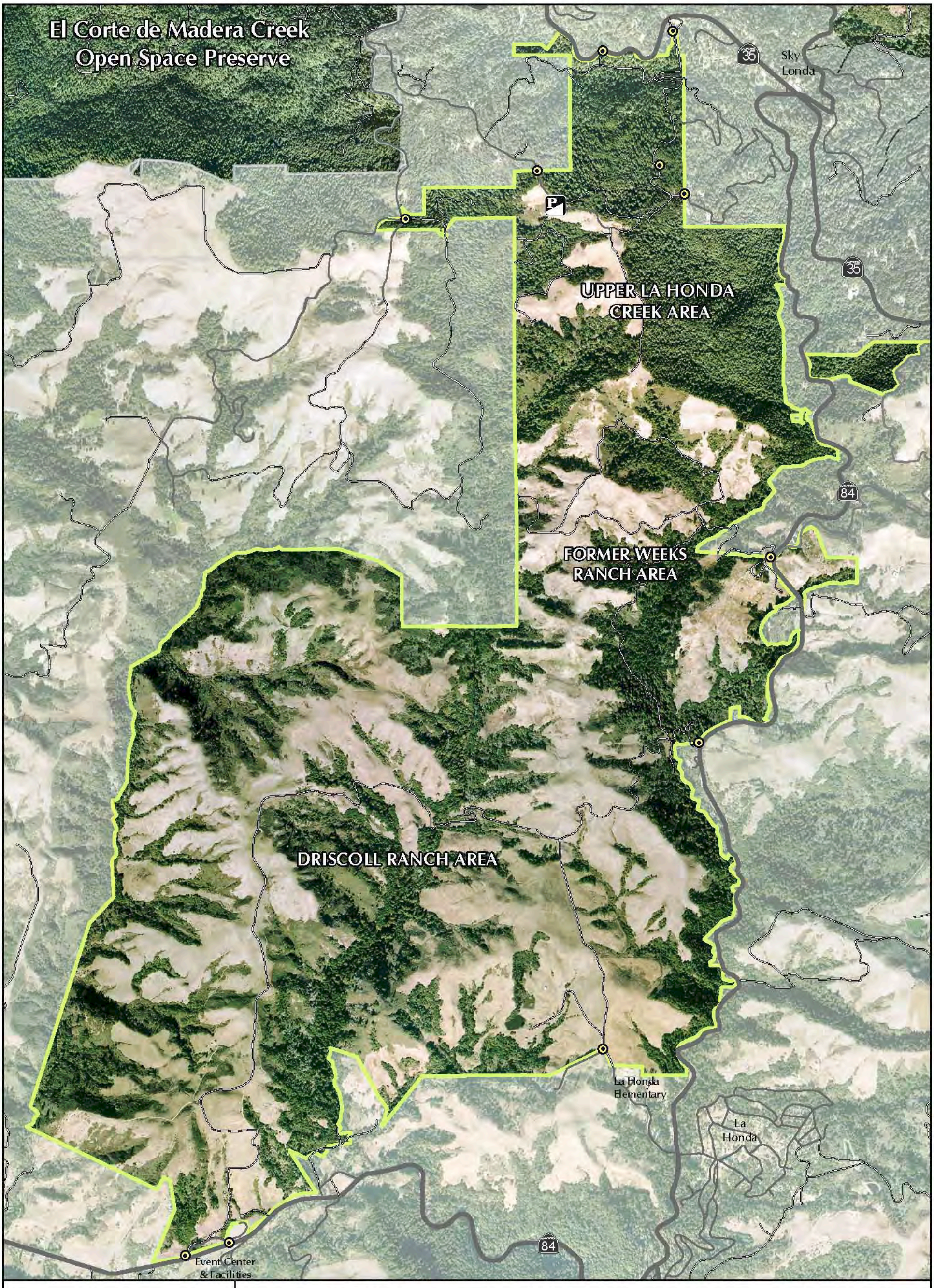
Exhibit 2-1: Regional Base Map

Land Use

- La Honda Creek Open Space Preserve
- Other MROSD Open Space Preserve
- Other Public Open Space
- Land Trust or Academic Lands
- Watershed Lands
- Land Trust Conservation Easement

Roads

- Interstate Highways
- State Highways
- Major Roads
- Minor Roads



La Honda Creek Open Space Preserve Initial Study / ISMND

Map Projection: UTM Zone 10N, NAD 1927
Data Sources: USGS, County of San Mateo, and MROSD.
Map Printed June, 2008

0 0.25 0.5
Miles

N

Exhibit 2-2: Aerial Photograph Area Map

Access

- Exterior gate
- Roadside Permit Parking Area

Roads

- Unpaved Ranch / Patrol Road
- Existing Paved Road
- Highway

La Honda Creek Open Space Preserve

Map Projection: UTM Zone 10N, NAD 1927
Data Sources: USGS,County of San Mateo, and MROSD
Map Printed September, 2008

0 0.25 0.5
Miles

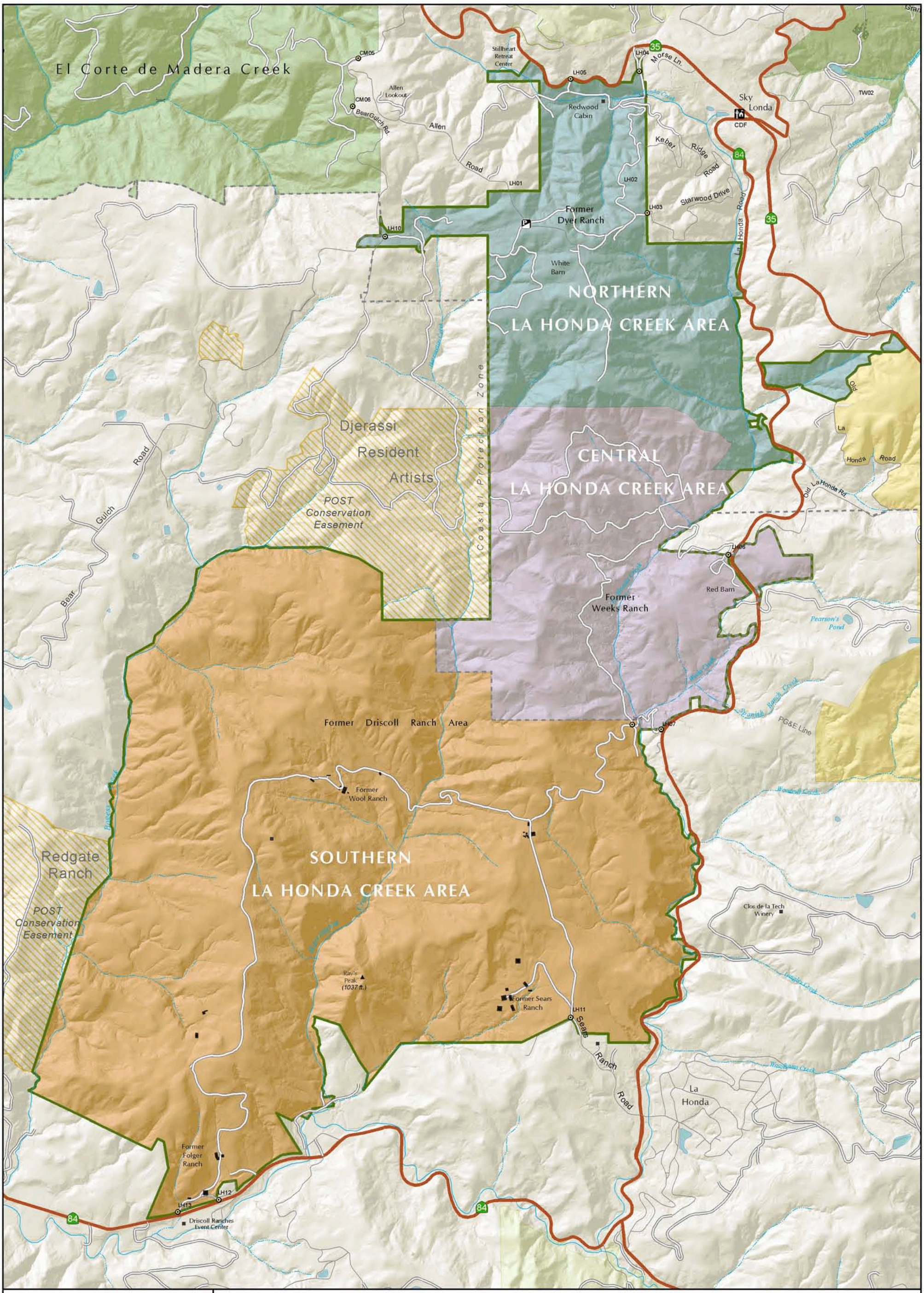
N

Exhibit 2-3: Topographic Base Map

Land Use
- MROSD Open Space Preserve
- Other Public Open Space
- Land Trust
- Land Trust Conservation Easement

Roads
- Unpaved Ranch / Patrol Road
- Existing Paved Road
- Highway

Contour Intervals
- 200 Feet
- 40 feet



La Honda Creek Open Space Preserve

Map Projection: UTM Zone 10N, NAD 1927
Data Sources: USGS,County of San Mateo, and MROSD
Map Printed November 2007

0 0.25 0.5
Miles

N

Exhibit 2-4: Preserve Areas

- Northern La Honda Creek Area
  includes former Dyer Ranch and Redwood Cabin
- Central La Honda Creek Area
  includes former Weeks Ranch and Red Barn
- Southern La Honda Creek Area
  includes former Driscoll Ranch

Roads

- Unpaved Ranch / Patrol Road
- Existing Paved Road
- Highway

- **Redwood Cabin.** W. B. Allen, a former owner of Palo Alto Hardware, built the Redwood Cabin with the help of two Swedish laborers in 1927-28. The California Conservation Corps built and improved nearby roads and trails in the 1930s. The cabin served as a recreational retreat for Allen's family and guests, including the YMCA and Rotary Club (Paulin, 2004). As such, it is an excellent example of early recreational destinations in the region.

PUBLIC ACCESS

Currently, the Preserve offers approximately three miles of trails for hikers and equestrians. These trails are open to the public by permit only. Ten cars a day are allowed to park at the end of Allen Road, inside the Preserve gate in a small parking area, provided they obtain a District permit, per an agreement with the homeowners along Allen Road. No other public parking or access is currently allowed in the Preserve.

2.6 NEED FOR THE PROPOSED PROJECT

Although a number of planning documents apply to portions of La Honda Creek Open Space Preserve, no unified long-term planning or comprehensive policy document applies to the Preserve as a whole. A long-term plan is needed to provide vision and to guide future use and management decisions. Specifically, the proposed Master Plan is intended to serve a number of key functions, including:

- A handbook that presents an adopted vision for the Preserve;
- An implementation plan that prioritizes future improvements and Preserve projects;
- A set of criteria for projects;
- A Preserve-specific resource management strategy;
- A planning framework to pursue funding; and
- A tool to raise public awareness.

2.7 PROJECT OBJECTIVES

The proposed project is intended to achieve the following primary objectives:

- Follow appropriate steps to enhance the recreational opportunities in the Preserve by opening additional areas to the public for low intensity recreation and enjoyment, by allowing bicycle use (where appropriate), by allowing dogs on leash (where appropriate).
- Manage key areas that require special protection due to high quality habitat, presence of sensitive species, and/or susceptibility to negative resource impacts as conservation areas where use is limited.
- Protect water quality, improve stream habitat, protect and restore pond habitat, and identify and maintain existing springs and water infrastructure.
- Protect rare plants and enhance native grassland vegetation by expanding the grazing program as a conservation tool; utilize a variety of management techniques to prevent brush encroachment and to control key non-native and invasive plant species.
- Protect native wildlife populations by identification and protection of listed species and key wildlife corridors.
- Protect significant cultural, historical, and archaeological resources by increasing knowledge of the existing cultural resources, including historically-significant structures and key cultural landscape features, and implementing cultural resource protection measures.
- Expand and improve available parking.

- Enhance the Preserve trail system and trail experience by providing loop trails and trail connections to parking areas, key destination sites, and newly opened areas of the preserve, and by providing trail amenities, and by removing obstructions to important viewsheds.
- Promote regional trail connections.
- Expand opportunities for people with diverse physical abilities to enjoy passive recreational and educational opportunities.
- Educate the public about Preserve resources.
- Reduce and control sources of erosion and sedimentation.
- Reduce fire risk by managing wildland fuels, facilitating wildland fire response and suppression, and preparing a Wildland Fire Response Plan.
- Address environmental hazards.
- Maintain rental facilities in working and safe condition.

2.8 DESCRIPTION OF PROPOSED MASTER PLAN

The Master Plan was developed to establish a long-term vision for the Preserve to guide future decisions affecting use and management of the land for the next 30 years. To implement the vision, the Plan catalogs and prioritizes improvements in the Preserve that are needed to balance resource protection with recreation. The Plan was developed through a series of public workshops with the goal of raising awareness of the value of the Preserve. Finally, the Plan includes goals, objectives, and implementation actions to address issues uncovered in the master planning process.

The Master Plan calls for the retention of all existing uses within the Preserve with the addition of: expanded public access; the reintroduction of grazing into the northern portion of the Preserve; the construction of additional parking areas, facilities and trails; habitat restoration and enhancement; and adoption of resource management and public access policies aiming to protect and enhance the Preserve's diverse natural resources. These components are described in more detail below.

2.8.1 VEHICLE ACCESS

Public vehicle access into Preserve parking/staging areas would be provided by three new access points, as well as the existing access via Allen Road (Gate LH01). The new access points, shown on Exhibit 2-5, are all existing driveways into the Preserve and include the Driscoll Ranch West Gate (LH13), the Sears Ranch Road Gate (LH11), and the Red Barn Lower Gate (LH06). Allowing the public to use these access points to reach parking/staging areas will require Caltrans review and approval (except for existing public road access at the Sears Ranch Road Gate), and may require improvements per Caltrans standards. These improvements may include adjustments to the ingress/egress access point, widening the driveway flare entrance, and installing signage.

2.8.2 PARKING/STAGING AREAS

The Master Plan calls for improvements to an existing permit parking lot at Allen Road and the construction of three new parking areas, two of which will accommodate horse trailers (See Exhibit 2-5). The improved and new parking areas would include typical standard District site furnishings, including pit toilet restrooms, signboards, split-rail fencing, wheel stops, native vegetation plantings, and entrance signs. The parking areas will be paved or gravel, depending on site-specific conditions, location, and needs to expedite the opening of the southern Preserve area to the public, two interim parking areas would be established relatively quickly with only minor improvements. Minor improvements include minimal grading,

PUBLIC ACCESS TRAILS

listed in order by implementation phase

1	Driscoll Ranch Main Access Road	5.6
2	Easy Access Loop Trail	0.9
3	Vista Point Loop Trail	2.8
4	Trail Connection to Red Barn Area	0.3
5	Trail Connection to Driscoll Ranch	1.5
6	La Honda Creek Loop Trail	4.8
7	Redwood Cabin Loop Trail	2.3
8	Interior Loop Trail	2.4
9	Red Barn Loop Trail	2.0
10	Folger Ranch Loop Trail	3.9
11	Harrington Creek Trail	1.6
12	Sears Ranch Loop Trail	1.9
13	Trail to Ray's Peak	0.1

TRAIL USE

All trails open to hiking. Off-trail hiking allowed throughout except in Conservation Management Units.

All trails open to equestrian use, unless site conditions do not allow trail construction to meet District equestrian use standards.

Pending resource agency approval: multiple-use on (1) the northeastern section of the Driscoll Ranch Road from Sears Ranch Road to the Red Barn area, (2) a portion of the La Honda Creek Loop Trail, and (3) the designated Bay Area Ridge Trail once one safe, through connection is secured (see legend).

Trails north of Vista Point open to dogs on leash after grazing program is established; also, work with existing grazing tenant to identify suitable trail loop off Sears Ranch Road for dogs on leash.

NO PUBLIC ACCESS

NO PUBLIC ACCESS

Redwood Cabin

LH01

Allen Road Permit Lot

White Barn

Vista Point

LH06

Red Barn Parking Area

Red Barn

LH07

Ray's Peak (1037 ft.)

LH11

Sears Ranch Road Parking Area

La Honda Elementary

Former Driscoll Ranch West Gate Parking Area

LH13

Driscoll Ranches Event Center

Sky Londa

Allen Road

Kebet Ridge Road

Starwood Drive

La Honda Creek

Bear Creek

San Gregorio Creek

La Honda

La Honda Creek Open Space Preserve

Map Projection: UTM Zone 10N, NAD 1927
Data Sources: USGS, CA Dept. of Fish & Game, County of San Mateo, and MROSD.

0 0.2 0.4 Miles

N

Exhibit 2-5: Public Access

Trails

- Existing Public Trails (Hiking, Equestrian)
- New Public Trails (Hiking, Equestrian)
- New Multiple-Use Public Trails (Hiking, Equestrian, Bicycling)
- New Segment of the Bay Area Ridge Trail (Hiking, Equestrian, Bicycling)

Facilities

- Existing Parking Area
- New Parking Area
- New Equestrian Parking Area
- New Interpretive Site

Roads

- Unpaved Ranch / Patrol Road
- Existing Paved Road
- Highway

- Conservation Management Unit (No Public Access)

baserock surfacing, new signage, wheel stops, and a portable restroom. Each interim parking area would be replaced with a new permanent parking area once the District finalizes construction plans, obtains permits, and completes construction. Additional phases to further expand parking capabilities are not described in the Master Plan and thus are not evaluated in this Initial Study. Parking/staging area projects are described briefly below:

- **Allen Road Enhancements.** The existing Allen Road Parking Area would be expanded (as part of Phase II) into the adjacent grasslands to the south to better accommodate the existing ten parking spaces. This would allow a clear delineation of parking spaces and make it easier for vehicles to turn around. The capacity of the lot would not change.
- **Red Barn.** The District proposes the construction of a permanent parking area above the existing corrals near the Red Barn along Highway 84, during years six to ten (Phase II). The parking lot would accommodate 15-25 vehicles, three to six horse trailers, a restroom, signboards, and other miscellaneous staging area furnishings. To improve line of sight, a new driveway would be constructed near the mid-point between Weeks Creek and the existing driveway.
- **Sears Ranch Road.** During years one through five (Phase I), the District proposes to construct an interim informal parking area accommodating 10 to 20 vehicles and a portable restroom at the entrance to Driscoll Ranch on Sears Ranch Road, at least 150 feet from the La Honda Elementary School property. A permanent parking facility with a permanent restroom would be developed in years 6 through 10 (Phase II).
- **Driscoll Ranch West Gate.** During years one through five (Phase I), the District proposes the construction of a temporary parking area across from the Driscoll Events Center. Subsequently, the phased construction of permanent parking facilities would accommodate the Preserve's future levels of use. The first phase would accommodate 10 to 20 vehicles and three to six horse trailers, a restroom, signage, fencing, and other furnishings**.** If there is a demand for additional spaces in the future, MROSD would consider adding spaces as a separate action, but this is not anticipated.

2.8.3 TRAIL IMPROVEMENTS

There are 13 new trail alignments proposed in the Master Plan (See Exhibit 2-5). New trail alignments will incorporate existing ranch and forest roads, where appropriate. Existing roads will be improved where necessary to improve drainage and reduce erosion, according to prescriptions developed by the District's Certified Engineering Geologist (Best 2007; see "Road and Trail Maintenance", below). In some cases, existing roads will be realigned to reduce grades and avoid sensitive resources. Where new trail construction is planned, new alignments will be designed to follow natural contours and maintain an average maximum 10% grade to the greatest extent possible, and will otherwise conform to the District's Road and Trail Typical Design Specifications (MROSD 2008). All new trails would be constructed at a 2- to 4-foot width. Trail amenities may include a few horse troughs (located outside cattle pastures to prevent pathogen transmission), picnic areas along trails outside the Coastside Protection Area, and memorial benches. (Note that the Master Plan mentions regional trail connections but treats them as speculative; therefore these connections are not described below and are not included in the environmental analysis.)

- **Driscoll Ranch Main Access Road.** The existing 5.6-mile interior access road through Driscoll Ranch is proposed to be the first and primary trail that would be opened to public use. Prior to opening the trail, the District will construct bypass trails that go around existing residences, as needed, and install new signage and gates to ensure that the introduction of recreational use does not conflict with the on-going grazing operations and tenant residences. Of the total 5.6 miles, three segments have culverts that pose a high risk of road failure and significant erosion potential. The other two high priority treatment sites include an eroding inside ditch and, pending further evaluation, a vehicular bridge crossing that may overtop during high flows. Moderate- to low-priority drainage improvements are also identified throughout the road alignment, including rocking/armoring, correcting inside ditches, installing rolling dips, and re-crowning the road surface. These trail improvements are proposed in Phase I.

- **Allen Road Parking Area/Easy Access Loop Trail.** A short, gentle loop trail utilizing an existing road-width trail beginning and ending at the Allen Road Permit Parking Area would provide a 0.9 mile easy-access loop. The existing trail would be resurfaced to increase firmness and stability of the trail tread. These trail improvements are proposed in Phase I.
- **La Honda Creek Loop.** This new 4.8-mile loop trail is proposed to be constructed in Phase I in the eastern area of Driscoll Ranch. The trail would utilize a one-mile section of the existing Driscoll Ranch access road, after drainages improvements (installation of rolling dips, culvert replacements and additions, and new rock energy dissipaters) are completed. New trail construction near La Honda Creek would be at a narrow 3- to 4-foot width through primarily grasslands with the easternmost sections closest to the creek under oak woodland, Douglas fir, and redwood forest canopy. Existing ATV paths may also be utilized.
- **Vista Point Loop.** This 2.8-mile trail, proposed to be constructed in Phase II, would provide a mid-length loop opportunity to a vista point off the Allen Road permit parking area. The trail would use approximately 2.2 miles of existing ranch roads, of which 1.2 miles are currently open to the public. This trail would largely traverse the edges of grassland, redwood forest, Douglas fir forest, and mixed broadleaf vegetation communities. Drainage improvements to the existing roads would include adding ditch relief culverts, rocking sections of road, adding rolling dips, and installing culverts. Approximately one mile of new trail would be constructed at a narrow width of three to four feet through steeper terrain in the upper area of the Preserve to complete the loop.
- **Connection to Red Barn Area.** A new trail connection is proposed in the northern portion of the Preserve to link the trails in the former Dyer Ranch area to the new trails in the former Weeks Ranch area. The connecting trail would pass through grassland and coyote brush shrubland. This connection would be approximately 0.3 miles long and would complete the important and highly desired connection that would allow Preserve visitors to travel between the two upper halves of the Preserve. The connector trail is proposed to be constructed in Phase II.
- **Connection to Driscoll Ranch.** Approximately 1.5 miles of an existing ranch road to the west of La Honda Creek would be opened to public use to provide a connection between the trails in the upper reaches of the Preserve and the Driscoll Ranch area. This trail would feature the Preserve's wide variation of vegetation communities, extending through Douglas fir and redwood forests, grasslands, oak woodlands and coyote brush shrublands. A few isolated sections of the road are overly steep, requiring rocking, new ditch relief culverts, and rocked fords. The remainder of the road would greatly benefit from the addition of rolling dips to improve surface water drainage. These improvements are proposed for Phase II.
- **Redwood Cabin Loop.** In Phase III, a new trail loop is proposed off the Allen Road permit parking area that reaches the Redwood Cabin through a largely forested environment of redwood and Douglas fir stands. This new interior loop trail would use approximately 0.8 miles of the existing road network that is currently open to the public. Drainage improvements, including installation of rolling dips and replacement of rusted culvert inlets, and construction of partial trail realignments to bypass steep sections of road would be required. The total mileage for the Redwood Cabin Loop Trail, including new and existing trail segments, would be approximately 2.3 miles.
- **Interior Loop.** Also in Phase III, a new trail loop is proposed north of the Red Barn area, primarily along existing ranch roads. The trail loop would be approximately 2.4 miles and traverse primarily through grasslands and broad leaf and evergreen forests. New drainage improvements include rocking, installing rolling dips and new rock fords, and enlarging culverts. Approximately 0.6 miles of existing trail requires a realignment to reduce steep grades and avoid future erosion.
- **Red Barn Loop.** The District proposes to construct a loop trail and connections to the new interior trail system from the future Red Barn parking/staging area in Phases III and IV. The trail would pass primarily through exposed grassland with a section nearest La Honda Creek extending through evergreen forest of Douglas fir and redwood. The approximately 2.0 miles of trail would use existing ranch roads to the greatest extent possible.

- **Folger Ranch Loop.** Within the former Folger Ranch area of western Driscoll Ranch, two new trail loops are proposed in Phase III. The trails would pass primarily through grasslands, allowing for open scenic views to the west and showcasing the Bogess Creek drainage in the foreground with nearby ranches in the background. Existing ranch roads would be used, where appropriate, after drainage improvements, including rocking, are made. Otherwise, narrow 3- to 4-foot wide trail sections would be constructed to complete the 3.9 mile trail loops.
- **Sears Ranch Loop.** A short, 1.9 mile loop trail is proposed in Phase IV above the former Sears Ranch building and pond complex. The trail would utilize a portion of the Driscoll Ranch main access road and proposed Harrington Creek Trail (please refer to the trail description below). New construction would be accomplished at a 3- to 4-foot width, following contours through grasslands to the east of Harrington Creek with a minor elevation change. The trail would be aligned away from cattle water sources and nearby residences.
- **Harrington Creek Trail.** In Phase IV, a narrow trail parallel to and south of the Driscoll Ranch main access road would be constructed to offer visitors an alternate, more intimate trail experience. This trail would be approximately 1.6 miles in length and extend through coyote bush, oak woodlands, red alder forest and grasslands. Segments of old tractor routes would be incorporated as part of the alignment, where appropriate.
- **Trail to Ray's Peak.** An in-and-out destination trail is proposed to allow visitors to reach as close to the top of Ray's Peak as feasible. The trail would extend primarily through grasslands and brush. Where possible, existing ranch roads would be used and otherwise 3- to 4-foot wide trail segments would be constructed to complete the corridor.

2.8.4 NATURAL RESOURCES MANAGEMENT

A number of Natural Resource Management projects and actions are proposed to protect and enhance biotic resources, including native wildlife, and aquatic, riparian, grassland, and forest habitats, on the Preserve (See Exhibit 2-6 below). Two Conservation Management Units (CMU's) would be established in highly-sensitive areas to prevent recreation-induced disturbances that can negatively impact sensitive natural resources. Other projects are described briefly below.

WATERSHED AND AQUATIC HABITAT MANAGEMENT

The Master Plan includes numerous projects and actions to protect or improve watershed resources and aquatic habitat. For streams providing salmonid habitat, these include monitoring (and potentially modifying) fish passage barriers, monitoring erosion-prone creek banks, collecting data on creek temperature and flow volume, and managing large woody debris for increased habitat complexity and distribution. For riparian habitat, restoration projects include construction or extensive repair of fencing and gates to prevent cattle from accessing the stream banks, stream bank restoration and reinforcement, and willow or other riparian vegetation planting. Maintenance of these areas would potentially include follow-up plantings, monitoring, and management of exotic riparian vegetation. A Pond Management Plan to enhance aquatic habitat for California red-legged frog in the former Wool Ranch has been completed and analyzed under a separate CEQA document. Further pond improvements proposed by the Master Plan include rehabilitation of the filled pond near the Red Barn, which could create high quality habitat for CRLF. This project will be included in a future Site Specific Plan for the Red Barn Area. The proposed Master Plan also includes road and trail maintenance projects (described in the Road and Trail Maintenance section, below) to reduce sedimentation into aquatic habitat. Finally, all Master Plan projects will include Best Management Practices (BMPs) to reduce the potential for erosion and sedimentation. BMPs include design of trails to minimize grading, incorporation of appropriately-sized drainage structures to accommodate high storm flow, the rocking of trails in erosion-prone areas, monitoring for new erosion areas, and implementation of seasonal closures as needed.

VEGETATION AND FOREST MANAGEMENT

Cattle grazing is an effective form of vegetation management that is currently utilized on the Preserve to control brush encroachment, maintain grassland diversity, and control invasive plants. As part of a 50-year grazing lease on the former Driscoll Ranch, a Resource Management Plan was adopted that sets appropriate stocking rates to avoid overgrazing, minimize erosion, protect water quality, reduce fast burning fuels, and ensure compliance with existing regulations. The proposed Master Plan identifies four new pastures (See Exhibit 2-7) to reintroduce cattle to the former Dyer and Weeks Ranch areas to extend conservation grazing into other Preserve grasslands, as recommended in a Grazing Plan prepared by rangeland specialists (Sage and Associates 2007). This would require improvement of existing grazing infrastructure, including fence installation and repair, and repair or replacement of existing water troughs and waterlines.

Identification, mapping, monitoring, and control of invasive plants will continue in conjunction with other District-wide efforts. Aside from grazing, the Master Plan includes mowing and spot herbicide application to help control brush encroachment and manage invasive species. The proposed Master Plan includes ongoing monitoring and mapping of the rare plant populations and the species composition of the surrounding habitat (including tree canopy cover) to determine population trends and detect changes in natural succession.

The proposed Master Plan encourages active forest management, which includes selective conservation logging to thin out existing young stands of trees and understory brush for increased light penetration, reduced water and nutrient competition, and restoration of late-seral forest habitat. A Forest Management Plan would be prepared and analyzed in a separate CEQA document. The District will also continue monitoring for Sudden Oak Death (SOD) and will also take a proactive approach to reducing its potential spread by installing SOD cleaning stations at target parking areas, educating the public about the pathogen, following SOD Best Management Practices when conducting maintenance and construction activities, and removing hazard trees in high use areas.

WILDLIFE MANAGEMENT

As discussed above, the District proposes water quality, aquatic and riparian habitat, and forest management projects that will enhance the suitability of the Preserve to support both common and special-status wildlife. The proposed Master Plan encourages the monitoring of known populations of rare wildlife species and partnering with resource agencies to accomplish this goal. In addition, the District will continue to identify and map key wildlife corridors as they become known to further inform resource management practices and future land management actions. Wildlife-friendly fences and cattle water troughs would be used at the Preserve to allow for unimpeded wildlife use of pasture areas.

2.8.5 CULTURAL RESOURCES MANAGEMENT

The proposed Master Plan includes goals and objectives to protect significant cultural, historical, and archaeological resources . The proposed Master Plan also includes Environmental Protection Guidelines (CUL-1 through CUL-4) , which are directly incorporated from the Annexation EIR Mitigation Measures. These Environmental Protection Guidelines are designed to properly manage both known and unknown cultural resources that may be unearthed during future construction projects at the Preserve. The Environmental Protection Guidelines also include specific actions for treatment of historic and potentially historic buildings.

La Honda Creek Open Space Preserve

Exhibit 2-6: Resource Management Projects

El Corte de Madera Creek

Djerassi Resident Artists

POST Conservation Easement

Redgate Ranch

POST Conservation Easement

Coastal Protection Zone

Bogess Creek

La Honda Creek

Woodruff Creek

Langley Creek

Woodhams Creek

San Gregorio Creek

Clos de la Tech Winery

La Honda Elementary

La Honda

84

35

Conservation Management Unit (CMU)

Improve road drainage or alignment

Develop/implement erosion control plan

Replace or extensively repair bridge

Fire safety treatment: fuel break/defensible space

Restore riparian area, install fencing

Survey for fish passage, presence, & population

Manage ponds for sensitive species

Coastside stream protection corridor

Conservation grazing (grassland areas)

Preserve local cultural landmark

Assess historical significance of structures

Remediate soil contamination

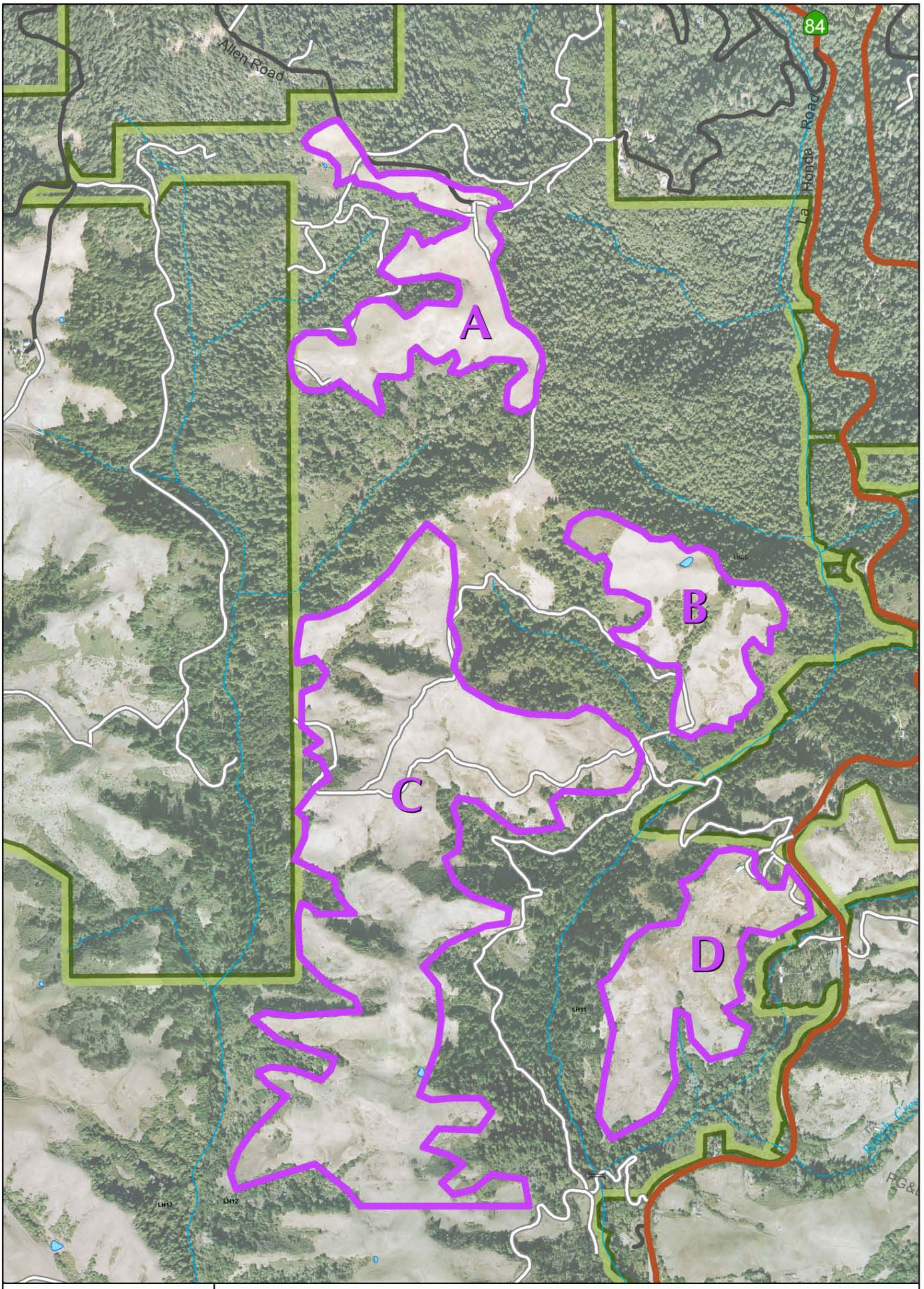
Conserve & study rare plant occurence

Vegetation Types

- Forest
- Woodland
- Shrubland
- Grasslands
- Unvegetated or rural residential

Map Projection: UTM Zone 10N, NAD 1927
Data Sources: USGS; CA Dept. of Fish & Game, County of San Mateo, and MROSD.
Map Printed September, 2008

0 0.125 0.25 0.5
Miles



La Honda Creek
Open Space Preserve

Map Projection: UTM Zone 10N, NAD 1927
Data Sources: USGS,County of
San Mateo, and MROSD
Map Printed September, 2008

0 0.1 0.2
Miles

N

Exhibit 2-7: Proposed Pastures

Land Use

MROSD Open Space Preserve

Roads

Unpaved Ranch / Patrol Road

Highway

A: Former Dryer Ranch, access via Allen Road

B: Former McDonald Ranch, access via Red Barn

C: Former McDonald Ranch, access via Driscoll Ranch

D: Former McDonald Ranch, access via Driscoll Ranch

Several potentially historic structures exist at the project site. The most notable of these structures are the Red Barn, the White Barn, and the Redwood Cabin. In the case of the Red Barn, the proposed Master Plan requires preparation of a site-specific plan, to be analyzed in a separate CEQA document, that would address use and maintenance of the barn. The site-specific plan would incorporate design guidelines to ensure that future improvements in this area correspond to and enhance the rural character of the Red Barn. The proposed Master Plan identifies potential upgrades to an existing garage associated with the Red Barn for potential use as an environmental interpretation facility/classroom. The District proposes to retain and maintain both the White Barn and the Redwood Cabin in the short term, and evaluate the potential and need for long-term preservation and maintenance based on professional assessments of their historical significance.

2.8.6 VISUAL ENHANCEMENTS

The Preserve provides many opportunities for scenic open space views that are characteristic of the San Mateo coast. The most prominent vistas extend out to the Pacific Ocean. The proposed Master Plan highlights these important viewsheds and also identifies opportunities for improving the aesthetic integrity of the landscape.

One such improvement addresses the presence of overhead utility lines that currently detract from the visual quality of the scenery in the southern area of the Preserve. In the former Sears Ranch area, overhead utility lines run the length of the eastern main ranch access road and detract from views of the prominent Ray's Peak. Under the proposed Master Plan, this stretch of utility lines would either be relocated underground or replaced with a solar panel system to help restore open views characteristic of rural ranchlands.

The Preserve also includes a number of dilapidated and obsolete structures (does not include those identified above as "Noteworthy Structures"). These structures have fallen into disrepair, are not of benefit to the District or existing tenants, and detract from the Preserve experience, and are therefore becoming a public nuisance. The Master Plan includes removal of these and other small and insignificant structures, as appropriate, that pose a potential public hazard or are considered a public nuisance.

2.8.7 FIRE AND FUELS MANAGEMENT

The District will continue to facilitate the California Department of Transportation's (Caltrans) efforts to manage vegetation along stretches of highway that front the Preserve. The District will also manage vegetation at other high risk ignition locations within the Preserve, such as parking areas. Trail access points will be closed on predicted high fire response level days (red flag days) to reduce fire hazards.

The District will work cooperatively with leading fire management agencies, including CAL FIRE, to facilitate the creation and maintenance of the following new fuel breaks:

- fuelbreak that extends from the western boundary of the Preserve near the Djerassi property to the former Dyer Ranch area in the northern are of the Preserve.
- shaded fuelbreak that extends from the former Dyer Ranch area (northern are of the Preserve) to the former Weeks Ranch area (central area of the Preserve).

Combined with other vegetation management tools described above, the expansion of grazing activities as identified in the proposed Master Plan would also control brush encroachment into grassland areas and reduce fuel loads. The proposed Master Plan also includes actions to reduce fuels along roadways, as well as bridge repairs and upgrades (bridge at gate LH08, two bridge crossings at La Honda Creek and a tributary north of the Redwood Cabin, and a bridge crossing at Harrington Creek), to ensure safe emergency vehicle access. Furthermore, the development of new ponds, restoration of former ponds, and deepening of existing ponds will improve fire suppression at the Preserve by supplying additional sources of water in the event of a fire. The

proposed Master Plan requires preparation of a Wildland Fire Response Plan, developed with participating fire departments, that would establish Best Management Practices for wildland fire response and suppression activities.

2.8.8 ROAD AND TRAIL MAINTENANCE

Of the 144 sites inventoried as part of a road and trail assessment for the Preserve (Best 2007), 74 have moderate to high treatment priority and are targeted for corrective actions to reduce the potential for sediment delivery or to repair damaged segments of road. As described in the proposed Master Plan, prior to opening existing segments of ranch road to trail use, the District will address road and trail treatments, focusing on higher priority treatments. Repairs and treatments include: road and trail re-surfacing, installation of additional drainage structures (i.e. culverts, inside ditches, rolling dips), upgrades and maintenance of drainage structures, and stream crossing restorations. Best Management Practices would be implemented including conducting trail maintenance during low flow periods and installation of erosion control devices such as silt fences, straw bale barriers, storm drain inlet protection, sediment traps, etc. The District would prepare a Road Maintenance Plan that inventories problem sites and includes a repair history to keep track of road conditions and past roadwork.

2.8.9 STAFFING

Full buildout of the proposed La Honda Creek Open Space Master Plan is anticipated to result in the need for the addition of 5 new District staff (2 rangers and 3 maintenance personnel). Staff would be hired as Master Plan phases are completed and as demand for additional staff increases. Note that under the current Operations model, these staff may not be "dedicated" to the Preserve, but may be utilized regionally. Also, the addition of staff for the proposed Master Plan, in combination with other District-wide staff increases over the next 30 years, may result in the need for opening additional facilities, such as field offices, to accommodate these staff. It is expected, as is typical for the District, that existing or newly purchased buildings would be re-used rather than construct new facilities. For this reason, no environmental impacts are expected with respect to new staff facilities. However, at this time, it is too speculative to consider how the District would expand its staff facilities in the Skyline area, except to state that a future coastal office is likely. If and when such a facility is proposed, the potential environmental impacts of a new staff facility would be analyzed at that time, prior to any approval to proceed with its implementation.

2.8.10 PUBLIC ACCESS AND PHASING

The District will monitor all existing and new trail uses (hiking, equestrian use, bicycle use, and dogs-on-leash) to determine if unforeseen environmental issues or poor user compliance with District regulations merit a subsequent change in trail use for this Preserve. The following action items are listed in order of implementation:

HIKING

1. Keep existing designated trails open to hiking.
2. Allow off-trail hiking except in Conservation Management Units.
3. Open new trails and areas of the Preserve to hiking as they become available.

EQUESTRIAN USE

1. Keep existing designated trails open to equestrian use.

2. Open new areas of the Preserve to equestrian use as trails become available, unless site conditions do not allow trail construction to meet District equestrian standards.

BICYCLE USE

Note that the proposed Master Plan now identifies only one option for trail use (originally called out as Option 2), which the Board of Directors selected as the preferred option for inclusion in the Master Plan and as part of the project description for this environmental analysis. Introducing bicycles to the Preserve may be subject to review and approval by the resource agencies, which would determine whether bicycles pose a threat to the natural resources. Bicycle use is described below.

1. Open the ranch road that extends from the Sears Ranch Road trailhead to the northeastern boundary of the Driscoll Ranch area to bicycles.

2. Construct a new multiple-use trail west of La Honda Creek in the northeastern corner of the Driscoll Ranch area to establish a loop trail that will be accessible to visitors traveling on bicycle who enter from the Sears Ranch Road trailhead.

3. Open the ranch road that extends from the northeastern boundary of the Driscoll Ranch area to the Red Barn to bicycles; this multiple-use trail extension will provide visitors traveling on bicycle a connection between the Town of La Honda and the Red Barn and, once established, the Bay Area Ridge Trail.

4. Open the Bay Area Ridge Trail alignment to bicycles once this trail is established and at least one safe through-connection (an extension of the official Ridge Trail beyond the Preserve boundary) is secured. Two connections, one to the east and one to the west, are ideal to fulfill the larger goal of a continuous Ridge Trail alignment that encircles the Bay Area.

DOG USE

The Master Plan identifies dog use via leash only within certain areas of the Preserve and under specific conditions as described below. Introducing dogs to the Preserve may be subject to review and approval by the resource agencies, which would determine whether dogs-on-leash pose a threat to the natural resources.

- Open trails north of the vista point in the northern area of the Preserve to dogs-on-leash after the grazing program has been planned and implemented; implement seasonal closures for dog use, as needed, to avoid disrupting the seasonal grazing operation in this area.
- Work with the Driscoll Ranch tenant to explore opportunities to open a loop trail to dogs-on-leash near the Sears Ranch Road entrance. Some ideas that will be considered for discussion include seasonal dog use based on the calving schedule, fencing, and the relocation of the calving operation.

PHASING

The District intends to implement the Master Plan incrementally over the next 30 years. Master Plan actions are prioritized and grouped into one of four phases based on their relative importance, critical need, and sequencing (when certain projects must precede others) to implement the District's vision for the Preserve. While the Phasing Plan provides a general direction for implementation, flexibility is needed to accommodate future unknown conditions, such as available funding, emergency situations, and the identification of higher priorities located on other District lands. For example, grant funding may allow certain facilities to be built sooner than expected. Or conversely, District budget constraints or the absence of new funding sources may necessitate delays in implementation.

PHASE I

Phase I actions are essential to protecting critically sensitive resource areas and would allow the District to open new areas of the Preserve to the public. Phase I actions will be initiated within five years following Master Plan approval, and include:

High Priority

- Designate Conservation Management Units
- Prepare a Pond Management Plan (complete)
- Implement water infrastructure improvements and conservation grazing in central/northern portion of the Preserve
- Identify and implement measures to reduce cattle impacts to water quality
- Prepare the Red Barn Area Site Plan
- Complete emergency maintenance repairs to the White Barn and Redwood Cabin
- Establish two interim parking areas: one off Sears Ranch Road and the other across from the Driscoll Events Center
- Implement Phase I road and trail erosion treatments
- Implement Phase I trail improvements
- Improve trail off the Allen Road permit parking lot as an easy access trail
- Replace or repair bridge near Gate LH08
- Prepare a Wildland Fire Response Plan
- Contain contaminated areas; complete required remedial actions (complete)

Moderate Priority

- Complete a springs and water infrastructure inventory
- Develop forest management practices
- Complete historical and structural assessments of the White Barn and Redwood Cabin
- Non-renew Williamson Act contracts
- Make updates to the open space dedication status of Preserve parcels

Low Priority

- Cleanup existing debris sites **(completed)**
- Identify former logging features and incorporate as part of the trail experience

PHASE II

Phase II actions focus on more extensive resource management and habitat enhancement projects, as well as the expansion of recreational amenities and trails. Phase II actions are anticipated to be initiated within years six through ten of the Master Plan, and include:

High Priority

- Restore watershed and in-stream salmonid habitat
- Construct the Red Barn parking area
- Implement Phase II road and trail erosion treatments
- Replace or repair the bridge near Gate LH04

Moderate Priority

- Complete forest assessments
- Prepare a maintenance plan for the Red Barn
- Implement Phase II trail improvements
- Construct the Sears Ranch Road parking area
- Complete Allen Road permit parking area improvements
- Remove dilapidated structures
- Prepare a Road Maintenance Plan

Low Priority

- Implement additional interpretation projects (White Barn and Redwood Cabin areas)
- Establish picnic areas

PHASE III

Phase III focuses on actions that may have a longer timeline due to funding constraints or where implementation should be based on future demand that is not yet demonstrated. Some Phase III actions (such as the environmental education facility) may become part of Phase II if grant funding becomes available. Phase III implementation is planned within years 11–20, and include the following actions:

High Priority

- Implement Phase III road and trail erosion treatments
- Decommission abandoned roads

Moderate Priority

- Prepare a management plan for King's Mountain manzanita and other rare plants
- Develop maintenance plans for White Barn and Redwood Cabin
- Construct permanent parking area near the Driscoll Events Center
- Implement Phase III trail improvements
- Underground utility lines

Low Priority

- Identify and inventory wildlife corridors
- Evaluate the Red Barn garage for use as an environmental education facility

PHASE IV

Phase IV includes the lowest priority actions. Some Phase IV actions (such as the Red Barn pond restoration) may become part of Phase III if grant funding becomes available. Phase IV implementation is planned to occur within years 21–30 and includes:

High Priority

- Construct Red Barn area easy access trails

Moderate Priority

- Implement Phase IV trail improvements

Low Priority

- Assess the Red Barn for nomination on historic registers
- Restore Red Barn pond
- Complete archeological surveys; document historic logging area features
- Complete historical research and interpret past oil exploration
- Assess expansion of parking areas (based on demand)

ONGOING PROJECTS (PHASES I-IV)

The following are not tied to a particular phase and instead will be ongoing:

High Priority

- Expand the preserve
- Update natural and cultural resource and infrastructure inventories
- Complete periodic resource surveys
- Monitor and modify fish barriers
- Implement pond habitat enhancements Manage invasive plants
- Implement resource protection measures
- Monitor Sudden Oak Death
- Revise brochures and website information
- Implement Best Management Practices
- Manage fuels; maintain defensible space clearances; construct fuel breaks
- Maintain important structures
- Amend Williamson Act Contracts on affected Preserve properties to permit open space and recreational uses compatible with agriculture

Moderate Priority

- Monitor and treat channel bank erosion
- Manage brush encroachment
- Monitor rare plants
- Conduct prescribed fires
- Prepare interpretive signs and displays, schedule docent-led hikes and educational events

Low Priority

- Install memorial benches
- Install horse troughs

3 ENVIRONMENTAL CHECKLIST

PROJECT INFORMATION

1.	**Project Title:**	La Honda Creek Open Space Preserve Master Plan
2.	**Lead Agency Name and Address:**	Midpeninsula Regional Open Space District (MROSD) 330 Distel Circle, Los Altos, CA 94022
3.	**Contact Person and Phone Number:**	Lisa Bankosh, Planner III, (650) 691-1200
4.	**Project Location:**	Unincorporated San Mateo County
5.	**Project Sponsor's Name and Address:**	Same as Lead Agency (MROSD)
6.	**General Plan Designation:**	Open Space, Public Recreation and Timber Production
7.	**Zoning:**	RM, RM-CZ/CD, TPZ

8. **Description of Project:** **(Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)**

   See attached project description.

9. **Surrounding Land Uses and Setting:** **(Briefly describe the project's surroundings)** The Preserve is surrounded primarily by agriculture, open space, undeveloped private land, and rural residential uses. Please see attached project description.

10. **Other public agencies whose approval is required:** **(e.g., permits, financing approval, or participation agreement)**
    - US Army Corps of Engineers (Section 404 Permit)
    - US Fish and Wildlife Service (Section 7 compliance)
    - California Department of Fish and Game (Section 1602 and 2080.1 compliance)
    - Regional Water Quality Control Board (Section 401 cert.)
    - Bay Area Air Quality Management District (notification of demolition)
    - San Mateo County (planning entitlements, grading and building permits)

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ **Aesthetics**	☐ **Agriculture and Forest Resources**	☐ **Air Quality**
☐ **Biological Resources**	☐ **Cultural Resources**	☐ **Geology / Soils**
☐ **Greenhouse Gas Emissions**	☐ **Hazards & Hazardous Materials**	☐ **Hydrology / Water Quality**
☐ **Land Use / Planning**	☐ **Mineral Resources**	☐ **Noise**
☐ **Population / Housing**	☐ **Public Services**	☐ **Recreation**
☐ **Transportation / Traffic**	☐ **Utilities / Service Systems**	☐ **Mandatory Findings of Significance**
		☒ **None With Mitigation**

DETERMINATION (To be completed by the Lead Agency)

On the basis of this initial evaluation:

☐ I find that the proposed project could not have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.

☒ I find that although the proposed project COULD have a significant effect on the environment, there WILL NOT be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared.

☐ I find that the proposed project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.

☐ I find that the proposed project **MAY** have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier **EIR** or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **EIR** or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	**Date**
Printed Name	**Title**
Midpeninsula Regional Open Space District	
Agency	

EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.
4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:
   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.
9. The explanation of each issue should identify:
   a) the significance criteria or threshold, if any, used to evaluate each question; and
   b) the mitigation measure identified, if any, to reduce the impact to less than significance.

3.1 AESTHETICS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
I. Aesthetics. Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

3.1.1 ENVIRONMENTAL SETTING

The Preserve has a high degree of visual quality and variability. Multiple scenic vistas are located throughout. (See Exhibits 3.1-1 through 3.1-4) For example, the Preserve offers picturesque panoramas of the surrounding Coastal landscape, especially from higher elevations within the Driscoll Ranch area. Sweeping views of grazing lands are available from multiple locations in the Preserve. Vista Point is an overlook in the northern portion of the preserve, at the end of the Allen Road trail network, offering a panoramic view of the lower preserve and the Pacific Ocean. Scenic views can also be seen from Highway 35, which is an officially-designated State Scenic Highway. (Caltrans 2012) The San Mateo County General Plan identifies scenic corridors along Highways 84 and 35 within the Master Plan area. (County of San Mateo 1986) The view of the Red Barn from Highway 84 is a popular scenic vista. Visual character of the Master Plan area ranges from rolling grassland (as exemplified in Exhibit 3.1-2) and chaparral to dense forest (as exemplified in Exhibit 3.1-4). Multiple historic buildings, including the Red Barn, add visual interest and quality to both the scenic views and the overall character of the planning area. The scenic vistas from and onto the Preserve are generally very high quality. The visual character of the Preserve is also of very high quality. Despite this high quality, there are a few features, such as power lines in the former Sears Ranch area and dilapidated structures that detract from the overall quality. Nevertheless, the detractions are few.

District policy included in the "Resource Management Policies" document and the Coastal Service Plan reduces District-wide visual impacts. Applicable Resource Management Policies include minimizing evidence of human impacts by minimizing visibility of trails and infrastructure and maintaining significant natural landscapes by controlling vegetation to maintain scenic views and requiring tenants to maintain landscapes. The Coastal Service Plan includes several Guidelines, most of which are Mitigation Measures from the Annexation EIR. These Guidelines include limiting views of adjacent properties from trails, siting trails to avoid creation of visible lines, screening of staging areas visible from sensitive viewpoints, undergrounding utilities visible from Scenic Highways, and shielding new light sources.

Exhibit 3.1-1 View from Hill Near White Barn

Exhibit 3.1-2 View of Driscoll Ranch

Exhibit 3.1-3 Roadside View of Red Barn

Exhibit 3.1-4 Visual Character of Redwood Cabin

3.1.2 DISCUSSION

a) Have a substantial adverse effect on a scenic vista?

Less-Than-Significant. The proposed Master Plan primarily involves preservation of the existing natural environment, including the visual setting. Implementation of various components of the Master Plan would involve minor physical modifications that will complement and fit in with the existing visual environment; these include construction of trails, parking areas and other low-intensity recreational facilities such as restrooms, horse troughs, picnic areas, benches, and signage. As described in the project description, new trail alignments would incorporate existing ranch and forest roads, where appropriate. The Master Plan also includes improvements that will benefit and restore the native landscape such as the demolition of existing dilapidated structures, reintroduction of grazing into the northern part of the Preserve to preserve grassland habitat, invasive vegetation management activities, and creation and restoration of ponds.

Moreover, the Master Plan includes specific objectives (Objective PA 7.2) to improve the scenic vistas by removing obstructions to important view sheds, such as overhead power lines and dilapidated and obsolete structures that do not hold historical value:

- 7.2.a. Underground or replace overhead line that extends past Sears Ranch Road with a solar system
- 7.2.b. Demolish and remove unused and/or un-maintained structures that do not hold historic value

Removing overhead utility lines, particularly in the former Sears Ranch area, and locating the lines underground and/or replacing overhead electrical lines with a solar system would help restore unobstructed views of Ray's Peak from the eastern leg of the Driscoll Ranch main access road to allow for wide open rangeland views characteristic of rural ranchlands.

The effects of facility construction on scenic resources in the former Driscoll Ranch area have been analyzed in the Environmental Impact Report for the San Mateo Coastal Annexation ("Annexation EIR"). The Annexation EIR concluded that there would be no significant impacts to scenic vistas resulting from development of open-space-related-facilities if Mitigation Measures *AES-1a, AES-1b, AES-1c*, *AES-1d,* and *AES-1e* were adopted. Note that the Annexation EIR and the mitigation measures currently apply only to the Driscoll Ranch Area (Southern La Honda Creek Area). The proposed Master Plan includes Environmental Protection Guidelines AES-1 through AES-5 that incorporate the mitigation measures from the Annexation EIR that reduce impacts to scenic vistas and extend the application of these measures to the Central and Northern La Honda Creek Areas. (See Appendix A of the La Honda Creek Open Space Preserve Master Plan.) Consistent with the mitigation measures from the Annexation EIR, the Environmental Protection Guidelines require trail alignments and facilities to be designed harmoniously with the surroundings to retain natural appearance and value, including avoidance of trail alignments that create noticeably visible lines on existing landscape. The Guidelines also require that all views of major staging areas be buffered from sensitive viewpoints using screening berms, perimeter plantings, and canopy trees and also require screening of all structures proposed in scenic corridors, including Highways 35 and 84, with native landscaping. The Guidelines additionally require undergrounding of any utilities constructed within a State scenic corridor. Implementation of the Environmental Protection Guidelines minimizes physical effects to existing views onto the project site from visually sensitive areas by avoiding placement of new trails/facilities in areas that would adversely affect existing views of (and from) the Preserve, and by providing natural visual screening to any new facilities seen from the visually sensitive areas described above.

Master Plan facilities are sited consistent with Master Plan policies and objectives, as well as the Environmental Protection Guidelines. For example, the Master Plan includes the construction of a parking/staging area near the Red Barn to accommodate 15 to 25 vehicles, three to six horse trailers, a restroom, signboards and other miscellaneous staging area furnishings. The parking area would be located behind trees and tall vegetation to

minimize its view from Highway 84 and avoid impinging on the scenic view of the Red Barn in adherence with the Environmental Protection Guidelines. The only other developed facilities within 1,000 feet of Highways 35 and 84 include the proposed staging area at the southern end of the Preserve (across from the existing event center). Vegetation or other natural screening for this staging area will be provided per the Service Plan and Environmental Protection Guideline AES-3. In addition, proposed new trails would be located on existing roads and pathways to the maximum extent feasible to minimize the creation of new visible lines on the landscape. New trail alignments, such as the trail to Ray's Peak, have been sited to minimize visibility from the surrounding viewshed. It should be noted that, as a practice, trail planning always takes into account topography and vegetation, siting trails along the contours, rather than across them or along ridgelines, thus reducing visibility from a distance and allowing trails to blend more into the landscape.

Consistent with the conclusions of the Annexation EIR, the proposed Master Plan's impacts to scenic vistas would be *less than significant* with implementation of the Master Plan policies and objectives and the Environmental Protection Guidelines (which include the mitigation measures from the Annexation EIR).

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Less-Than-Significant. As mentioned above, the Red Barn part of is a popular scenic vista from Highway 84. This picturesque structure is the only historic building located within view of a scenic public road. Although Highway 84 is not an officially-designated or eligible State Scenic Highway (Caltrans 2012), it is considered to be part of a San Mateo County Scenic Corridor. The proposed Master Plan (p. 56) indicates that the District would hire a qualified architectural historian to formally evaluate the Red Barn for inclusion in the State and/or National Registers (for Historic Resources). The District would prepare a detailed site-specific plan for the Red Barn that would include management practices to protect and enhance the historical significance of the site while incorporating public access and interpretation. The Environmental Protection Guideline CUL-3 requires that the eligibility of on-site structures for listing in the California Register will be determined by an architectural historian and any structure found eligible for listing on the California Register will be retained and either mothballed or rehabilitated per Secretary of the Interior Standards.

Moreover, exterior modifications to an eligible structure would need to be consistent with the Secretary of the Interior's Standards; therefore, implementation of the proposed Master Plan would not adversely affect a historic structure located within a scenic corridor. The Cultural Resources section of this Initial Study includes more detailed information regarding potential upgrades and maintenance, which would reduce aesthetic effects related to an increase in public access and visitation. Furthermore, as mentioned in "a," the new parking area associated with the Red Barn would be located behind trees and tall vegetation to minimize its view from Highway 84 and avoid affecting the scenic view of the Red Barn.

Rock outcroppings are not common and are known to exist only in a specific area within the northern portion of the Preserve. Implementation of the proposed Master Plan would not affect these outcroppings. Although the District makes an effort to select trail alignments that minimize the need for tree removal, fuel and forest management practices included within the Plan may involve selective logging to increase light penetration (which accelerates forest maturity) and to reduce potential for wildland fire spread. Trees may also be removed to prevent the spread of Sudden Oak Death (SOD). These resource conservation practices would result in the loss of a limited number of trees, and would not result in clear cutting or other tree removal practices that would noticeably affect the appearance of the natural setting. These resource conservation practices would not substantially degrade the visual setting, but would rather result in a healthier, more mature forest over the long term, minimizing the potential loss of acres of trees due to catastrophic wildland fire or SOD. Therefore, these resource conservation practices would work to prevent substantial degradation of the existing aesthetic quality of the affected area. The impact related to damage to scenic resources is considered *less than significant*.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?

Less-Than-Significant. The visual character of the Preserve consists of open rolling grasslands to the south and forests of redwood and Douglas fir to the north. As stated in the Annexation EIR (p. (IV-G-5) the District is most interested in obtaining and/or managing "open space" properties. These are properties that typically have few or very limited existing improvements. La Honda Creek Open Space Preserve is no exception. Few improved facilities exist on the Preserve, and, aside from limited improvements to support public access (trails, small parking areas, etc.), the District intends to maintain and, in some cases, improve the existing visual character. Because the Preserve is so massive and the improvements are so limited (consistent with other Preserves), the Master Plans' potential to impact the existing visual character is less than significant, similar to its potential to impact scenic vistas as described under "a" above. In addition, providing non-motorized public access would not substantively change the existing visual character; consistent with a typical open space viewshed in District Preserve and rural San Mateo County, people will be seen in the background and at a distance either walking, bicycling, and horseback riding and thus would not substantially change the visual character of the area, or rural San Mateo County, or of the Preserve. These non-motorized uses are minor, would not detract from the visual qualities of the landscape, and are consistent with open space and rangeland uses. Consistent with the conclusion of the Annexation EIR, implementation of the proposed Master Plan would result in a *less-than-significant impact* with implementation of the Environmental Protection Guidelines described under "a" above.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Less-Than-Significant. Projects result in significant light or glare impacts when they include substantial new light sources, especially in an area that includes very few artificial light sources, or if they include highly reflective surfaces that can annoy drivers or existing residences.

Open space uses, by their nature, generally do not include facilities with large reflective surfaces that generate substantial glare, such as large buildings with mirrored windows. The only proposed facilities that could noticeably reflect sunlight would be cars in the proposed parking areas and the solar photovoltaic (PV) arrays that may be installed. Reflection from car windshields in a parking lot may be a slight nuisance to drivers but the clarity and the convex curvature of most windshields prevent direct reflection of the sun (as opposed to a flat, mirrored surface), and the resulting glint is therefore not intense. Furthermore, proposed parking areas visible from highways would be screened from view with trees and vegetation (See Environmental Protection Guideline AES-3), which would nearly eliminate reflection from reaching drivers on these roadways. Regarding solar PV facilities, modern solar panels are designed to absorb as much light as possible and are also coated with an anti-reflection layer (often multiple layers) and therefore exhibit low reflectivity, compared to regular glass panels.

The proposed visitor-oriented structures in the Master Plan, which would include restroom facilities, parking areas, and picnic tables, do not require substantial lighting, in part because public access would be allowed only from sunrise to half-an-hour after sunset (i.e. during daylight hours). Specifically, District Regulations Section 805.2 prohibits general use of the Preserve by the public during the nighttime. Moreover, typical District recreational facilities do not include lighting and are generally constructed and maintained with non-reflective materials. Other new structures (e.g. fencing, corrals, culverts) and upgrades to existing structures (e.g. improvements to tenant residences and upgrades to existing structure for environmental interpretive center) would not result in new sources of substantial light or glare.

In the event that outdoor lighting is required for improved public safety or visibility, implementation of Environmental Protection Guideline AES-6 (Coastal Annexation EIR Mitigation Measure AES-2), which requires any new lighting to include light shields or other light/glare reducing devices, would reduce potential impacts of

the Master Plan due to new sources of light or glare to a less-than-significant level. This is consistent with the conclusion of the Coastal Annexation EIR (p. IV-G-5).

3.2 AGRICULTURE AND FOREST RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. Agriculture and Forest Resources.				
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.				
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☒	☐
b) Conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☒	☐
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☒	☐
e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

3.2.1 ENVIRONMENTAL SETTING

Much of the grassland area of the Southern La Honda Creek Area (former Driscoll Ranch) is currently used for commercial grazing. The Central and Northern La Honda Creek Areas also include areas of grassland that have been determined appropriate for grazing. No commercial crops are currently cultivated on the Preserve.

As of 2010, no areas of the Preserve were mapped as Farmland of Statewide or Local Importance, Unique Farmland or Prime Farmland by the Farmland Mapping and Monitoring Program. The Preserve does not contain any designated "Farmland" per the Farmland Mapping and Monitoring Program (FMMP). The FMMP designates the land within Preserve boundaries as either "Grazing Land" or "Other Land." (Department of Conservation 2010) IThe Coastal Annexation EIR included a measure to amend the Coastal Service Plan's definition of "prime agricultural land" to include "land which supports livestock for the production of food and fiber and which has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the U.S. Department of Agriculture." Grazing land within the preserve has an annual carrying capacity of less than one animal unit per acre (Sage Associates 2007, Bush 2006) and therefore does not meet this criteria. No Prime Farmland exists on the Preserve.

The California Land Conservation Act of 1965--commonly referred to as the Williamson Act--enables local governments to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive property tax assessments which are much lower than similarly situated properties because they are based upon farming and open space uses as opposed to full market value. Local governments receive an annual subvention of forgone property tax revenues from the state via the Open Space Subvention Act of 1971. Twelve parcels in the Preserve, which comprise approximately 2,228 acres, are currently under land conservation contracts pursuant to the Williamson Act (WA). The WA parcels in the former Driscoll Ranch area are actively grazed, as allowed under a 50-year grazing lease that began in 2002. The grazing operation on WA parcels in the vicinity of the Red Barn (the former McDonald Ranch) will be reactivated as part of Master Plan Implementation Phase I. It is anticipated that a grazing lease will be executed for this property in Fall 2012.The Preserve is zoned RM (Resource Management), RM-CZ/CD (Resource Management – Coastal Zone) and TPZ (Timberland Preserve Zone). These zoning designations provide for park, open space and recreational uses., as well as agriculture.

Existing District policies ensure that the District sustains and encourages agricultural viability while minimizing impacts on the natural environment. Agricultural practices on District Preserves are guided by the Resource Management Policies as well as the Coastal Service Plan. Resource Management Policies include guidelines to ensure that grazing supports and is compatible with wildlife and wildlife habitat. These guidelines include requirements such as inventory and conservation of sensitive habitats, preparation of site-specific grazing management plans including water quality BMPs, and protection of riparian and aquatic habitats. The Coastal Service Plan includes several guidelines that direct District purchase of and agricultural practices on farmland, as well as guidelines to protect farmland by requiring buffers for development and trails near farmland (where trail use has negative impacts on farming operations). Finally, as part of the Coastal Annexation, the District entered into a Memorandum of Understanding with the San Mateo County Farm Bureau that ensures that all District actions on the Coastside which may impact agricultural operations are vetted by local farmers and ranchers.

3.2.2 DISCUSSION

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Less-Than-Significant. No Prime Farmland, Unique Farmland, or Farmland of Statewide Importance occurs on the Preserve (Department of Conservation 2010). The FMMP identifies "grazing land" and "other land" on the Preserve. Implementation of the proposed Master Plan would continue the grazing and ranching operations in the former Driscoll Ranch area of the Preserve, which are allowed under an existing 50-year lease with a private tenant that began in 2002. In addition, implementation of the Master Plan would reintroduce grazing in the northern portion of the Preserve (the former McDonald Ranch;See Exhibit 7 in Section 2 "Project Description.") Although the proposed Master Plan includes small parking lots and the construction of new trails, implementation of the Master Plan would result in a net expansion of grazing land. Furthermore, the proposed Master Plan includes Environmental Protection Guidelines based on the Annexation EIR mitigation that protect existing agricultural operations from public access and maintenance activities by providing buffers between agricultural operations and trails (where user impacts may negatively impact agriculture), consulting with agricultural operators regarding siting trail alignments, restricting application of pesticides where they could affect adjacent agriculture, etc. The proposed Master Plan would also be consistent with the District's Resource Management Policies and the Coastal Service Plan, as described above in the Environmental Setting. Therefore, there would be a *less-than-significant* impact to farmland.

b) Conflict with existing zoning for agricultural use or a Williamson Act contract?

Less-Than-Significant. Implementation of the proposed Master Plan would allow existing agricultural uses to continue while integrating public recreation throughout most of the Preserve. The Master Plan also includes reintroducing grazing in the Central and Northern La Honda Creek Areas. Grazing and ranching are considered allowable agricultural uses under the WA. Compatible uses under the WA also include "Open Space Use" and "Recreational Use." "Recreational Use" is defined under Government Code 51201(n) under the WA as the use of land in its agricultural or natural state by the public, with or without change, for any of the following: walking, hiking, picnicking, camping, swimming, boating, fishing, hunting, or other outdoor games or sports for which facilities are provided for public participation. "Open Space Use" in San Mateo County is defined as the use or maintenance of land in a manner that preserves its natural characteristics, beauty, or openness for the benefit and enjoyment of the public within a:

- state-designated scenic highway corridor, which includes all lands adjacent to and visible from State Hwy 35 from the Santa Cruz County Line to State Route 92;
- wildlife habitat area, defined as a land or water area designated by the Board of Supervisors after consulting with and considering the recommendation from the Department of Fish and Game, as an area of great importance for the protection or enhancement of the wildlife resources of the state; or
- managed wetlands area, defined as an area diked off from the ocean or any bay, river, or stream to which water is occasionally admitted, and which, for at least three consecutive years immediately prior to being placed within an agricultural preserve pursuant to this chapter, was used and maintained as waterfowl hunting preserve or game refuge or for agricultural purposes.

The Preserve is zoned RM (Resource Management), RM-CZ/CD (Resource Management – Coastal Zone) and TPZ (Timberland Preserve Zone). These zoning designations provide for park, open space and recreational uses. Thus, opening new areas of the Preserve to public use and implementing new public access improvements as

well as habitat and open space enhancement projects, as identified in the Master Plan, is consistent with the current zoning.

The District's mission to preserve, protect, and maintain lands as open space and to support agricultural uses within the Coastside Protection Area essentially meets the intent and purpose of the WA. Since the District is a tax-exempt public agency whose mission is to preserve open space, the Williamson Act is not necessary to achieve land conservation objectives on District lands. For these reasons, the District will seek to file notices of non-renewal with San Mateo County for lands within the Preserve that are under WA contracts. Non-renewal is the standard, preferred administrative method of terminating a contract on a parcel of land; the entire non-renewal process requires a nine-year wind down period. Non-renewal of the WA contracts is an administrative procedure that will not affect the agricultural use that is currently present on the Preserve. Consistent with the District's mission, agricultural lands will remain protected after non-renewal.

The Master Plan identifies development of trails and staging areas that would facilitate open space and recreational uses, both of which are compatible with ongoing cattle grazing in grassland areas of the property. Although the proposed Master Plan represents one of the first examples of this mixed use of open space in the District, many parks, both country-wide and in the San Francisco Bay region, successfully integrate these uses. The Williamson Act contracts on the affected Preserve properties are quite old and out-of-date in regards to current statutory provisions governing compatible uses, with these mid-1960s contracts specifically allowing *only* those uses that directly support the production of agricultural commodities. The proposed Master Plan therefore includes amendment of the contracts to include compatible open space and recreational uses, as provided for by Section 51253 of the Williamson Act.

Before any non-agricultural use (e.g. staging areas or hiking trails) is implemented within the areas under WA contracts, the contracts would either be amended and updated, in cooperation with the County, to provide for such compatible uses, or the improvement would be deferred until the contract nonrenewal period has passed and the property is out of the contract. The administrative act of nonrenewal along with any necessary contract amendments would abide by San Mateo County requirements. Current and future land uses as described in the Master Plan would remain consistent with the WA contracts, as amended, throughout the non-renewal period. Therefore, the project would result in a *less-than-significant* impact associated with conflicts with Williamson Act contracts.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No Impact. As mentioned above under "b," areas of the Preserve are zoned TPZ (Timberland Preserve Zone), which allows park, open space, and recreational uses. The proposed Master Plan would not require a rezone. Therefore, the proposed Master Plan would result in *no impact* related to conflicts with the zoning of forest land or timberland.

d) Result in the loss of forest land or conversion of forest land to non-forest use?

Less-Than-Significant. Implementation of the proposed Master Plan does not include development of new structures or facilities that would require substantial tree removal. Trails would be sited to avoid tree removal, as feasible, and would not result in loss of forest land. As mentioned under "b" and "c" above, park, open space, and recreational uses are consistent with the TPZ zone. The Master Plan includes vegetation management and forest management components (including surveys and inventories, identification of landmark trees, fuels

management, proper removal of diseased trees, invasive species control, etc.), which would help preserve the existing forests. Implementation of the proposed Master Plan would result ina *less-than-significant* impact.

e) Involve other changes in the existing environment, which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

No Impact. Implementation of the proposed Master Plan would not involve other changes that could result in conversion of farmland or forest land to non-agricultural or non-forest use. As described in the discussions under "a" through "d" above, implementation of the proposed Master Plan would result in *no impact* related to conversion of agricultural or forest land.

3.3 AIR QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. Air Quality.				
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied on to make the following determinations.				
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

3.3.1 ENVIRONMENTAL SETTING

The La Honda Creek Open Space Preserve is located in San Mateo County, which lies in the San Francisco Bay Area Air Basin (SFBAAB) and is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). With respect to ozone, San Mateo County is currently designated as a nonattainment area for the 1-hour state ambient air quality standard and the 8-hour state and national ambient air quality standards (ARB 2010). San Mateo County is designated as unclassified for the national standard for respirable particulate matter with an aerodynamic diameter of 10 micrometers or less (PM_{10}) and as nonattainment for the state standard for PM_{10}; and is designated as nonattainment for the state and national standards for fine particulate matter with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$) (ARB 2011).

Air quality within San Mateo County is regulated by such agencies as the U.S. Environmental Protection Agency (EPA), and California Air Resources Board (ARB) at the federal and state levels, respectively, and locally by the BAAQMD. The BAAQMD seeks to improve air quality conditions through a comprehensive program of planning, regulation, enforcement, technical innovation, and promotion of the understanding of air quality issues. The clean air strategy of the BAAQMD consists of the development of programs for the attainment of ambient air quality standards, adoption and enforcement of rules and regulations, and issuance of permits for stationary sources. BAAQMD also inspects stationary sources, responds to citizen complaints, monitors ambient air quality

and meteorological conditions, and implements other programs and regulations required by the federal Clean Air Act, federal Clean Air Act Amendments of 1990, and the California Clean Air Act.

The BAAQMD prepared the Draft Bay Area 2010 Clean Air Plan, which defines a strategy to: (1) reduce emissions and decrease ambient concentrations of harmful pollutants; (2) safeguard public health by reducing exposure to air pollutants that pose the greatest health risk, with an emphasis on protecting the communities most heavily impacted by air pollution; and (3) reduce greenhouse gas (GHG) emissions to protect the climate (BAAQMD 2010). In compliance with the requirements set forth in the California Clean Air Act, the plan specifically addresses the nonattainment status for ozone and to a lesser extent, PM_{10} and $PM_{2.5}$.

BAAQMD adopted new thresholds of significance and guidance for the evaluation of projects under CEQA in early June of 2010 (BAAQMD 2010). These documents provide detailed guidance for evaluating both short-term construction activities and the long-term operations of new facilities. The BAAQMD adopted the following quantitative thresholds of significance for the evaluation of criteria air pollutants (CAPs) and precursors generated by construction and operational activities:

- Average daily emissions of 54 pounds per day (lb/day) of reactive organic gases (ROG),
- Average daily emissions of 54 lb/day of oxides of nitrogen (NO_X),
- Average daily emissions of 82 lb/day of PM_{10} exhaust,
- Average daily emissions of 54 lb/day of $PM_{2.5}$ exhaust,
- An incremental increase in the annual average concentration of $PM_{2.5}$ concentrations greater than 0.3 micrograms per cubic meter, and
- Fugitive PM_{10} and $PM_{2.5}$ dust with implementation of best management practices for dust control.

Note that BAAQMD defines sensitive receptors as “facilities that house or attract children, the elderly, people with illnesses or others who are especially sensitive to the effects of air pollutants. Hospitals, schools, convalescent facilities, and residential areas are examples of sensitive receptors.” (BAAQMD 2010) Although not specifically stated in the BAAQMD definition, people who are active outdoors are considered by the EPA to be sensitive to criteria air pollutants, such as ozone, and would fall under the “others” category in the BAAQMD definition. (EPA 2012)

It should also be noted that the Coastal Service Plan includes Implementation Action G.6J(i) to reduce fugitive dust emissions. This Implementation Action is taken from Annexation EIR Mitigation Measure AIR-1, which is incorporated into the proposed project (Environmental Protection Guideline AQ-1).

3.3.2 DISCUSSION

a) Conflict with or obstruct implementation of the applicable air quality plan?

Less-Than-Significant. The emissions inventories used to develop a region’s air quality attainment plans are based primarily on projected population growth and vehicle miles traveled (VMT) for the region, which are based, in part, on the planned growth identified in regional and community plans. Therefore, projects that would result in increases in population or employment growth beyond that projected in regional or community plans could result in increases in VMT above that planned in the attainment plan, resulting in mobile-source emissions that could conflict with a region’s air quality planning efforts. Increases in VMT beyond that projected in area plans generally would be considered to have a significant adverse incremental effect on the region’s ability to attain or maintain state and federal ambient air quality standards.

The San Mateo County General Plan designates the Preserve as Open Space, Public Recreation and Timber Production, which allow for resource management, recreation and agricultural uses. The Preserve is zoned RM

(Resource Management), RM-CZ/CD (Resource Management – Coastal Zone) and TPZ (Timberland Preserve Zone). These zoning designations provide for park, open space, recreation, and resource management uses. The Goals, Policies, and Objectives of the proposed Master Plan are designed to carefully balance natural resource management with increasing public access and recreation opportunities. Thus, implementation of the proposed Master Plan would not conflict with the County's land use designation and zoning for the Preserve. In addition, the San Mateo County Trails Plan highlights the Preserve area as a route for the Harrington Creek Trail and the Bay Area Ridge Trail. Updated versions of both of these regional trails are proposed in the Master Plan, and therefore the Master Plan is consistent with the San Mateo County Trails Plan.

Because the proposed Master Plan would not change the amount of development projected in the San Mateo County General Plan, it would be consistent with the population growth and VMT projections for the SFBAAB contained in BAAQMD's Clean Air Plan (which is based on general plan projections) and thus would not interfere with the region's ability to attain or maintain state and national ambient air quality standards. Also, the La Honda Creek Open Space Master Plan would not result in the operation of any major stationary emission sources or extensive, ongoing use of heavy-duty off-road equipment. Thus, implementation of the proposed project would not conflict with or obstruct implementation of any air quality planning efforts. As a result, this impact would be less than significant. No mitigation is required.

b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

The proposed Master Plan would result in both short-term construction-related emissions and long-term operational emissions. These are discussed separately below.

SHORT-TERM CONSTRUCTION-GENERATED CRITERIA AIR POLLUTANT AND PRECURSOR EMISSIONS

Less-Than-Significant with Mitigation Incorporated. Implementation of the Master Plan would include a variety of construction and maintenance activities during its 30 year implementation time span, including the construction of temporary parking lots, permanent parking lots, graveling of roads, establishment of new trails, implementation of drainage features, rehabilitation of existing structures (e.g., the Red Barn), demolition of some dilapidated structures, rehabilitation of ponds, maintenance of roads and trails and other facilities, and replacement of existing overhead utility lines with underground lines or an on-site solar panel array.

Construction activities associated with change-in-use projects could include site preparation (e.g., excavation, grading, and vegetation clearing), trail reconstruction and repairs, recontouring of slopes to reduce erosion and runoff, establishment of paved or unpaved parking and staging areas for recreational visitors, and upgrades to bridges. These activities could involve the use of off-road, heavy-duty construction equipment that would generate short-term exhaust emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$. Exhaust emission would also be generated by haul trucks delivering supplies to construction sites and by worker commute trips.

The BAAQMD-approved California Emissions Estimator Model, Version 2001.1.1 (CalEEMod) was used to estimate maximum daily emissions that could be generated by the types of construction activity that would occur on the Preserve. (South Coast Air Quality Management District 2011) Table 3.3-1 summarizes the modeled maximum daily level of emissions of CAPs and precursors associated with construction activity that would occur under the proposed Master Plan. Modeling input parameters were based on the types of construction activities discussed in Section 2 "Project Description," as well as default parameters representative of conditions in San Mateo County. Refer to Appendix B for detailed modeling assumptions, inputs, and outputs.

Table 3.3-1 Summary of Modeled Average Daily Criteria Air Pollutant and Precursor Emissions from Construction Activities

Construction Activity	Emissions (lb/day)			
	ROG	NO_X	PM_{10} Exhaust	$PM_{2.5}$ Exhaust
Construction Activity	30	51	3	3
Thresholds of Significance[2]	54	54	82	54

Notes: lb/day = pounds per day; ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = particulate matter with aerodynamic diameter less than 10 microns; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns.
Detailed assumptions and modeling output files are included in Appendix B.
Source: Modeling conducted by Ascent Environmental 2012.

As shown in Table 3.3-1, worst-case maximum daily levels of construction-related exhaust emissions would not exceed BAAQMD's thresholds of significance for construction-generated CAPs and precursors. Thus, exhaust emissions from construction equipment would not violate or contribute to emission concentrations that exceed the NAAQS and CAAQS and would not violate or contribute substantially to the nonattainment status designated for any CAP in the SFBAAB.

Fugitive dust emissions, however, including emissions of PM_{10}, and $PM_{2.5}$, would also be generated by ground disturbance and earth movement activities (i.e., excavation, grading), as well as travel by haul trucks, vehicles, and equipment on dirt roadways and other unpaved surfaces. Fugitive dust emissions would vary as a function of soil silt content, soil moisture, wind speed, and the area of disturbance. While project-related construction activity would be subject to the dust control practices required by the Environmental Protection Guideline AQ-1, which is consistent with Mitigation Measure AIR-1 from the San Mateo Coastal Annexation EIR, these dust control practices do not include all of the Best Management Practices now required by BAAQMD. Therefore, construction-related emissions of fugitive dust could potentially violate or contribute to emission concentrations that exceed the NAAQS and CAAQS for PM_{10}, and $PM_{2.5}$ and/or violate or contribute substantially to the nonattainment status designated for PM_{10} and $PM_{2.5}$ in the SFBAAB. Moreover, construction-generated emissions could expose sensitive receptors to substantial pollutant concentrations, and/or conflict with air quality planning efforts. As a result, this would be a **significant impact**.

LONG-TERM OPERATIONAL CRITERIA AIR POLLUTANT AND PRECURSOR EMISSIONS

Less-Than-Significant. Operation of the proposed project would result in long-term regional emissions of ROG, NO_X, and PM_{10}, and $PM_{2.5}$ associated with area sources (e.g., landscaping maintenance equipment), on-site energy consumption, and vehicle trips associated with visits by Preserve visitors and staff. According to the traffic analysis, the proposed project would generate approximately 180 trips during the peak 4-hour period on a peak weekend day. It is assumed that an additional 90 trips would be generated during the remainder of a peak weekend day and, thus, 270 daily trips could be generated by the proposed project in a single day.

The operational emissions (i.e., regional area- and mobile-source emissions of ROG, NO_X, and PM_{10}, and $PM_{2.5}$) associated with implementation of the proposed project were also estimated using CalEEMod (South Coast Air Quality Management District 2011), as recommended by BAAQMD, based on inputs from the project description and default model settings for San Mateo County where project-specific information was not available. The project's operational emissions are presented in Table 3.3-2. Refer to Appendix B for a detailed summary of the CalEEMod modeling assumptions, inputs, and outputs.

Table 3.3-2 Summary of Modeled Emissions of Criteria Air Pollutants and Precursors Associated with Operation of La Honda Creek Open Space Preserve

Operational Activities	Emissions (lb/day)			
	ROG	NO_X	PM_{10}	$PM_{2.5}$
Area Sources	0.3	0.00	0.00	0.00
Energy Use	<0.1	<0.1	<0.1	<0.1
Mobile Source (visitor vehicle trips)	3	5	47	4
Total	3	5	47	4
BAAQMD Thresholds of Significance	**54**	**54**	**82**	**54**

Notes: lb/day = pounds per day; ROG = reactive organic gases; NO_X = oxides of nitrogen; PM_{10} = particulate matter with aerodynamic diameter less than 10 microns; $PM_{2.5}$ = particulate matter with aerodynamic diameter less than 2.5 microns. Total may not be exact due to rounding. Detailed assumptions and modeling output files are included in Appendix B.
Source: Modeling conducted by Ascent Environmental 2012.

As shown in Table 3.3-2, the operational emissions associated with implementation of the proposed project would not exceed the applicable BAAQMD-recommended thresholds of significance for ROG, NO_X, PM_{10}, or $PM_{2.5}$. In addition, because project-generated vehicle trips would not result in heavy traffic congestion at signalized intersections, the project would not have the potential to result in localized concentrations of carbon monoxide that would exceed applicable ambient air quality standards. As a result, the project would not violate or contribute substantially to an existing air quality violation or conflict with air quality planning in the SFBAAB. Therefore, this impact would be *less than significant*.

Mitigation Measure 3.3-1

The District shall require all its construction contractors to implement the following basic construction mitigation measures. Some, but not all of these measures are similar to the dust control measures required by the Environmental Protection Guidelines which directly incorporate the Mitigation Measures of the San Mateo Coastal Annexation EIR. (The measures below provide updated consistency with BAAQMD regulations.)

Basic Construction Mitigation Measures

- *All exposed and un-compacted surfaces (e.g., staging areas, soil piles, and graded areas,) shall either be watered two times per day or covered with mulch, straw, or other dust control cover.*
- *All haul trucks transporting soil, sand, or other loose material off-site shall be covered.*
- *All visible mud or dirt track-out onto adjacent public roads shall be collected and removed at least once per day. The use of dry power sweeping is prohibited.*
- *All vehicle speeds on unpaved roads shall be limited to 15 miles per hour (mph).*
- *All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding, dust control covers, or soil binders are used.*
- *Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measures (ATCM) Title 13, Section 2485 of California Code of Regulations). Clear signage shall be provided for construction workers at all access points.*

- *All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.*

- *Post a publicly visible sign with the telephone number and person to contact at the Lead Agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. BAAQMD's phone number shall also be visible to ensure compliance with applicable regulations.*

Significance after Mitigation

The dust control measures in Mitigation Measure 3.3-1 would result in reductions in both fugitive emissions of PM_{10} and $PM_{2.5}$ though the exact amount of the reduction cannot be quantified. Individual dust control measures have been shown to reduce fugitive dust by anywhere from 30% to more than 90% and, in the aggregate, best management practices would substantially reduce fugitive dust emissions from construction sites (BAAQMD 2010, p. D-47). As stated above, BAAQMD would consider fugitive PM emissions to be reduced to a *less-than-significant* level with implementation of the dust control measures in Mitigation Measure 3.3-1.

c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?

Less-Than-Significant with Mitigation Incorporated. The SFBAAB is currently designated as a nonattainment area for state and national ozone standards and nonattainment for the state PM_{10} standards and state and national $PM_{2.5}$ standards. SFBAAB's nonattainment status is attributed to the region's development history. Past, present and future development projects contribute to the region's adverse air quality impacts on a cumulative basis. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. As explained in BAAQMD's CEQA Guidelines, and consistent with CEQA, if a project's contribution to the cumulative impact is considerable, then the project's impact on air quality would be considered significant (BAAQMD 2010).

In developing thresholds of significance for air pollutants, BAAQMD considered the emission levels for which a project's individual emissions would be cumulatively considerable. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the region's existing air quality conditions. Therefore, additional analysis to assess cumulative impacts is unnecessary.

As discussed in the analysis under item "b" above, construction -generated exhaust emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ would not exceed applicable thresholds and, therefore, would not violate or contribute substantially to an existing or projected air quality violation. Also, construction -related emissions of fugitive PM_{10} and $PM_{2.5}$ dust would not contribute to emission concentrations that exceed the NAAQS and CAAQS for PM_{10} and $PM_{2.5}$ or contribute substantially to the nonattainment status designated for PM_{10} and $PM_{2.5}$ in the SFBAAB with implementation of BAAQMD's Best Management Practices for controlling fugitive dust, as required by Mitigation Measure 3.3-1. In addition, operational emissions of ROG, NO_X, PM_{10}, and $PM_{2.5}$ would not exceed applicable thresholds. As a result, project-generated emissions of criteria air pollutants and precursors would not be cumulatively considerable. This would be a *less-than-significant* impact with implementation of Mitigation Measure 3.3-1.

d) Expose sensitive receptors to substantial pollutant concentrations?

Criteria air pollutants and precursors; diesel particulate matter emissions; and naturally occurring asbestos are discussed separately below.

CRITERIA AIR POLLUTANTS AND PRECURSORS

Less-Than-Significant with Mitigation Incorporated. Some residences would continue to be inhabited on the Preserve. Otherwise, the surrounding land uses consist of undeveloped land. Implementation of the proposed Master Plan would potentially introduce people participating in physical activity (i.e. hiking and bicycling), which are considered to be sensitive receptors in this analysis, to air pollutants during construction activities. However, it is District standard practice to restrict public access near construction zones. Furthermore, as discussed in b) above, project-related construction and operations would not result in emissions of ROG, NO_X, PM_{10}, $PM_{2.5}$ or local carbon monoxide emissions that would result in or contribute substantially to an air quality violation. Fugitive dust emissions associated with construction-related ground disturbance would be reduced to a less-than-significant level with implementation of Mitigation Measure 3.3-1. Emissions-generating construction activity would occur at different locations on the Preserve and not continue at any single location for an extended period. The majority of operational emissions would be from vehicles traveling to and from the Preserve, as shown in Table 3.3-2, and therefore not result in localized concentrations of any CAPs. Therefore, project-related emissions would not expose sensitive receptors to substantial concentrations of CAPs.

DIESEL PARTICULATE MATTER

Less-Than-Significant. Construction-related activities would result in temporary, short-term emissions of diesel PM from the exhaust of off-road heavy-duty diesel equipment used for site preparation (e.g., demolition, grading, excavation, grading, and clearing); paving; trucks delivering and removing materials from construction sites; and other miscellaneous activities. According to ARB, the potential cancer risk from the inhalation of diesel PM is a more serious risk than the potential non-cancer health impacts (ARB 2003). Consequently, for the purposes of this analysis, the discussion below focuses on cancer rather than non-cancer risks.

The dose to which receptors are exposed is the primary factor used to determine health risk (i.e., potential exposure to TAC emission levels that exceed applicable standards). Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher level of exposure to the exposed individual. In other words, the risks estimated for an exposed individual are higher if a fixed exposure occurs over a longer period. According to the Office of Environmental Health Hazard Assessment, Health Risk Assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the duration of exposure (OEHHA 2001). The use of mobilized equipment for construction activities would be temporary at any one location, and would dissipate with increasing distance from the source. In addition, all construction equipment would not operate at the same time or location and, therefore, not expose the same nearby receptors to increased levels of diesel PM during the entire construction period. Moreover, as shown in Table 3.3-1 above, average daily emissions of $PM_{2.5}$ exhaust would not exceed BAAQMD's threshold of significance of 54 lb/day. For these reasons, and because of the highly dispersive properties of diesel PM (Zhu et. al. 2002), short-term construction-generated TAC emissions would not expose sensitive receptors to an incremental increase in cancer risk that exceeds 10 in one million or a Hazard Index greater than 1.0 of the maximally exposed individual; or result in an incremental increase in the annual average concentration of $PM_{2.5}$ concentrations greater than 0.3 micrograms per cubic meter. This impact would be *less than significant*.

NATURALLY OCCURRING ASBESTOS

No Impact. Naturally occurring asbestos (NOA) was identified as a TAC in 1986 by ARB. NOA is located in many parts of California, including the Bay Area, and is commonly associated with ultramafic rocks, according to a special publication published by the California Department of Conservation, which is now named the California Geological Survey (California Department of Conservation 2002). Asbestos is the common name for a group of naturally occurring fibrous silicate minerals that can separate into thin but strong and durable fibers. Ultramafic rocks form in high-temperature environments well below the surface of the earth. By the time they are exposed at the surface by geologic uplift and erosion, ultramafic rocks may be partially to completely altered into a type of metamorphic rock called serpentinite. Sometimes the metamorphic conditions are right for the formation of chrysotile asbestos or tremolite-actinolite asbestos in the bodies of these rocks, along their boundaries, or in the soil. Exposure to asbestos may result in inhalation or ingestion of asbestos fibers, which over time may result in damage to the lungs or membranes that cover the lungs, leading to illness or even death.

According to the *General Location Guide for Ultramafic Rocks in California—Areas More Likely to Contain Naturally Occurring Asbestos*, the Preserve is not located in areas that are more likely to contain NOA (California Geological Survey 2007, California Department of Conservation 2000). Therefore, any ground disturbance activity associated with project-related construction or operations would not to result in the reentrainment of NOA-containing dust. There would be *no impact*.

e) Create objectionable odors affecting a substantial number of people?

Less-Than-Significant. The occurrence and severity of odor impacts depend on numerous factors, including the nature, frequency, and intensity of the source; wind speed and direction; and the presence of sensitive receptors. Although offensive odors rarely cause any physical harm, they still can be very unpleasant, leading to considerable distress and often generating citizen complaints to local governments and regulatory agencies.

BAAQMD has established Regulation 7 (Odorous Emissions) to address odor issues. Regulation 7 places general limitations on odorous substances and specific emission limitations on certain odorous compounds. Project implementation would not result in any major sources of odor and the project type is not one of the common types of facilities or activities that are known to produce odors (e.g., landfill, coffee roaster, wastewater treatment facility). In addition, the diesel exhaust from the use of heavy-duty equipment during construction and demolition activities would be intermittent and temporary, and would dissipate rapidly from the source with an increase in distance. Also, construction activity would not occur at any single location for an extended period of time. Portable restrooms and pit toilet restrooms would be properly maintained and thus not become an odor nuisance. Therefore, project implementation would not create objectionable odors affecting a substantial number of people. As a result, this impact would be less than significant.

3.4 BIOLOGICAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IV. Biological Resources. Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

3.4.1 ENVIRONMENTAL SETTING

La Honda Creek Open Space Preserve is located on the western slopes of the Santa Cruz Mountains. The Santa Cruz Mountain region is topographically and ecologically diverse, stretching from the Pacific coast to the peak of Loma Prieta, and encompassing a variety of biological communities, ranging from chaparral to coast redwood forests to marshes. The diverse array of habitats, along with topographic diversity and numerous microclimates, results in high levels of biodiversity and number of endemic species.

Three major tributaries of San Gregorio Creek drain the Preserve: La Honda Creek flows along the eastern border of the Preserve; Harrington Creek flows through its center; and Bogess Creek flows along the western boundary. All three creeks reach their confluence with San Gregorio Creek to the south of the Driscoll Ranch area. The Preserve also contains Weeks Creek, a tributary of La Honda Creek. Additionally, there are nearly four

miles of intermittent or ephemeral tributary streams within Preserve boundaries. Multiple ponds and numerous natural springs exist within the Preserve.

The District has prepared detailed vegetation maps of the Preserve and classified vegetation cover types into 27 categories, based on the Manual of California Vegetation (Sawyer and Keeler-Wolf 1995) (Table 3.4-1). These categories were consolidated into seven major habitat types:

- California annual grasslands
- Oak and broadleaf woodland
- Redwood forest
- Coyote brush scrub
- Douglas-fir forest
- Willow riparian forest
- Wetland

Table 3.4-1 Terrestrial Habitat Types on the Preserve

Habitat Type (Percent of Total Preserve)	Vegetation Classification	Acres
Annual Grassland (38%)	California Annual Grasslands Series	2,163
Oak and Broadleaf Woodland (19%)	Coast Live Oak Series	757
	Lower Elevation Mixed Broadleaf Hardwoods Mapping Unit	290
	Tanoak (California Bay) Multiple Series Mapping Unit	18
	California Buckeye Series	46
Redwood Forest (18%)	Redwood / Tanoak Association	608
	Douglas-fir / Coast Redwood Association	250
	Redwood Series	182
Coyote Brush Scrub (15%)	Coyote Brush Mesic Stands (Coyote Brush - Ocean Spray - Rubus spp. - Poison Oak)	472
	Coyote Brush Xeric Stands (Coyote Brush – California Sagebrush - Mimulus spp.; Coyote Brush – Successional)	175
	Coyote Brush Series	122
	Coyote Brush Open Stands (Coyote Brush/California Annual Grasslands)	88
	Mixed Chaparral (Manzanita spp. -Chamise - Blue-blossom - Coffeeberry - Toyon – Coyote Bush) – Coastal Scrub Transition	6
	Poison Oak Series	2
Douglas-Fir Forest (3%)	Douglas-fir Association – Mixed Hardwoods Mapping Unit	141
	Douglas Fir Series	36
Willow Riparian Woodland (2%)	Mixed Willow (Arroyo willow identified as component)	76
	Red Alder Series (Mixed willow present)	27
Wetland (less than 0.3%)	Small Ephemeral Ponds	10
	Sedge – Juncus Meadow Mapping Unit	6
Other (4%)	Weedy Ruderal (Harding Grass - Velvet Grass - Thistle spp.)	170
	Built Up/Urban Disturbance	53
	Sparsely vegetated Cliffs, landslides or outcroppings	7
	Eucalyptus Series	2
	Planted Stands of Pine (Monterey Pine, Monterey Cypress, other spp)	1
	Broom Series	1
	Agriculture	< 0.20
Total		**5,708**

Note: Discrepancy in total acreage is due to differences in the recorded parcel
Source: MROSD 2007, La Honda Creek Open Space Preserve Master Plan, Existing Conditions Report.

California annual grasslands are the most common vegetation type in the Preserve, covering 38% of the Preserve. This community is dominated by annual grasses such as Italian rye (*Lolium multiflorum*), rattail fescue (*Vulpia myuros*), wild oats (*Avena barbata*), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), rattlesnake grass (*Briza maxima*) and Mediterranean barley (*Hordeum marinum* ssp. *gossoneanum*). Patches of native perennial grasses, such as purple needlegrass (*Nasella pulchra*), California brome (*Bromus carinatus*) and blue wildrye (*Elymus glaucus*) are intermixed with the more common annual grasses. Both native and exotic forbs, such as California cudweed (*Gnaphalium californicum*), California aster (*Aster chilensis*), bristly oxtongue (*Picris echioides*) and Italian thistle (*Carduus pycnocephalus*) form a significant component of this community.

Oak and broadleaf woodlands cover 19% of the Preserve. Coast live oak (*Quercus agrifolia*) is the dominant species in the oak woodlands. California bay (*Umbellularia californica*), California buckeye (*Aesculus californica*) and Pacific madrone (*Arbutus menziesii*) are also significant components of the canopy. Poison oak (*Toxicodendron diversilobum*), coffeeberry (*Rhamnus californica*) and coyote brush (*Baccharis pilularis)* are common shrubs in the understory, and common herbs include cow parsnip (*Heracleum lanatum*), California aster (*Aster chilensis*), soap plant (*Chlorogalum pomeridianum*) and sneezeweed (*Helenium puberulum*).

Coastal redwood (*Sequoia sempervirens*) is a dominant or co-dominant species in 18% of the Preserve. In moist, riparian settings, bigleaf maple (*Acer macrophyllum*) is a significant component of the canopy, while in drier, upland settings, tanoak (*Lithocarpus densiflorus*) and Douglas-fir (*Pseudotsuga menziesii*) increase in abundance. Tanoak mortality due to Sudden Oak Death (SOD) is occurring on the Preserve. Under-story species include poison oak, redwood sorrel (*Oxalis oregana*) and western sword fern (*Polystichum munitum*). Coast redwoods tend to occur in valleys that are flooded every 30 to 60 years. This flooding regime suppresses other tree species that are less tolerant of inundation.

Coyote brush scrub habitat covers 15% of the Preserve. Periodic fire is associated with these stands, as coyote brush commonly retains a large amount of standing dead wood, which is highly flammable. Coyote brush is the dominant species in these vegetation types. Poison oak, California sagebrush (*Artemisia californica*), California blackberry (*Rubus ursinus*) and sticky monkeyflower (*Mimulus aurantiacus*) are other common shrubs and vines in this community. Common herbs include mugwort (*Artemisia douglasii*), bracken fern (*Pteridium aquilinum*) and California cudweed.

Douglas-fir forests cover less than 3% of the Preserve, and are concentrated in several large patches in the northern portion of the Preserve. Douglas-fir is the dominant tree species in this community. In moister areas, coast redwood is a co-dominant. Tanoak is also a significant canopy or subcanopy tree in this community. Common shrubs and vines in this community include poison oak, wood rose (*Rosa gymnocarpa*) and California honeysuckle (*Lonciera hispidula*). Ferns, such as common lady fern (*Athyrium filix-femina* var. *cyclosorum*) and California wood fern (*Dryopteris arguta*), are common in the understory.

The District is currently guided by Board-adopted Resource Management Policies, which include a substantial number of policies related to vegetation and wildlife management, invasive species management, water resources protection, grazing management, forest management, ecological succession, and habitat connectivity. The proposed Master Plan has been prepared consistent with these policies.

3.4.2 DISCUSSION

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?

Less-Than-Significant with Mitigation Incorporated. Based on habitats present on the Preserve and species ranges and requirements, 34 special-status plant species have the potential to occur on the Preserve (Appendix C). The District also manages for other rare plants for which more information is needed or which have a limited distribution (California Rare Plant Ranks 3 and 4). Four special-status plants, King's mountain manzanita (*Arctostaphylos regismontana*), western leatherwood (*Dirca occidentalis*), California bottle-brush grass (Hystrix californica), and Choris's popcornflower (*Plagiobothrys chorisianus* var. *chorisianus*), are known to occur within the Preserve (Ecosystems West 2008).

Sixteen special-status wildlife species have potential to occur on the Preserve (Appendix C). Five of these have been documented in the Preserve: steelhead trout (*Oncorhynchus mykiss irideus*), California red-legged frog (*Rana draytonii*), western pond turtle (*Emys marmorata*), pallid bat (*Antrozous pallidus*), and Townsend's big-eared bat (*Corynorhinus townsendii*).

A number of Master Plan Objectives were designed to protect natural resources located on the Preserve. These include:

- Master Plan Objective NR.3.1 protects unique and sensitive resources, which include managing key areas that require special protection due to high quality habitat, presence of sensitive species, and/or susceptibility to negative resource impacts as conservation areas where use is limited. For instance, the two CMUs proposed in the Master Plan would protect sensitive habitats.
- Master Plan Objectives NR 4.1, 4.2, and 4.3 protect water quality and improve stream habitat, protect the quality of existing pond habitat, develop and restore former stock ponds to increase available aquatic habitat, and identify and maintain existing springs and water infrastructure.
- Master Plan Objectives NR 5.1, 5.2, 5.3, 5.4, and 5.5 continue and expand the conservation grazing program, utilize management techniques to prevent brush encroachment into grassland habitat, protect populations of rare plants, protect and where appropriate, enhance forest habitat, and eradicate or control non-native, invasive species.
- Master Plan Objectives NR 6.1 and 6.2 protect and enhance populations of listed wildlife species, and identify and protect key wildlife corridors.

While the District will take all the precautions listed in the Master Plan, in the course of implementing proposed improvements, the District may still encounter special-status species that were not detected in earlier surveys due to the difficulty in surveying the entire preserve or the cryptic nature of the species, or it may not be feasible to completely avoid the sensitive resource area.

The Master Plan actions have the potential to adversely affect the Preserve's biological resources, especially where new facilities, such as trails, bridges, signage, picnic sites, and parking areas are introduced into previously undisturbed areas. Stream bank restoration and reinforcement, installation of culverts at stream crossings, creation of fuel breaks, and other vegetation management activities, such as mowing, may also have adverse impacts on special-status species. The Master Plan also calls for trail and road improvements/repairs, changes in existing use patterns, undergrounding of utility lines, removal of dilapidated and obsolete structures, decommissioning and restoration of old ranch and forest roads, and maintenance of historic structures.

SPECIAL STATUS PLANTS

As proposed in the Master Plan, the District will continue ongoing special status plant surveys within the Preserve to identify the occurrence, distribution, and locations of special status plants. This information will be used, in part, to inform the design of new facilities, including relocation, as appropriate and if feasible, to avoid known plant populations. In addition, Environmental Protection Guidelines BIO-1 through BIO-4 (which incorporate Annexation EIR Mitigation Measures BIO-1a through BIO-1d) will be followed to survey and avoid special-status plants and limit access to sensitive areas to the extent feasible. However, it may not be feasible to avoid all impacts to special-status plants. Actions planned under the Master Plan, such as road and trail improvements, and maintenance and construction of parking areas and trails, creation of fuelbreaks, and other vegetation and forest management activities, could result in smothering, compaction of soils, or crushing of root systems of special-status plants. This could affect the survival of Western leatherwood, California bottle-brush grass, King's Mountain Manzanita, and Choris's popcornflower populations and, therefore, the impact is considered *potentially significant*. The following mitigation measure, above and beyond the Annexation EIR mitigation (included in the Environmental Protection Guidelines) is necessary to reduce potential impacts to special status plants.

MITIGATION MEASURES

BIO-1 Conduct Special-status Plant Surveys, Implement Avoidance and Mitigation Measures, or Provide Compensatory Mitigation.

The District shall utilize qualified District staff or a contractor to conduct protocol-level preconstruction special-status plant surveys for all potentially occurring species within the project footprint that has not previously been surveyed. Prior to ground-disturbance or vegetation management in potentially suitable habitat, surveys shall be conducted during the appropriate blooming period when they are most readily identifiable in accordance with Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities (DFG 2009). If no special-status plants are found during focused surveys, the findings shall be documented in a letter report, and no further mitigation shall be required.

If special-status plant populations are present in the project footprint, the District shall determine if the population can be avoided by adjusting the project design. The District will locate new trails, new roads, or other new facilities to avoid impacts to the extent feasible.

If the impact to special-status plants cannot be avoided, the District shall consult with DFG and USFWS, as appropriate depending on species status, to determine the appropriate measures to ensure no net loss of occupied habitat or individuals. These measures may include preserving and enhancing existing populations, creation of off-site populations on project mitigation sites through seed collection or transplantation, and/or restoring or creating suitable habitat in sufficient quantities to achieve the no-net-loss standard.

SPECIAL-STATUS AMPHIBIANS AND REPTILES

California red-legged frog and western pond turtle are known to occur within the Preserve. California red-legged frog is federally listed as threatened and considered a species of special concern by DFG. For successfully reproduction, this species requires deep pools in slow-moving streams or ponds with riparian and/or emergent marsh vegetation. Western pond turtles, which are considered a species of special concern by DFG, require still or slow-moving water with instream emergent woody debris, rocks, or other similar features for basking sites. Pond turtle nests are typically located on unshaded upland slopes in dry substrates with clay or silt soils. The entire Preserve is federally designated critical habitat for California red-legged frog (Unit SNM-2). The proposed Master Plan identifies two large Conservation management Units (CMU's), one of which, located in the

northwestern corner of the former Driscoll Ranch area, offers exceptionally high quality habitat for California red-legged frog. To ensure protection of California red-legged frog, public access is restricted within the CMU.

San Francisco garter snake (*Thamnophis sirtalis tetrataenia*) is an endemic species to the San Francisco Peninsula and historically occurred in scattered wetland areas from approximately the San Francisco County line south along the eastern and western bases of the Santa Cruz Mountains, at least to the Upper Crystal Springs Reservoir, and along the coast south to Año Nuevo Point, San Mateo County, and Waddell Creek, Santa Cruz County. This species is currently given the highest level of regulatory protection ("Fully Protected" status) by the California Department of Fish and Game. Suitable habitat for San Francisco garter snake is present on the Preserve, especially in and around the ponds that support California red-legged frog, which is a prey species for the snake. San Francisco garter snake is known from nearby locations, with a documented occurrence less than a mile to the east of the Preserve (CNDDB 2012). However, general amphibian and reptile surveys of the Preserve have failed to detect this species (Seymour 2006), as did three subsequent years of focused San Francisco garter snake surveys in areas of high habitat suitability (Vollmar 2009, The Wildlife Project 2010, MROSD 2010,2011). Nevertheless, because of nearby occurrences and the presence of suitable habitat, it is possible that San Francisco garter snake could occur on the Preserve. To further study the potential presence, the District has implemented an ongoing coverboard monitoring program for detection of San Francisco garter snake on the Preserve.

The District is currently implementing a pond management plan within the former Wool Ranch Conservation Management Area (CMU) of the Preserve under a USFWS Endangered Species Recovery Permit. The goal of the pond management plan is to enhance habitat for California red-legged frog, a primary prey species for the San Francisco garter snake, which in turn would also enhance habitat for the San Francisco garter snake. While this and other resource management actions under the Master Plan are anticipated to protect and enhance habitats for these species, the potential exists for implementation of the Master Plan to incidentally adversely affect these species over the life of the plan. Stream bank restoration and reinforcement, exotic riparian vegetation removal, trail crossings, culvert replacement, and other activities in aquatic or riparian habitats could temporarily displace, crush, or injure California red-legged frog adults, tadpoles or eggs, western pond turtle, or San Francisco garter snake, if they are present. Accidental release of sediment into aquatic habitats could also result in smothering of individuals. This impact is considered *potentially significant*. The following mitigation measures would be implemented to reduce these impacts.

MITIGATION MEASURES

BIO-2a Protection and Compensation Measures for California Red-legged Frog,

The District or its contractor will avoid impacts to California red-legged frog by avoiding aquatic and riparian habitat by at least 200-feet to the extent feasible.

If project activities are to occur in aquatic habitat, qualified District staff or a contractor shall determine if suitable habitat for California red-legged frog (e.g., streams with slow moving water or ponds) is present using USFWS' California Red-legged Frog Habitat Site Assessment Data Sheet (USFWS 2005, Appendix D) and following Equipment Decontamination Procedures (USFWS 2005, Appendix B) to minimize the spread of pathogens that may be transferred as a result of surveys. If the habitat requirements for California red-legged frog are not met, then no further mitigation shall be required.

If suitable aquatic habitat for California red-legged frog could be affected, the District will consult with the U.S. Fish and Wildlife Service (USFWS) and comply with the requirements of the Endangered Species Act (ESA). Because potential impacts to aquatic habitat for California red-legged frog may also require a Section 404 permit from the USACE (see Discussion under "C" below and Mitigation Measure BIO 6), consultation would likely occur under Section 7 of the ESA.

The District shall ensure the no net loss of California red-legged frog habitat occurs. Aquatic habitat that is disturbed during construction shall be restored to its pre-project condition. If permanent loss of habitat occurs, habitat restoration or enhancement shall occur elsewhere on District land as compensatory mitigation.

- *The District will implement the following minimization measures to protect California red-legged frog during construction activities in streams with slow moving water or ponds:*

  - *At least 15 days prior to the onset of activities, the applicant or project proponent shall submit the name(s) and credentials of biologists who would conduct activities specified in the following measures. No project activities shall begin until proponents have received written approval from USFWS that the biologist(s) is qualified to conduct the work.*

  - *A USFWS-approved biologist shall survey the work site two weeks before the onset of activities. If California red-legged frogs, tadpoles, or eggs are found, the approved biologist shall contact USFWS to determine if moving any of these life-stages is appropriate. In making this determination USFWS shall consider if an appropriate relocation site exists. If USFWS approves moving animals, the approved biologist shall be allowed sufficient time to move California red-legged frogs from the work site before work activities begin. Only USFWS-approved biologists shall participate in activities associated with the capture, handling, and monitoring of California red-legged frogs.*

  - *Before any construction activities begin on a project, a USFWS-approved biologist shall conduct a training session for all construction personnel. At a minimum, the training session shall include a description of the California red-legged frog and its habitat, the importance of California red-legged frog and its habitat, the general measures that are being implemented to conserve the California red-legged frog as they relate to the project, and the boundaries within which the project may be accomplished. Brochures, books, and briefings may be used in the training session, provided that a qualified person is on hand to answer any questions.*

  - *A USFWS-approved biologist shall be present at the work site until such time as all removal of California red-legged frogs, instruction of workers, and habitat disturbance have been completed. After this time, the contractor or permittee shall designate a person to monitor on-site compliance with all minimization measures. The USFWS-approved biologist shall ensure that this individual receives training outlined above in measure 3 and in the identification of California red-legged frogs. The monitor and the USFWS-approved biologist shall have the authority to halt any action that might result in impacts that exceed the levels anticipated by USACE and USFWS during review of the proposed action. If work is stopped, USACE and USFWS shall be notified immediately by the USFWS-approved biologist or on-site biological monitor.*

  - *During project activities, all trash that may attract predators shall be properly contained, removed from the work site and disposed of regularly. Following construction, all trash and construction debris shall be removed from work areas.*

  - *All fueling and maintenance of vehicles and other equipment and staging areas shall occur at least 20 meters from any riparian habitat or water body. USACE and permittee shall ensure contamination of habitat does not occur during such operations. Prior to the onset of work, USACE shall ensure that the permittee has prepared a plan to allow a prompt and effective response to any accidental spills. All workers shall be informed of the importance of preventing spills and of the appropriate measure to take should a spill occur.*

  - *A USFWS-approved biologist shall ensure that the spread or introduction of invasive exotic plant species shall be avoided to the maximum extent possible. When practicable, invasive exotic plants in the project areas shall be removed.*

- *Project sites shall be revegetated with an appropriate assemblage of native riparian wetland and upland vegetation suitable for the area. A species list and restoration and monitoring plan shall be included with the project proposal for review and approval by USFWS and USACE. Such a plan must include, but not be limited to, location of the restoration, species to be used, restoration techniques, time of year the work will be done, identifiable success criteria for completion, and remedial actions if the success criteria are not achieved.*

- *Stream contours shall be returned to their original condition at the end of the project activities, unless consultation with USFWS has determined that it is not beneficial to the species or feasible.*

- *The number of access routes, number and size of staging areas, and the total area of the activity shall be limited to the minimum necessary to achieve the project goal. Routes and boundaries shall be clearly demarcated, and these areas shall be outside of riparian and wetland areas. Where impacts in these staging and access routes, restoration shall occur as identified in measures 8 and 9 above.*

- *Work activities shall be completed between May 1 and November 1. Should the proponent or applicant demonstrate a need to conduct activities outside this period, USACE may authorize such activities after obtaining the USFWS' approval.*

- *To control erosion during and after project implementation, the applicant shall implement best management practices, as identified by the appropriate Regional Water Quality Control Board.*

- *If a work site is to be temporarily dewatered by pumping, intakes shall be completely screened with wire mesh not larger than five millimeters to prevent California red-legged frogs from entering the pump system. Water shall be released or pumped downstream at an appropriate rate to maintain downstream flows during construction. Upon completion of construction activities, any barriers to flow shall be removed in a manner that would allow flow to resume with the least disturbance to the substrate.*

- *USFWS-approved biologist shall permanently remove, from the project area, any individuals of exotic species, such as bullfrogs, crayfish, and centrarchid fishes, to the maximum extent possible. The permittee shall have the responsibility to ensure that their activities are in compliance with the California Fish and Game Code.*

BIO-2b Preconstruction Surveys and Protection Measures for Western Pond Turtles

The District or its contractor will avoid impacts to western pond turtle by avoiding aquatic and riparian habitat by at least 200-feet to the extent feasible.

Qualified District staff or contractor shall conduct a pre-construction survey for western pond turtles no more than 30 days prior to construction in suitable aquatic habitats and upland habitat within the project corridor/footprint, including stream crossings, drainage ditches, and culverts.

If the species is found near any proposed construction area, impacts on individuals and their habitat shall be avoided to the greatest extent feasible.

If occupied habitat can be avoided, an exclusion zone shall be established around the habitat, and temporary exclusion fencing shall be installed around a buffer area determined by the qualified District staff or contractor with "Sensitive Habitat Area" signs posted and clearly visible on the outside of the fence.

If avoidance is not possible and the species is determined to be present in work areas, the qualified District staff or contractor, with approval from CDFG, may capture turtles prior to construction activities and relocate them to nearby, suitable habitat a minimum of 300 feet downstream from the work area. Exclusion fencing

should then be installed, if feasible, to prevent turtles from reentering the work area. For the duration of work in these areas, the qualified District staff or contractor should conduct monthly follow-up visits to monitor effectiveness.

BIO-2c Preconstruction Surveys and Protection Measures for San Francisco Garter Snake

General Impact Avoidance Measures

If an incidental sighting of San Francisco garter snake is reported in the Preserve, either from District staff or recreational visitor to the Preserve, the District shall evaluate the validity of the sighting and take precautionary actions to ensure that the individual is protected. Measures shall include:

- *Conducting focused surveys in the area of the reported sighting to delineate boundaries of occupied and potentially occupied areas*
- *Avoiding disturbance within 660 feet of occupied aquatic and riparian habitat to the extent feasible*
- *Based on survey results and potential habitat, the District may restrict certain types of activities, or close the area to specific uses as appropriate*

Impact Avoidance Measures for Construction Projects

Qualified District staff or a contractor shall conduct a pre-construction survey for San Francisco garter snake no more than 30 days prior to construction in suitable aquatic habitats and adjacent upland habitat within the project footprint .

If the species is found near any proposed construction area, work shall cease immediately and the District shall contact USFWS and California Department of Fish and Game within 24 hours to develop appropriate conservation measures to avoid and minimize impacts.

OCCUPIED BAT ROOSTS

The proposed Master Plan includes removal of and alterations to existing structures on the Preserve. Numerous vacant buildings on the Preserve could provide day roosts, maternity colony roosts, and/or hibernation roosts for several bat species. Common bats detected in the Preserve and known to roost in buildings and other structures include: Yuma myotis, long-eared myotis, fringed myotis, California myotis, silver-haired bat, big brown bat, and Mexican free-tailed bat (Heady and Frick 2007). Special-status bats known to roost on site include pallid and Townsend's big-eared bat (Heady and Frick 2007). Hoary bats and western red bats were detected on the Preserve (Heady and Frick 2007), but only use trees for roosting, and would not be affected by removal or alterations to buildings.

Demolition of buildings, sealing of openings or cracks, or other construction activities that cause noise, vibration, or physical disturbance to these structures, could affect the survival of adult or young bats if they are present within the buildings at the time of the activity. Loss of an active bat colony resulting from demolition or modification of structures would be considered a *potentially significant* impact.

BIO-3 Preconstruction Surveys and Protection Measures for Bat Roosts in Buildings

Surveys for roosting bats on the project site will be conducted by a qualified District staff or contractor. Surveys will consist of a daytime pedestrian survey looking for evidence of bat use (e.g., guano) and/or an evening

emergence survey to note the presence or absence of bats. The type of survey will depend on the condition of the buildings. If no bat roosts are found, then no further study is required. If evidence of bat use is observed, the number and species of bats using the roost will be determined. Bat detectors may be used to supplement survey efforts, but are not required.

If roosts of pallid or Townsend's big-eared bats are determined to be present and must be removed, the bats will be excluded from the roosting site before the facility is removed. A program addressing compensation, exclusion methods, and roost removal procedures will be developed in consultation with DFG before implementation. Exclusion methods may include use of one-way doors at roost entrances (bats may leave but not reenter), or sealing roost entrances when the site can be confirmed to contain no bats. Exclusion efforts may be restricted during periods of sensitive activity (e.g., during hibernation or while females in maternity colonies are nursing young). The loss of each roost (if any) will be replaced in consultation with DFG and may include construction and installation of bat boxes suitable to the bat species and colony size that was excluded from the original roosting site. Roost replacement will be implemented before bats are excluded from the original roost sites. The District has successfully constructed bat boxes elsewhere that have subsequently been occupied by bats. Once the replacement roosts are constructed and it is confirmed that bats are not present in the original roost site, the structures may be removed or sealed.

In the case of renovation work, renovations will be done in as concentrated a time period as possible and will be timed to minimize disturbance to bat roosts as recommended by a bat expert. Renovations will be done in a manner that will promote the continued use of the structure by bats whenever feasible.

NESTING BIRDS

La Honda Creek Open Space Preserve provides suitable nesting habitat for migratory songbirds and raptors (i.e., hawks and owls). Special-status raptors that could nest in the Preserve include golden eagle, northern harrier, and white-tailed kite, as well as common raptors, such as red-tailed hawk, red-shouldered hawk, American kestrel, and great-horned owl. Special-status songbirds with potential to nest in the Preserve include: olive-sided flycatcher, loggerhead shrike, yellow warbler, and grasshopper sparrow. In addition, in the northern portion of the Preserve, potentially-suitable nesting habitat is present for marbled murrelet, a state and federally listed seabird. The Preserve does not contain federally-designated critical habitat for marbled murrelet.

Vegetation removal associated with maintenance activities or to construct trails or other facilities during the nesting season for special-status birds could result in the loss of nests, eggs or individuals. Other activities, such as creation of new fuelbreaks, vegetation and forest management, including mowing , and watershed habitat management, including stream bank restoration and reinforcement, have the potential to disturb nesting birds if conducted during the breeding season. Demolition of abandoned structures could also result in the loss of migratory birds or their nests that are protected under the Migratory Bird Treaty Act. Disturbance to nesting birds could result in nest abandonment by the adults and mortality of chicks and eggs. This impact would be *potentially significant*.

MITIGATION MEASURES

BIO-4a Preconstruction Surveys and Protection Measures for Raptors and Other Nesting Birds

To minimize potential disturbance to nesting birds, project activities, including vegetation removal and building demolition, watershed habitat management, and vegetation and forest management, shall occur during the non-breeding season (September 16-February 14), unless it is not feasible to do so, in which case the following measures shall also be applied.

During trail construction, road improvements, and other activities, removal of trees greater than 6 inches dbh shall be limited to the greatest degree possible.

If construction activity is scheduled to occur during the nesting season (February 1 to August 15), The District shall utilize qualified District staff or contractor to conduct preconstruction surveys and to identify active nests on and within 500 feet of the project site that could be affected by project construction. The surveys shall be conducted no less than 14 days and no more than 30 days before the beginning of construction in a particular area. If no nests are found, no further mitigation is required.

If active nests are found, impacts on nesting raptors and songbirds shall be avoided by establishment of appropriate buffers around the nests. No project activity shall commence within the buffer area until a qualified District staff or contractor confirms that any young have fledged or the nest is no longer active. A 500-foot buffer around raptor nests and 50-foot buffer around songbird nests are generally adequate to protect them from disturbance, but the size of the buffer may be adjusted by a qualified District staff or contractor in consultation with DFG depending on site specific conditions. For trail construction, use of non-power hand-tools may be permitted within the buffer area if the behavior of the nesting birds would not be altered as a result of the construction. Monitoring of the nest by a qualified District staff or contractor during and after construction activities will be required if the activity has potential to adversely affect the nest.

BIO-4b Avoidance of Nesting Habitat and Protection Measures for Marbled Murrelets

To minimize potential disturbance to marbled murrelets at potential nesting sites and traveling to coastal foraging areas, the following measures shall be implemented:

- *The District shall maintain a GIS-based map of potentially suitable habitat for marbled murrelets in the Preserve. A ¼ mile buffer around suitable habitat shall be identified and mapped.*

- *No construction activities shall occur within potentially suitable habitat, associated buffer zones, or areas identified as old growth during the marbled murrelet breeding season (March 24 to September 15).*

- *If volunteer or contract work is scheduled to occur during the marbled murrelet breeding season (March 24 to September 15) in forested areas of the Preserve, a qualified District staff or contractor shall review the project area and verify that the project activities would not occur within the area identified as potential habitat and buffer zone.*

- *Within conifer forests on the Preserve, during the marbled murrelet breeding season (March 24 to September 15), noise generating construction activity shall be restricted to 2 hours after sunrise to 2 hours before sunset to minimize disturbance of potential nesting murrelets using forest habitat as a travel corridor between inland nesting and coastal habitat.*

ANADROMOUS FISH

Coho salmon historically occurred in the San Gregorio watershed and is known to occur downstream of confluence of San Gregorio and Harrington Creeks (MROSD 2007). All accessible reaches of creeks tributary to the San Lorenzo River north to Punta Gorda (Mendocino County) are federally-designated as critical habitat for the coho salmon-Central California Coast Ecological Significant Unit (ESU). Steelhead are known to occur within Bogess, Harrington and La Honda Creeks in the Preserve. Bogess, Harrington, and La Honda Creeks within the Preserve are federally-designated critical habitat for steelhead.

While many of the resource management actions under the Master Plan are anticipated to protect and enhance stream habitats, the potential exists for implementation of the Master Plan to incidentally adversely affect these species during project activities. Stream bank restoration and reinforcement, exotic riparian vegetation removal, trail crossings, culvert replacement, and other activities in stream habitats could temporarily displace, crush, or injure adults, fry, or eggs. Accidental release of sediment into aquatic habitats could also result in smothering of

spawning habitat, including fry and eggs. This impact is considered potentially significant. The following mitigation measures would be implemented to reduce these impacts.

BIO-5 Protection and Compensation Measures for Anadromous Fish

The District or its contractor will avoid impacts to coho salmon and steelhead by avoiding stream habitat by at least 200-feet to the extent feasible.

If project activities are to occur in stream habitat, a qualified District staff or contractor shall determine if suitable habitat for anadromous fish would be affected by the activity, including downstream effects. Examples could include activities associated with bank stabilization or installation of stream crossing footings (etc.) within the ordinary high water mark (OHWM). If the habitat for anadromous fish would not be affected, then no further mitigation shall be required.

If suitable habitat for anadromous fish would be affected by the project activity, the District will consult with the National Marine Fisheries Service (NMFS) to comply with the requirements of the Endangered Species Act (ESA) and California Department of Fish and Game (DFG) to comply with the requirements of the California Endangered Species Act (CESA). Because potential impacts to stream habitat for these anadromous fish may also require a Section 404 permit from the USACE (see Discussion under "C" below and Mitigation Measure BIO 6), consultation would likely occur under Section 7 of the ESA. The proposed projects may qualify for ESA compliance by using the programmatic Biological Opinion for Anadromous Fish issued to USACE for specific fisheries restoration projects (NMFS 2006).

The District shall ensure the no net loss of coho salmon and steelhead habitat occurs. Aquatic habitat that is disturbed during construction shall be restored to its pre-project condition. If permanent loss of habitat occurs, habitat restoration or enhancement shall occur elsewhere on District land as compensatory mitigation.

- *The District will implement the following minimization measures to protect aquatic habitat during construction activities in streams:*
  - *Project sites shall be monitored by a qualified District staff or contractor during construction to prevent adverse and unforeseen effects to listed salmonids. The qualified staff or contractor shall monitor work activities and instream habitat a minimum of three times per week during construction for the purpose of identifying and reconciling any condition that could adversely affect salmonids or their habitat. The District staff or contractor shall have the authority to cease construction activities in order to resolve any unanticipated adverse impact resulting from construction.*
  - *A monitoring report shall be provided to NMFS and DFG following the completion of construction within 120 calendar days following the completion of the construction phase of each restoration project. The report shall include the number and approximate size (mm) of listed salmonids captured and removed; any effect of the proposed action on listed salmonids; and photographs taken before, during, and after the activity from photo reference points.*
  - *A spill prevention plan shall be in place prior to construction and shall be reviewed and approved by NMFS and DFG prior to construction.*
  - *The District shall review and incorporate the minimization and avoidance measures, as proposed by USACE, NMFS, and/or DFG, prior to final project design submittal and construction. Construction crews and the qualified staff or contractor shall have a copy of these measures on site during project activities.*
  - *Restoration projects shall not result in the introduction of anadromous salmonids into nonnative habitats. Fish passage enhancement actions, that facilitate anadromous salmonid migration into stream reaches without any prior historical access, are not permitted.*

- *Sediment minimization measures shall apply to large woody debris (LWD) placement actions. Root wads placed instream to enhance salmonid habitat shall be largely free of fine sediment prior to placement.*

- *NMFS and/or DFG may place additional site specific conditions on any restoration project in order to protect listed salmonids or their critical habitat from otherwise unforeseen adverse circumstances. USACE are expected to incorporate these additional site specific conditions into their permits.*

LEVEL OF IMPACT AFTER IMPLEMENTATION OF MITIGATION MEASURES

Implementation of Mitigation Measures BIO-1 through BIO-5 would reduce impacts to special status plant and wildlife species by requiring surveys and implementing avoidance measures to minimize potential take of these species or adversely affect their habitat. This impact would be reduced to a *less-than-significant* level.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or the U.S. Fish and Wildlife Service?

Less-Than-Significant. Sensitive natural communities are of limited distribution statewide or within a county or region that provide important habitat value to native species. Most types of wetlands and riparian communities are considered sensitive natural communities due to their limited distribution in California. In addition, sensitive natural communities include habitats that are subject to U.S. Army Corps of Engineers (USACE) jurisdiction under Section 404 of the Clean Water Act (CWA), Section 1602 of the California Fish and Game Code, and the state's Porter-Cologne Water Quality Control Act, which protects waters of the state. Sensitive natural communities are of special concern because they have high potential to support special-status plant and animal species. Sensitive natural communities can also provide other important ecological functions, such as enhancing flood and erosion control and maintaining water quality.

The following sensitive natural communities occur within the Preserve: California buckeye woodland, tanoak woodland, redwood forest, riparian (red alder and willow) woodland, and wetlands (DFG 2010). New improvements, ongoing maintenance, and introduction of recreational uses into areas currently closed to the public could adversely affect these sensitive natural communities by vegetation removal, soil compaction, and introduction of invasive weeds. The Master Plan includes Environmental Protection Guidelines directly incorporated from Annexation EIR mitigation measures. The Guidelines include several actions to avoid/reduce impacts on sensitive natural communities including surveying/avoiding sensitive habitats (Guidelines Bio-1, Bio-2, Bio-4, Bio-8, Bio-9), installing barriers to limit trail access (Guideline Bio-3, Bio-5, Bio-6), establishing riparian setbacks (Guideline Bio-7), conducting wetland delineations (Guideline Bio-9), restoring, revegetating, or enhancing areas of sensitive habitat (Guideline Bio-10), monitoring for soil compaction (Guideline Bio-11)developing management programs (if necessary) (Guideline Bio-12), minimizing removal of native vegetation (Guideline Bio-13), and controlling noxious plants (Guideline Bio-14). Implementation of these Guidelines ensure that potential impacts of the Master Plan on sensitive natural communities would be *less than significant*.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less-Than-Significant with Mitigation Incorporated. The streams, creeks, ponds, and wetlands found in the Preserve are likely considered waters of the U.S. and subject to USACE jurisdiction under Section 404 of the

Clean Water Act (CWA) and Section 401 certification from Regional Water Quality Control Board (RWQCB). Areas supporting riparian or wetland vegetation could also be regulated by DFG under Section 1600-1616 of the California Fish and Game Code, which provides for the protection of fish, wildlife, and native plant resources.

The Master Plan includes numerous actions to protect or improve watershed resources and aquatic habitat, such as monitoring erosion-prone creeks, preventing cattle from accessing stream banks, stream bank restoration and reinforcement, and willow or other riparian vegetation planting. Trail and road maintenance projects would reduce sedimentation into aquatic habitat and all projects will include BMPs to reduce the potential for erosion and sedimentation, including designing trails to minimize grading, incorporating appropriately-sized drainage structures, rocking of trails in erosion-prone areas, monitoring for new erosion areas, and implementation of seasonal closures as needed.

Construction of the trail improvements could entail the installation of stream crossings and bridges across drainages. Environmental Protection Guidelines are included in the Master Plan, which require trails to be designed to avoid impacts to these resources to the maximum extent feasible (Guidelines Bio-2, Bio-6, Bio-8 and Bio-9). Despite these Guidelines, the bed and bank of existing drainages may be altered and riparian and wetland vegetation may be removed. Bank restoration and reinforcement to prevent erosion and other management activities could occur within jurisdictional waters of the U.S. Where wetlands or other waters of the U.S. cannot be avoided, the Environmental Protection Guidelines require a formal wetland delineation will be conducted (consistent with Annexation EIR mitigation measure Bio-1i). Placement of trail material or bridge footings in the drainages or bank stabilization would likely be subject to regulation under the CWA. Loss of riparian and wetland habitat is a potentially significant impact.

MITIGATION MEASURE

BIO-6 Wetland Minimization and Compensation Measures

The District will implement the following measures to minimize impacts to wetlands and other waters of the U.S.:

- *Where wetlands or other Waters could be affected by trail improvements, bank stabilization, or other activities, a preliminary wetland delineation shall be submitted to USACE for verification. The wetlands may also be subject to DFG regulation under Section 1602 of the Fish and Game Code. No grading, fill, or other ground disturbing activities shall occur until all required permits, regulatory approvals, and permit conditions for effects on wetland habitats are secured.*

- *If the wetlands are determined to be subject to USACE jurisdiction, projects such as small bank stabilization projects, restoration activities, or trail or road crossings may qualify for a Nationwide Permit if certain criteria are met. For those wetlands that cannot be avoided, The District shall commit to replace, restore, or enhance on a "no net loss" basis (in accordance with USACE, RWQCB, and DFG) the acreage of all wetlands and other waters of the U.S. that would be removed, lost, and/or degraded with project implementation. Wetland habitat shall be restored, enhanced, and/or replaced at an acreage and location and by methods agreeable to USACE, RWQCB, and DFG, as appropriate, depending on agency jurisdiction, and as determined during the permitting processes.*

LEVEL OF IMPACT AFTER IMPLEMENTATION OF MITIGATION MEASURES

Implementation of mitigation measure BIO-5 would reduce impacts related to wetlands and other waters of the U.S. to *less-than-significant* levels by requiring appropriate consultation with DFG and/or USACE and following the appropriate permit procedures, including replacement, restoration, and/or enhancement of affected wetlands or other waters of the U.S. on a no net loss basis.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

Less-Than-Significant. Wildlife corridors are features that provide connections between two or more areas of habitat that would otherwise be isolated and unusable. Often drainages, creeks, or riparian areas are used by wildlife as movement corridors as these features can provide cover and access across a landscape.

The Preserve and surrounding areas provide corridors for movement of large wildlife such as deer, mountain lions and raptors. Bogess, Harrington and La Honda Creeks, for example, are known as important terrestrial and avian wildlife corridors within the Preserve. Other wildlife corridors shall be identified in part through research and surveys and appropriately protected as specified under Objective NR-6.2 of the Master Plan.

The Proposed Master Plan for the Preserve includes expansion of public access in a controlled manner that would ensure that the ecological values of the areas are protected. Trails would be open to hiking, equestrian use, and mountain biking. Dogs would be permitted on leash. Sensitive areas would be closed to public access, and monitoring would occur to ensure other areas are not degraded due to over-use. The District will temporarily close areas to restore areas as needed. Recreational use of the trails in previously undisturbed areas may deter some wildlife species from using the area immediately adjacent to the trails, but the effect is not expected to be severe enough in magnitude to cause localized extinctions or restrict the range of native species.

No actions proposed under the Master Plan would significantly fragment interior habitat, alter watercourses, or impede the movement of fish throughout the Preserve. Also, no new lighting is proposed that could inhibit the nocturnal movement of species. The installation of new fencing would follow the District's new wildlife-friendly fencing design that allows for safe and unimpeded wildlife movement of small and large native species. Therefore, implementation of the Master Plan would result in a *less-than-significant* impact to wildlife corridors.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less-Than-Significant. The San Mateo County General Plan and Local Coastal Program prohibit development that has significant adverse impacts on sensitive habitat areas. The Master Plan and mitigation measures included in this document would minimize potential adverse effects on sensitive habitats to less-than-significant levels.

The San Mateo County Ordinance Code also governs the removal and trimming of heritage and significant trees. Such trees do occur on the Preserve. Trails and other facilities would be designed to avoid heritage-sized trees. However, the proposed Master Plan does include forest management and fuels management practices that may require removal or trimming of these trees (i.e. if a tree is infected with SOD). Should such a need arise, the District would follow San Mateo County requirements and remain in compliance with local ordinances. Therefore, this impact is considered *less than significant*.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Impact. The Preserve is not subject to an adopted or proposed Habitat Conservation Plan, Natural Community Conservation Plan or other habitat conservation plan. Therefore, *no impact* would occur.

3.5 CULTURAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
V. Cultural Resources. Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	☐	☐	☒	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☐	☒	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☒	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

3.5.1 ENVIRONMENTAL SETTING

The Master Plan identifies three structures on the Preserve as the most important cultural assets: the Red Barn, the White Barn, and the Redwood Cabin. Each of these structures is more than 50 years old and thus, may be considered a significant resource under the California Register of Historical Resources (CRHR) and the National Register of Historic Places (NRHP) guidelines. If any federal funding or federal permitting applies to a project that would affect these resources, federal regulations would need to be followed.

The Red Barn is part of the former Weeks Ranch and was built around the turn of the twentieth century. It is the most prominent Preserve monument and an important landmark visible from Highway 84. The White Barn is part of the former Dyer Ranch and was likely built in the 1860s. The Redwood Cabin, located at the far northern end of the Preserve, was built between 1927-28. The cabin served as a recreational retreat and is an example of early recreational destinations in the region.

Other cultural resources can be found on the former Driscoll Ranch area, which is comprised of five original ranching complexes consisting of residences and a variety of types and sizes of auxiliary structures such as barns and storage structures. In a site visit to Driscoll Ranch during April 2007, Jones & Stokes conducted an inventory of these structures, which included a determination of the structures that may be deemed potentially historically significant. These potentially historically significant structures are provided below and organized by sub-area:

- Sears Ranch (Lower Ranch): the Ranch house, two hay barns, large barn nearest the residence, and the older of two storage buildings.
- Guerra-Zanoni Ranch (Upper Ranch): the Ranch house and the board-and-batten-sided Barn/Storage with corrugated metal roof
- Folger Ranch: the large white barn and the small Folger Barn (board-and-batten sided, one-story). The Folger Lodge was determined to be potentially significant; however, due to the level of alteration that has occurred

to the structure, it would be deemed significant only if it served a significant function in historic ranching operations, which has not yet been established.

Structures not listed above were deemed not to be historically significant. The Master Plan identifies a number of dilapidated and obsolete structures for removal that are not part of this list of potentially significant structures.

The Master Plan also identifies historic landscape features found on the Preserve. The forested areas in the Preserve have a history of logging dating back to at least 1865 and continuing through the early 1900s. Remnants of sawmills and shingle mills along La Honda Creek remain and a network of logging roads and skid roads in the woodlands are a part of the historic logging landscape. The southwest corner of the former Driscoll Ranch area was the location of the La Honda Oil Field Main Area. Oil drilling began in 1879 and continued through 1961. There are no aboveground remnants of this period, but it remains part of the historic landscape. Other examples of features that are part of the historical landscape and may be culturally significant include ponds, gates, roads, a wood bridge, water tanks, pastures, and a concrete tunnel between Driscoll Ranch and the Event Center.

The District is guided by several Board-adopted Resource Management Policies designed to protect, maintain, and preserve cultural resources, including historic structures and significant historic landscapes. These include policies that require the District to maintain an inventory of cultural resources on its preserves and address cultural resources in management plans and development of uses by reconnaissance surveys, avoidance of resources, consultation with Native American groups, and assessing feasibility of preservation of historic structures, as well as interpretive features. In addition, the Coastal Service Plan includes Guidelines that protect archaeological and historic resources, which are incorporated into the Coastal Service Plan from the Annexation EIR. Consistent with the Coastal Service Plan, the proposed Master Plan also incorporates the Annexation EIR Mitigation Measures as Environmental Protection Guidelines (CUL-1 through CUL-5).

3.5.2 DISCUSSION

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

Less-Than-Significant. The Master Plan includes several specific objectives designed to preserve and reduce potential impacts to cultural resources within the Preserve. These include:

- Objective CR 1.1: organize and increase the District's knowledge of the Preserve's cultural resources.
- Objective CR 1.2: implement cultural resource protection measures, which includes the preservation and protection of historic resources within the project area.
- Objective CR 1.3: protect key historically-significant structures. The District would retain the Red Barn and hire a qualified architectural historian to determine eligibility for listing in the State and/or Federal Register. For the White Barn and Redwood Cabin, the District would also hire a qualified architectural historian to evaluate the historical significance of the White Barn and Redwood Cabin. The District would retain these structures pending the results of the architectural historian's evaluation. Unoccupied, dilapidated structures that are no longer in use by the tenant or necessary for ongoing agricultural operations, and that have been determined to be ineligible for listing on a local, State, or Federal historic register, may be demolished and removed from the Preserve.
- Objective CR 1.4: protect historic landscape features, such as the forested area in Preserve and the historic oil field area.

The Master Plan also includes Environmental Protection Guidelines CUL-3 and CUL-4 which directly incorporates Mitigation CUL-1a and CUL-1b from the Annexation EIR. These Guidelines require evaluation of all property and building types by a qualified consultant to determine eligibility for listing in the local, State, or National Register and include actions to take if the structures are determined to be eligible, including mothballing, restoring, or moving the structure per Secretary of the Interior's standards. By following the District's Resource Management policies and the cultural resource objectives outlined in the Master Plan and also by implementing the Master Plan's Environmental Protection Guidelines, adverse impacts to potential historical resources would be avoided or reduced to a *less-than-significant* level.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Less-Than-Significant. The project area could contain previously unidentified archaeological deposits such as village middens, rock art, bedrock mortars, and lithic scatters. There is one identified area of archaeological significance, a possible bedrock mortar, on the Preserve. Although little has been identified to date, based on the proximity of the Preserve to previously-recorded archaeological sites, there is the potential for the discovery of new archaeological deposits in the Preserve.

Implementation of the proposed Master Plan would involve relatively little ground disturbance—mostly associated with grading for parking lots and construction and maintenance of new trails. The Master Plan includes Environmental Protection Guidelines CUL-1, which specifically incorporates Mitigation Measure CUL-2 from the Coastal Annexation EIR, and establishes protocol for unexpected discovery of archaeological and paleontological cultural materials. Specifically, CUL-1 requires construction buffers to be established in the event of a find and evaluation of the artifact by a qualified archaeologist or paleontologist who would provide avoidance measures or would prepare an Action Plan for appropriate treatment, data recovery, and curation, as appropriate.

Although implementation of the proposed Master Plan would include ground excavation or other ground disturbance during development and maintenance of improvements, implementation of the above Environmental Protection Guidelines would minimize potential impacts to previously unidentified archaeological resources by halting construction, temporarily restricting construction in the area of the find, and development of appropriate treatment for any significant resources uncovered. Consistent with the conclusion of the Annexation EIR, implementation of the proposed Master Plan would result in a *less-than-significant* impact.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less-Than-Significant. The Annexation EIR addresses potential impacts to paleontological resources on page IV-J-12. The EIR states that Ground excavation or other ground disturbance during development and maintenance of improvements could impact these resources. Destruction or other substantial adverse changes to archaeological and paleontological resources would be a significant impact. Mitigation measures can be applied to reduce this potential impact to a less than significant level. The Annexation EIR includes Mitigation Measure CUL-2 to reduce this impact. The proposed Master Plan includes Environmental Protection Guidelines that incorporate CUL-2. (See discussion under "b" above). Similar to the discussion under "b" above, implementation of the Environmental Protection Guidelines would minimize potential impacts to previously unidentified paleontological resources by halting construction, temporarily restricting construction in the area of the find, and development of appropriate treatment for any significant resources uncovered. Implementation of the proposed Master Plan would result in a *less-than-significant* impact.

d) Disturb any human remains, including those interred outside of formal cemeteries?

Less-Than-Significant. As described under the discussions "b" and "c" above, implementation of the proposed Master Plan would include ground disturbance during development and maintenance of improvements. To avoid potential impacts to human remains, Environmental Protection Guidelines are included in the Master Plan.

Implementation of the Environmental Protection Guidelines (which is based specifically on Coastal Annexation Mitigation CUL-3) would reduce potential impacts related to existing human remains by requiring temporarily halting construction in the immediate vicinity of the find, contacting the county coroner and archaeologist (if appropriate), coordinating with the NAHC and/or MLD, preparation of a data recovery/treatment report, and appropriate curation. Consistent with the conclusion in the Annexation EIR, this impact is *less than significant*.

3.6 GEOLOGY AND SOILS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI. Geology and Soils. Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☒	☐
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

3.6.1 ENVIRONMENTAL SETTING

The Preserve is located in a seismically-active region of the San Andreas Fault system. The Preserve is not included in current Alquist-Priolo fault zone maps. The closest active faults are the San Gregorio Fault to the southwest and the San Andreas Fault to the northeast, while the La Honda Fault bisects the Preserve. Although the Preserve is not located in an Alquist-Priolo fault zone, it is located in a seismically active area and implementation of the Master Plan has the potential to expose people or structures to potential substantial adverse effects involving the rupture of a known earthquake fault.

The San Francisco Peninsula Segment of the San Andreas Fault has been assigned a slip rate that results in a M_w 7.3 earthquake with a recurrence interval of 400 years.

The area also contains many northwest-trending folds that formed mainly during Pliocene and Pleistocene time. Pleistocene marine terraces are tilted and uplifted, indicating that the La Honda Watershed has been uplifted too, decreasing slope stability and increasing the rate of stream downcutting. Soils are residual, upland loams that formed mainly on the underlying Tertiary sedimentary and volcanic rocks. Due to their high content of unstable clay, they are prone to landsliding. Formations with inclusions of Pliocene to Eocene clastic rocks (mudstone, siltstone and sandstone) and Cretaceous sandstone and mudstone are particularly unstable and prone to landsliding. There are, however, opportunities to design trails safely within these broad areas.

The Preserve is underlain by a sequence of tightly folded and faulted Tertiary-age marine sediment. These rocks consist primarily of fine-grained sandstone, siltstone and mudstone, and shale. Much of the Preserve is underlain by relatively soft prairie soils derived from shale and mudstone. These soils are typically found in the open grassland areas of the Preserve. Soils in these areas can be wet in the winter and inherently prone to erosion.

District Resource Management Policies related to geology and soils require locating facilities to avoid high-risk areas subject to landslides, liquefaction, faulting, flooding, and erosion. Other erosion-related policies require minimizing unnatural soil erosion and sedimentation by monitoring and avoiding construction in areas with high soil erosion and slope failure, appropriately siting facilities, stabilizing erosion-prone roads and trails, limiting activities and facilities in wetland/riparian areas, minimizing maintenance-related soil disturbance, seeding, native plantings, and preventing native soil removal. Several Resource Management Policies also protect unique geological features by identifying, monitoring, and controlling access to such features. The Coastal Service Plan also includes guidelines related to geology and soils, which are directly incorporated from the Annexation EIR Mitigation. These guidelines require siting and designing roads to minimize geological hazards such as landslides and evaluating geologic hazards when siting and designing facilities. Consistent with the Coastal Service Plan, the Master Plan incorporates the Annexation EIR Mitigation Measures as Environmental Protection Guidelines (GEO-1 through GEO-3).

3.6.2 DISCUSSION

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to California Geological Survey Special Publication 42.)

Less-Than-Significant. Visitors to the Preserve would be primarily outside and would not typically be directly exposed to risk from rupture of an earthquake fault. In fact, the Preserve would be considered a relatively safe place to be during an earthquake event. However, visitors may be subject to indirect events induced by fault rupture, most notably landslides. Risk to visitors from landslides is discussed below under “iii and iv”; this discussion focuses primarily on risk associated with structures.

The Master Plan would permanently preserve the area as open space and allow for a limited number of habitable structures. There are a number of existing District-owned residences scattered throughout the Preserve. The Master Plan does not call for the addition of new residences, and the District would, if needed, obtain permits from San Mateo County for modifications to existing structures. The Master Plan includes Environmental Protection Guidelines (based on Annexation EIR Mitigation GEO-1c) which require a geotechnical evaluation to be conducted to identify engineering methods to reduce the potential for structural failure due to geological hazards. The Guidelines also require all buildings to be designed in a manner that reflects the geologic

hazards on the site, and shall be consistent with local and Uniform Building Codes. Major structural alterations (e.g. environmental interpretive facility) would be constructed consistent with current California Building Code (CBC). Because alterations to structures associated with implementation of the proposed Master Plan would be specifically engineered, based on the site's geology, to avoid structural failure, potential hazards to structures or occupants associated with fault rupture or seismic ground shaking are considered *less than significant*.

ii) Strong seismic ground shaking?

Less-Than-Significant. Impacts associated with strong seismic ground shaking are describe above under "a-i." As described above, risk to visitors associated with seismic ground shaking is not substantial and the proposed Master Plan includes potential alternations to existing residences and upgrades to an existing structure for the proposed environmental interpretive facility. These structural improvements would be implemented according to Uniform Building Code requirements, which would reduce potential impacts related to seismic ground shaking. This impact is *less than significant*.

iii) Seismic-related ground failure, including liquefaction?

Less-Than-Significant. Increased public access to the Preserve, including trails in areas prone to landslides, could increase the exposure of the public to the risks associated with ground failure or landslides. Unstable soils cause portions of the Preserve to be considered as areas of high landslide susceptibility as identified by the USGS. Historic earthquake shaking and seismically-triggered landslides have caused considerable damage to roads and infrastructure in the local area. Future landslides on the Preserve may occur regardless of land use activities. In accordance with the recommendations from the *Driscoll Ranch Road Erosion Inventory Road* and *Trail Erosion Inventory for La Honda Creek Open Space Preserve,* trails would be designed and constructed to minimize future erosion and geologic failures. The Master Plan (p. 87) indicates that the District will implement priority road and trail repairs and treatments identified in the *Driscoll Ranch Road Erosion Inventory* and the *Road* and *Trail Erosion Inventory for La Honda Creek Open Space Preserve* (Best, 2007a and b). These erosion reports are attached to this IS as Appendix A. Repairs and treatments include: road and trail re-surfacing, installation of additional drainage structures (i.e. culverts, inside ditches, rolling dips), upgrades and maintenance of drainage structures, stream crossing restorations, and installation of exclusionary livestock fencing. Therefore, the potential for an increased risk of deep-seated landsliding as a result of trail construction is considered to be low. In addition, the District routinely patrols trails and provides maintenance to avoid and minimize public exposure to hazardous geologic conditions.

The EIR for the Coastal Annexation analyzed the impacts of increased public exposure to dangers from geologic hazards and found that with careful site planning, hazard areas can be avoided or the risk to public safety can be mitigated to a less-than-significant level. The proposed Master Plan includes Environmental Protection Guidelines GEO-1 and GEO-2 that incorporate the applicable Annexation EIR Mitigation Measures. These Guidelines require geological surveys to identify potentially hazardous geological conditions and that trails be sited to avoid such areas. The Guidelines also require monitoring of trails to avoid public exposure of hazardous conditions.

By adhering to the San Mateo County permit process and implementing the Environmental Protection Guidelines identified above, geologic hazards would be avoided or mitigated to a *less-than-significant level*. This is consistent with the conclusion of the Annexation EIR.

iv) Landslides?

Less-Than-Significant. Impacts related to landslides are described under "a-iii" above. As described above, implementation of the proposed Master Plan would require implementation of Coastal Annexation EIR

Mitigation Measures GEO-1a and GEO-1b, which would reduce risk associated with exposure of trail users and other visitors to landslides to a *less than significant* level.

b) Result in substantial soil erosion or the loss of topsoil?

Less-Than-Significant. The Preserve is located in the moderately steep to very steep hills of the Santa Cruz Mountains. Erosion hazard ratings for these soils are characterized as moderate to high, based largely on slope and soil type. The development and maintenance of trails, roads and parking areas, the opening of portions of the Preserve to bicycle and equestrian use, and the reintroduction of grazing into the northern portion of the Preserve all have the potential to cause erosion in steep areas of the Preserve.

TRAILS, ROADS AND PARKING AREAS

The construction and maintenance of trails and parking areas could potentially cause soil erosion. Soil disturbance on new trails, as well as existing ranch roads that will be converted to trails, caused by equestrians and cyclists during periods of wet soil conditions could increase soil erosion and instability in the steep portions of the Preserve.

The existing ranch roads in the Preserve were studied in the *Driscoll Ranch Road Erosion Inventory Road* and *Trail Erosion Inventory for La Honda Creek Open Space Preserve* for their potential contribution to soil erosion. These studies are included in this IS as Appendix A. These studies include recommended road improvements to minimize the erosion potential of existing roads and trails. Implementation of road improvements are included in the Master Plan (see discussion under "a-iii" above.)

In regards to new trail construction, the Coastal Annexation EIR identifies several mitigation measures to reduce water quality impacts due to erosion and sedimentation. These include implementation of BMPs, use of appropriate trail surfaces, consistency with County grading and surface runoff management plans, and limitations on the amount of grading, cut, fill etc. for trail construction. These measures are incorporated into the Master Plan as Environmental Protection Guidelines (see the Hydrology and Water Quality Section of this IS), and would decrease the potential for significant erosion due to trail construction to a less-than-significant level

REINTRODUCTION OF GRAZING

Grazing operations on District lands are guided by Resource Management Policies, which aim to ensure that grazing is compatible with and supports wildlife and habitat. Specific Grazing Management policies include requirements to prepare site-specific grazing management plans that include BMPs, managing access to water features and supplying supplemental water supply as needed to protect water quality, and monitoring water quality in ponds, wetlands, and water features (to name a few). The Master Plan includes the continuation of grazing within the Southern La Honda Creek Area under a 50-year lease agreement with the existing grazing tenant. In accordance with policy, this agreement incorporates the *Driscoll Ranch Resource Management Plan*, which includes provisions for continuous rangeland monitoring and sets target actions to protect grassland health and reduces the potential for soil erosion. Recommendations for the appropriate reintroduction of grazing in the Preserve were provided in the *La Honda Creek Open Space Preserve Grazing Management Plan for Former McDonald & Dryer Sites* (Sage 2007). The Grazing Management Plan includes recommendations to reduce the potential for erosion, including prescribing appropriate stocking rates, repairing fencing along riparian areas, boxing/fencing around on-site springs, provision of larger water troughs to draw cattle away from water bodies, maintaining wetland/riparian functionality, and a monitoring program. These measures are incorporated into the Master Plan and will be implemented prior to reintroducing cattle. Specifically, Master Plan Objective MO-1.3 is to evaluate and address erosion caused by cattle and the grazing operation and to use corrective actions such as exclusion fencing or rock surface treatments, as necessary. The combination of

employing ecologically-sensitive construction standards and erosion control measures will reduce the potential for substantial soil erosion and loss of topsoil. By implementing Annexation EIR Mitigation Measures identified in the Hydrology and Water Quality Section of this IS, and implementing the list of priority road and trail treatments identified in the *Driscoll Ranch Road Erosion Inventory* and *Road and Trail Erosion Inventory for La Honda Creek Open Space Preserve*, as well as maintaining appropriate cattle stocking rates and installing appropriate exclusion fencing, potential impacts related to soil erosion resulting from construction, maintenance and repair activities, and grazing would be reduced to a *less-than-significant* level.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less-Than-Significant. The Preserve is underlain by soils that are potentially unstable. As described under "a-iii" above, the proposed Master Plan includes potential alterations to existing residences and upgrades to an existing structure for a potential environmental interpretive facility. These structural improvements would be implemented according to Universal Building Code requirements, which would reduce potential impacts related to unstable soil units. Implementation of the proposed Master Plan would require implementation of Coastal Annexation EIR Mitigation Measures GEO-1a through GEO-1c, which would reduce risk associated with unstable soil units to a *less than significant* level.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial risks to life or property?

Less-Than-Significant. The effects of expansive soils can damage foundations of above-ground structures, paved roads and streets, and concrete slabs. Substantial risk to life or property would generally occur to habitable buildings, which could experience compromised structural integrity due to expansive soils. As described under "a-iii" above, the proposed Master Plan includes potential alterations to existing residences and upgrades to an existing structure for a potential environmental interpretive facility. These structural improvements would be implemented according to Universal Building Code requirements, which would reduce potential impacts related to unstable soil units. Implementation of the proposed Master Plan would require implementation of Coastal Annexation EIR Mitigation Measures GEO-1a through GEO-1c, which would reduce risk associated with expansive soils to a *less than significant* level.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No Impact. Existing residences on the Preserve utilize septic systems. The District does not propose any alteration to these existing systems or changes in use that would require increased capacity. The Master Plan identifies vault pit toilet restrooms at the Allen Road Permit Parking Area, the Red Barn Parking Area, the Sears Ranch Road Parking Area and at the Driscoll Ranch West Gate Parking Area. In Phase 1, temporary portable toilets may be used; permanent toilets would be installed in later phases. The permanent toilets would be the standard District vaulted pit toilet restrooms. These toilets are self contained, requiring the effluent waste to be periodically pumped and disposed of at an appropriate off-site wastewater receiving facility. It is not expected that the District would need a septic system. Restroom facilities would adhere to the District's Resource Management Policy to protect surface and ground waters from contamination. Implementation of the proposed Master Plan would result in *no impact* related to septic tanks or other disposal of wastewater.

3.7 GREENHOUSE GAS EMISSIONS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VII. Greenhouse Gas Emissions. Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

3.7.1 ENVIRONMENTAL SETTING

Certain gases in the earth's atmosphere, classified as greenhouse gases (GHGs), play a critical role in determining the earth's surface temperature. GHGs are responsible for "trapping" solar radiation in the earth's atmosphere, a phenomenon known as the greenhouse effect. Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.

Human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is *extremely unlikely* that global climate change of the past 50 years can be explained without the contribution from human activities (Intergovernmental Panel on Climate Change [IPCC] 2007). By adoption of Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006, and Senate Bill (SB) 97, the State of California has acknowledged that the effects of GHG emissions cause adverse environmental impacts.

Emissions of GHGs have the potential to adversely affect the environment because such emissions contribute, on a cumulative basis, to global climate change. Although the emissions of one single project will not cause global climate change, GHG emissions from multiple projects throughout the world could result in a cumulative impact with respect to global climate change.

Legislation and executive orders on the subject of climate change in California have established a statewide context and a process for developing an enforceable statewide cap on GHG emissions. Given the nature of environmental consequences from GHGs and global climate change, CEQA requires that lead agencies consider evaluating the cumulative impacts of GHGs, even relatively small (on a global basis) additions. Small contributions to this cumulative impact (from which significant effects are occurring and are expected to worsen over time) may be potentially considerable and therefore significant.

Therefore, the global climate change analysis presented in this section estimates and analyzes the GHG emissions associated with construction- and operations-related activities that would occur under the La Honda Creek Open Space Preserve Master Plan.

The project site is located in the jurisdiction of the Bay Area Air Quality Management District (BAAQMD), which has developed recommended thresholds of significance for the evaluation of different types of GHG-emitting activities and project types (BAAQMD 2010). BAAQMD's thresholds are based on the emissions reduction

targets for the year 2020 mandated by AB 32 and address emissions of CO_2e, which is a measurement used to account for the fact that different GHGs have different potential to retain infrared radiation in the atmosphere and contribute to the greenhouse effect. This potential, known as the global warming potential of a GHG, is dependent on the lifetime, or persistence, of the gas molecule in the atmosphere. BAAQMD considers the GHG emissions associated with a land use development project to be less than significant if the mass emissions generated by the project would be less than 1,100 metric tons per year (MT/year) of CO_2e. Though the proposed Preserve Master Plan does not include the construction of new buildings or regional infrastructure the threshold of 1,100 MT/year of CO_2e is used in this analysis. This approach is considered to be more conservative than applying the threshold BAAQMD developed for the operation of stationary sources (e.g., power plants, refineries) of 10,000 MT/year of CO_2e.

3.7.2 DISCUSSION

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Less-Than-Significant. GHG emissions generated by the proposed project would predominantly be in the form of CO2 from the exhaust associated with construction equipment and with vehicle trips made by visitors to the Preserve. In addition, methane emissions would be generated by the additional 100 cattle that would graze on the Preserve. While emissions of other GHGs such as and nitrous oxide are important with respect to global climate change, the emission levels of these GHGs for the sources associated with project activities are nominal compared with CO_2e emissions, even considering their higher global warming potential (GWP). All GHG emissions for construction- and operation-related activities are reported as CO_2e.

The BAAQMD-approved California Emissions Estimator Model, Version 2001.1.1 (CalEEMod) (South Coast Air Quality Management District 2011) was used to estimate maximum daily emissions of CO_2e that could be generated by the types of construction activity and operational activities that would occur on the proposed Master Plan. Modeling input parameters were based on the types of construction activities discussed in Section 2 “Project Description,” and the number of vehicle trips by visitors and staff, as determined by the traffic analysis, as well as default parameters representative of conditions in San Mateo County. Methane emissions from the additional cattle that would graze on the site were estimated using the same emission factors that were used by the California Air Resources Board to prepare the statewide GHG inventory (ARB [no date]). Table 3.7-1 summarizes the estimated annual emissions of CO_2e associated with project-related activities. Refer to Appendix B for detailed modeling assumptions, inputs, and outputs.

Table 3.7-1 Summary of Estimated Emissions of Carbon Dioxide Equivalent Associated with Project-Related Activities (MT CO2e/year)

Construction-Related Activities (average annual)	328
Operations (mobile- and area sources, energy use)	463
Cattle	195
Total	986
BAAQMD Threshold of Significance	1,100

Notes:
MT/year = metric tons per year; CO_2e = carbon dioxide-equivalent
Detailed assumptions and modeling output files are included in Appendix B.
Emissions associated with construction activities and operation-related vehicle trips, area sources (e.g., landscaping) and on-site energy combustion were estimated using the BAAQMD-approved CalEEMod model. Methane emissions from cattle were estimated using emission factors provided in the documentation of California’s statewide GHG inventory.
Source: Modeling Conducted by Ascent Environmental 2012.

Based on the modeling conducted, project-related activities would result in 986 MT per year (MT/year) of CO_2e emissions. These emissions levels would be less than BAAQMD's threshold of significance of 1,100 MT/year. Thus, project-generated emissions would not result in a cumulatively considerable net increase of GHGs. As a result, this impact would be less than significant.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Less-Than-Significant. As discussed under item a) above, the total GHG emissions associated with this project would be less than BAAQMD's threshold of 1,100 MT/year. Because BAAQMD's threshold is based on the emissions reduction targets established by AB 32 for the year 2020 project-generated GHG emissions would not conflict with any other applicable plans, policies, or regulations established for the purposes of reducing GHG emissions. Therefore, this impact would be less than significant.

3.8 HAZARDS AND HAZARDOUS MATERIALS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VIII. Hazards and Hazardous Materials. Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐

3.8.1 ENVIRONMENTAL SETTING

Hazardous materials can be associated with a variety of sources, ranging from chemical spills during transport and leaking underground storage tanks, to prior use of pesticides. Known hazardous material sites occur on the Preserve. Investigations conducted during the purchase of the former Driscoll Ranch property identified several areas of potential environmental concern on the property. These investigations conducted by EKI in 2001 and 2005 identified the presence of residual petroleum hydrocarbons (crude oil) associated with the operation of a former Oil Field, pesticides (primarily toxaphene and dieldrin) associated with the former ranch practice of spraying cattle in stock corrals, and residual gasoline and diesel associated with small above-ground storage

tanks (ASTs) formerly used by Driscoll Ranch. In addition, there are small refuse areas associated with former ranching activities. In 2008, a Remedial Investigation Report (RI) was prepared by Northgate Environmental Management, Inc. and included follow-up sampling and investigations in these areas. A human health risk assessment (HRA) was prepared as part of the RI. The HRA concluded that residual petroleum hydrocarbons remaining at the former main oil field and tank farm area would not pose a health risk to future recreational users of the property, tenants, or District staff and hydrocarbon concentrations were well below the site-specific target level developed for a recreational use scenario.

The RI confirmed that slightly elevated levels of organochlorine pesticide surface oils were present in the soil at the Wool and Folger Ranch corrals, where spraying of cattle with chemicals to control pests may have occurred. The HRA concludes that residual pesticides would not pose a health risk to future users of the property, as pesticide concentrations were well below SSTLs developed for a recreational use scenario. However, chemical concentrations are above RWQCB environmental screening levels (ESLs) for residential and/or general unrestricted land use areas. In coordination with the California Regional Water Quality Control Board (Regional Board), Northgate prepared a Soil Management Plan for this area. In compliance with the Soil Management Plan (Northgate 2009), the District has dismantled the infrastructure remaining in the tank farm area, properly abandoned an inactive well, removed refuse and properly disposed of it off-site, and prepared a Regional Board-approved Soil Management Plan to guide future soil handling, disposal, and reuse procedures. The Regional Board has indicated that no further action is necessary (RWQCB 2010).

The Preserve contains numerous buildings and structures that may have asbestos-containing materials and lead-based paint; however, there are no other reports of hazardous materials in any of the typical data bases that record such incidences.

La Honda Elementary School is located immediately adjacent to the Preserve and over 700 feet from the location of the proposed staging area at Sears Ranch Road.

The Preserve is located in the minimally-developed western portion of San Mateo County in the Santa Cruz Mountains. The California Department of Forestry and Fire Protection (CAL FIRE) designates the Preserve as within a zone of moderate fire hazard severity in a State Responsibility Area. The severity zone is based on local vegetation type, slope, and weather.

The District is guided by Board-adopted Resource Management Policies, which includes policies that apply to hazardous materials. Applicable policies require BMPs to prevent hazardous materials release during operations and maintenance activities and investigation and remediation (if necessary) of potentially contaminated soils. The Coastal Service Plan includes similar guidelines (Mitigation Measures from the Annexation EIR) that address hazardous materials, including review of hazardous sites lists prior to property acquisition and remediation if applicable. The Coastal Service Plan also requires fuel management and consultation with fire protection service providers as well as monitoring and maintenance of trails to avoid public exposure to hazardous conditions. Consistent with the Coastal Service Plan, the proposed Master Plan also includes the Annexation EIR Mitigation Measures as Environmental Protection Guidelines (HAZ-1 through HAZ-8).

3.8.2 DISCUSSION

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Less-Than-Significant. District Ordinance 93-1, Section 409.2 prohibits the general public from possessing or using harmful substances on District lands. The Master Plan does not include routine use of hazardous materials in the Preserve with the exception of small quantities of common household hazardous materials such as pesticides, fuels, oils, lubricants, solvents, and detergents. A controlled amount of pesticides would occasionally

be applied in grazing operations and for vegetation management. Pesticide applications would comply with label instructions and all applicable local, state, and federal regulations. This would be consistent with existing agricultural operations within the Preserve and would not pose a significant hazard to the public or the environment. This impact is *less than significant*.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?

Less-Than-Significant. Existing structures within the preserve may contain building materials that contain lead and asbestos. The proposed project involves demolition of dilapidated structures, which may include these hazardous materials. California Code of Regulations (CCR), Title 8, Section 1529 "Asbestos" is enforced by Cal OSHA and sets very strict exposure limits for employees engaged in abatement and remediation activities and requires employers to perform an initial exposure assessment as well as daily monitoring of employee exposure. Section 1529 also includes a list of specific compliance measures including (but not limited to) vacuum cleaners with HEPA filters, wet methods, ventilation systems with HEPA filters, isolation/containment of asbestos dust-generating areas, as well as prohibitions against use of compressed air to remove asbestos without a ventilation system, dry sweeping/shoveling of asbestos, and use of high-speed abrasive disc saws without proper point of cut ventilators. Additional, more stringent, compliance measures are provided specific to Class I and Class II asbestos removal. CCR Title 8, Section 1529 "Asbestos."

Furthermore, BAAQMD Regulation 11, Rule 2 also regulates activities involving handling of asbestos related to demolition, renovation, and manufacturing. Demolition of any structures containing asbestos would be subject to this Rule. Rule 2 prohibits visible emissions of asbestos. BAAQMD's Rule 2 requires wet methods or use of HEPA filter-fitted ventilation systems, use of leak-tight chutes for getting materials to the ground, use of plastic barriers and HEPA filter-fitted ventilation systems to contain areas being stripped. Rule 2 also requires an asbestos survey, including materials sampling and lab testing, to be performed by a qualified consultant prior to abatement activities to determine the category of asbestos. Specific disposal methods are also required under Rule 2. BAAQMD's Regulation 11.

Similar to its regulations for asbestos handling, CCR (Title 8, Section 1532.1) contains lead exposure limits for employees engaged in demolition activities. Also similar to its asbestos regulations, CCR requires employers to prepare exposure assessments and exposure monitoring. CCR Section 1532.1 also includes methods of compliance, including but not limited to preparation of a compliance program, mechanical ventilation, respiratory protection, protective clothing and equipment, specific housekeeping practices, medical surveillance (including biological monitoring), temporary removal of exposed employees, signage and postings, and appropriate record keeping.

Handling of asbestos and lead is regulated by state law and BAAQMD rules. These rules include guidelines to minimize exposure of construction workers (including monitored and enforceable exposure limits) and release of these substances into the environment. Because the proposed project would be required to comply with the CCR and BAAQMD rules, demolition activities associated with the proposed Master Plan would not create a significant hazard to the public or environment.

General public use of the Preserve would be primarily limited to low-intensity, non-motorized, and non-emitting uses, including hiking, bicycling, and equestrian use. The possibility of the incidental release of motor vehicle oil, grease, or fuel is therefore limited to the infrequent use of the interior Preserve trails and roads by District patrol and maintenance vehicles, occasional emergency responders, vehicles and machinery used during the temporary construction process, tenants, and Preserve visitor vehicles that will park in the staging areas. Any release of minor amounts of hazardous material resulting from the limited vehicular use that would be allowed

on the Preserve does not pose a significant hazard to the public. Impacts related to water quality are addressed in the Hydrology and Water Quality section of this IS.

Although the release of hazardous materials through reasonably foreseeable accident conditions are not expected, the ongoing use of the property could create a health hazard to site workers, District employees, or other workers conducting maintenance, construction, or repair work that involves the disturbance of contaminated soil. The District will follow the Regional Board approved Soil Management Plan and Environmental Health and Safety Plan during future construction activities that occur within identified areas. Implementation of the Soil Management Plan would reduce this potential hazard to a *less-than-significant* impact.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Less-Than-Significant. La Honda Elementary School is located immediately adjacent to the Preserve. No known hazardous materials in the Preserve are located within one-quarter mile from the school. The Sears Ranch Road Parking Area is proposed to be located over 700 feet from the school boundary, accommodating ten to twenty vehicles. As described above under "b" any minor release of hazardous materials (i.e. oil or grease) from 10 to 20 visitor vehicles in parking areas would not result in public health risk. No demolition of structures would occur within one-quarter mile of the elementary school. Implementation of the proposed Master Plan does not otherwise involve emission or handling of hazardous materials. The risk of emitting hazardous materials within one-quarter mile of a school is therefore considered to be *less-than-significant*.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. According to DTSC's EnviroStor Database, there are no Federal Superfund sites, State Response sites, State Superfund sites, Voluntary Cleanup sites, or School sites on the Preserve. The State Water Resources Control Board's Geo Tracker database identifies one open case on the Preserve, which related to residual petroleum hydrocarbons (primarily crude oil), pesticides, and gasoline and diesel fuel. As mentioned above in the "Environmental Setting" the District hired Northgate to further analyze these soil conditions, and Northgate's investigation (2008) delineated the nature and extent of the contaminants and assessed the potential health risk by performing a human health risk assessment (HRA). The HRA concluded that pesticide compounds and total petroleum hydrocarbons are present in the soil at levels for which recreational users, ranch workers, and District staff may contact the soil without posing a health risk but that maintenance and construction activities that cause disturbance of the affected soil should be performed in accordance with a soil management plan and an environmental health and safety plan (EHASP).

Under the proposed Master Plan no trails or other facilities are identified in these areas and no soil-disturbing construction or maintenance activities would occur within the areas identified as having contaminated soils. However, should unexpected maintenance or construction become necessary in these area, the EHASP includes several measures such as appointment of a Project Manger/Superintendent that is responsible for overall management of health and safety, appointment of a "Competent Person" responsible for assuring compliance with the EHASP, appointment of a Site Health and Safety Officer responsible for ensuring employees are appropriately trained and wearing appropriate protective equipment and that air is being monitored (among other duties). The EHASP also identifies specific protective wear and practices to prevent bodily contact with affected soils, specific training requirements and techniques, air monitoring specifications, emergency response protocol, as well as protocol for entering/existing areas of higher contaminant concentration. The soil

management plan and EHASP are attached to this Initial Study as Appendix D. Northgate prepared and submitted a soil management plan and EHASP to RWQCB. On May 12, 2010 RWQCB issued a letter of "No Further Action" to the District indicating that clean-up has been satisfactorily completed and an appropriate soil management plan has been established that includes guidance on soil handling, disposal, and reuse procedures. Compliance with the RWQCB-approved soil management plan and EHASP (included as Appendix D) would ensure that construction and maintenance workers would not be exposed to soil contamination such that a health hazard could result. Therefore, there would be a *less-than-significant* impact related to hazardous material sites.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No Impact. The Preserve is neither within an airport land use plan nor within two miles of a public airport or public use airport. Therefore there would be *no impact* related to safety hazards associated with any airport land use plan conflicts.

f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

No Impact. The Preserve is not within the vicinity of a private airstrip. Therefore, *no impact* would occur.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact. There are no adopted emergency response plans or emergency evacuation plans affecting the Preserve area. Furthermore, the proposed Master Plan includes appropriate emergency vehicle access. Therefore, there would be *no impact* related to interference with an emergency response or evacuation plan.

h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Less-Than-Significant. The risk to the recreating public posed by potential wildland fires was analyzed in the Annexation EIR. The Annexation EIR concludes that, based on the District's existing management of steep and heavily vegetated lands on the Bay side of the Peninsula, public access to District-managed lands does not present a significant risk of loss, injuries, or death as a result of wildland fire. While fire protection within current District boundaries is provided by the jurisdictional local fire departments and CAL FIRE, the District works cooperatively with these jurisdictional fire agencies to reduce fire risk by assisting them to respond quickly and effectively to wildland fires. The District maintains fire breaks to slow or arrest the spread of wildland fires, and a system of District maintained fire roads ensures adequate access to remote areas. District lands are patrolled routinely by trained staff members in vehicles equipped with wildland fire suppression equipment, providing first response assistance until the jurisdictional fire agencies arrive and take over the scene. The addition of public use and District staff presence would result in an increased ability to detect and respond the appropriate fire agencies when fires occur.

The Master Plan seeks to reduce fire risk in the Preserve by managing and treating fire hazards, facilitating fire response and suppression, and following best management practices for wildland fire response. The Master Plan includes several objectives designed to reduce fire risk:

- Objective MO-2.1: implement practices to manage wildland fuels and reduce fire hazards. Implementation methods identified in the Master Plan include creating defensible space, reducing ignition sources, creating fuel breaks, and working with adjacent property owners on fire reduction.
- Objective MO-2.2: protect and manage natural resources by modifying vegetation/fuel. Implementation methods identified in the Master Plan include brush encroachment reduction.
- Objective MO-2.3: facilitate wildland fire response and suppression. Implementation methods identified in the Master Plan include developing or restoring new water sources and improving emergency vehicle road and bridge access.
- Objective MO-2.4: prepare a Wildland Fire Response Plan.

District Ordinance 93-1 Section 404 prohibits fires and smoking on District lands. In addition, District Rangers will regularly patrol the Preserve and are trained and equipped for initial response in the Incident Command System (ICS) for fire suppression, assisting with the response of jurisdictional fire agencies to the scene of a fire. The District's radio and repeater system combined with ranger patrols and staff on call 24 hours per day enables prompt and effective communication with emergency service providers in the event of a wildland fire or emergency response call. Additionally, the District purchased a 1,500 - 2,000-gallon maintenance-style water truck that is available to deliver water for mutual aid calls to assist in fire suppression activities.

As stated in the Annexation EIR, coordination with other fire suppression agencies is necessary to ensure swift and adequate response to wildland fire. The proposed Master Plan includes the following Environmental Protection Guidelines (HAZ-1 through HAZ-8) that are incorporated directly from Annexation EIR mitigation measures (HAZ-2a through -2f). These Guidelines require review of local fire protection services and available water resources, selection of fire-resistant indigenous plant material/seed mixes at staging areas or along trails, location of trail alignments and trail access points to provide emergency access, providing helicopter landing sites where feasible, formalizing mutual aid agreements with other fire suppression agencies, prohibition of off-road vehicle use, and specific trail head and staging area design to discourage fire ignition.

To further reduce the potential for wildland fire ignition beyond the Annexation EIR mitigation, the Master Plan includes the following Environmental Protection Guideline:

- HAZ-9. In order to reduce fire ignition risk, the District currently requires the following measures for all maintenance and construction activities within the Preserve:
  - All equipment to be used during construction and maintenance activities must have an approved spark arrestor.
  - Grass and fuels around construction sites where construction vehicles are allowed to be parked will be cut or reduced.
  - Mechanical construction equipment that can cause an ignition will not be used when the National Weather Service issues a Red Flag Warning for the San Francisco Bay Area.
  - Hired contractors will be required to:
    - Provide water and/or fire extinguisher to suppress potential fires caused by the work performed.
    - Remind workers that smoking is prohibited at the work site and on any District land per contract conditions and District Ordinance.
    - Maintain working ABC fire extinguishers on all vehicles in the work area.

- ➥ Contact both Mountain View Dispatch at (650) 968-4411 and CAL FIRE, Skylonda, at (650) 851-1860 for emergency response in the event of a fire.

Although implementation of the proposed Master Plan would allow increased public access to the Preserve, which could slightly increase the potential risk of wildland fire, the proposed Master Plan includes features that would reduce the risk of ignition and spread of a fire. Specifically, the Master Plan would re-introduce grazing to the northern portion of the preserve, thereby reducing fuel loads; repair and maintain the existing road network as well as create new trails, thereby improving access; create new fuelbreaks; and provide additional ranger presence, which would reduce existing risk of wildland fire spread. These proposed project components, combined with the Master Plan objectives and Environmental Protection Guidelines described above, would decrease ignition potential and increase emergency access and fire response coordination. Therefore, the proposed Master plan would result in a *less-than-significant* impact related to increased risk of wildland fire.

3.9 HYDROLOGY AND WATER QUALITY

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
IX. Hydrology and Water Quality. Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☒	☐
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?	☐	☐	☒	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?	☐	☐	☒	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☒	☐
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	☐	☐	☒	☐
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
j) Result in inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐

3.9.1 ENVIRONMENTAL SETTING

La Honda Creek Open Space Preserve is located within the San Gregorio Creek watershed, which drains an area of approximately 53 square miles in southwestern San Mateo County. (See Exhibit 3.9-1 below) Three major Creek tributaries of San Gregorio flow through its center; and Bogess Creek flows along the western boundary.

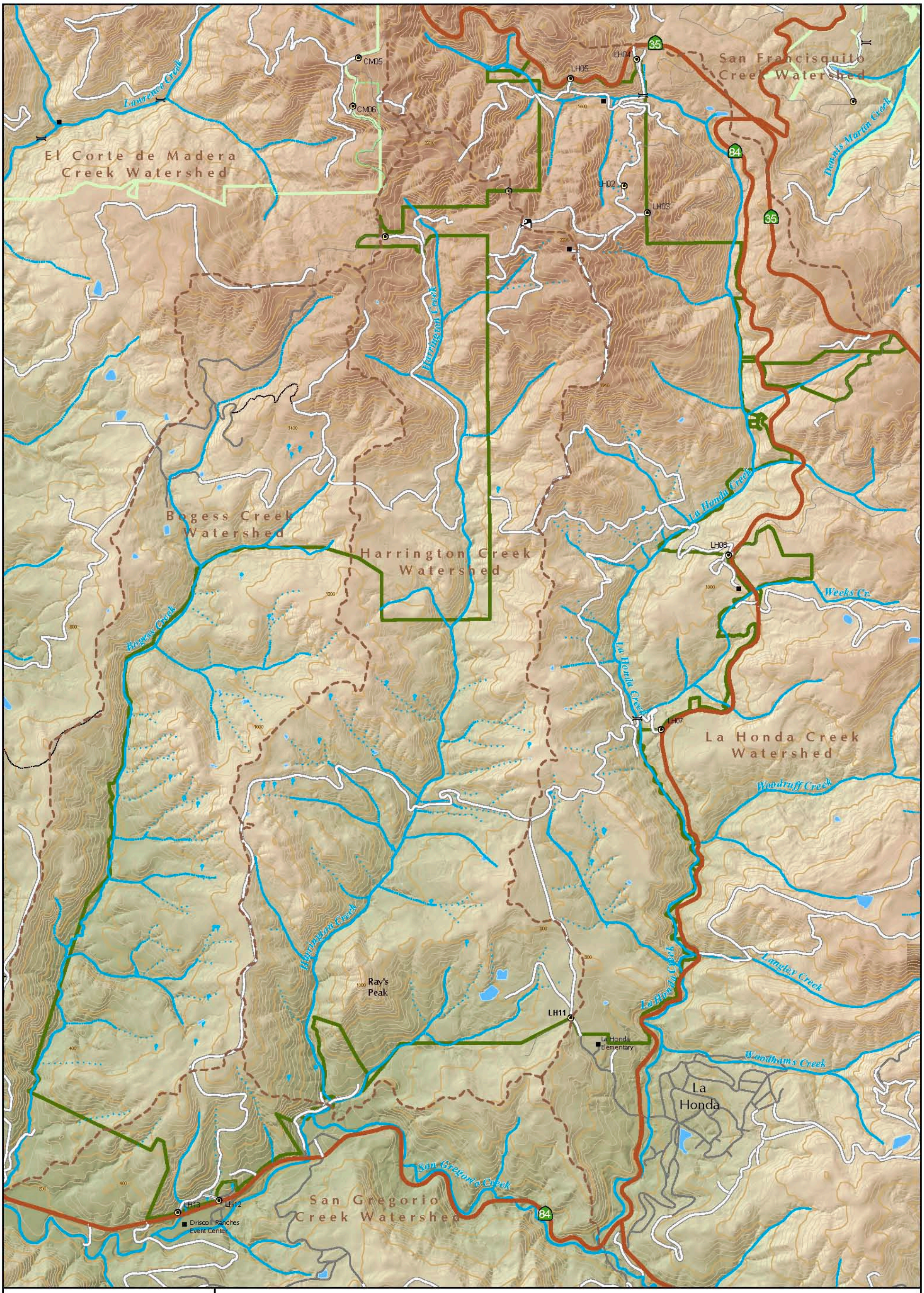
All three creeks reach their confluence with San Gregorio Creek to the south of the Driscoll Ranch area. Additionally, four named tributaries: Woodhams, Langley, Woodruff, and Weeks Creeks flow into La Honda Creek. Of these, the only major tributary within the Preserve is Weeks Creek. (DCE 2007) San Gregorio Creek is listed as sediment-impaired under Section 303-(d) of the Clean Water Act and is considered a Critical Coastal Area (CCA) by the California Coastal Commission. The creek and its tributaries are impaired by accelerated rates of erosion and sedimentation resulting from natural geological and climatic processes and augmented by human land use practices. The largest anthropogenic sources of sediment are believed to be active and abandoned roads on unstable slopes near stream channels and hillside gullies on agricultural and range lands in the lower watershed, formed primarily as a result of hillside row cropping in the 1930's (California Coastal Commission 2006). The San Gregorio Watershed Management Plan states that there are currently no studies for the total mass daily load (TMDL) for sediment in the watershed, but recommends control of fine sediment through management strategies, such as those described below.

There are nearly four miles of intermittent or ephemeral tributary streams within Preserve boundaries. While some of these may dry by late summer, they experience significant flows during the wet months. Although it is considered a perennial stream, low gradient reaches within La Honda Creek may also go dry in certain conditions. (DCE 2007)

Limited hydrologic information is available for District lands, however, recent hydrologic data at Delay's bridge (Post mile SM934 on Highway 84), a few miles downstream, is representative of the hydrology on site. It is estimated that a discharge for a flood with a 50- and 100- year return period would be 85 and 113 m3/s (3,000 and 4,000 cfs) respectively. These data also estimate the discharge of smaller flows such as the two and five-year return interval to equal 1.6 m3/s (58.4cfs) and 3.2 m3/s (112 cfs), respectively. All of these discharges are capable of causing major changes in channel cross-sectional morphology (in non-bedrock controlled reaches), undermining stream-side structures, and causing large areas of bank instability. (DCE 2007)

There are a number of natural springs and seeps in the Preserve. Several springs were improved to serve as watering sources for cattle and provide year-round flows. Twenty-three permanent and seasonal ponds are located on the Preserve, all but three of which are associated with providing a water source for the cattle operation on Driscoll Ranch. The ponds provide essential habitat for a number of wildlife species. (DCE 2007) See Section 3.4 "Biological Resources for more information regarding wildlife species and habitat.

The District's Resource Management Policies and the Coastal Service Plan reduce water quality-related impacts. Applicable Resource Management Policies include protecting surface and ground water from contamination, inventorying facilities and uses that could affect water resources, researching and pursuing cleanup of pollution sources, incorporating BMPs, and utilizing self-contained sanitary facilities when necessary. Other policies direct the District to restore, maintain, or enhance water quality on District lands by managing vegetation, regulating human activity, identifying sedimentation and issues, implementing BMPs, monitoring water quality, and maintaining and enhancing weltands, ponds, riparian areas, and fisheries. The Coastal Service Plan includes several Guidelines, most of which are Mitigation Measures from the Annexation EIR. These Guidelines include erosion and sediment-control BMPs and requirements for siting trails to minimize erosion.



La Honda Creek Open Space Preserve

Map Projection: UTM Zone 10N, NAD 1927
Data Sources: USGS, County of San Mateo, and MROSD.
Map Printed September, 2008

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Exhibit 3.9-1: Water Resources

Water Features

- Perennial Stream
- Intermittent Stream
- Emphemeral Stream (project area only)
- Pond or Reservoir
- Spring or Well
- Subwatershed Boundary

Roads

- Unpaved Ranch / Patrol Road
- Existing Paved Road
- Highway

Elevation

- 2400'
- 1200'
- 0'

3.9.2 DISCUSSION

a) Violate any water quality standards or waste discharge requirements?

Less-Than-Significant. Grazing operations can result in nutrient and pathogen pollution from livestock animal waste. This type of pollution most frequently occurs when livestock are confined and animal wastes are concentrated. The current grazing operation within the Southern La Honda Preserve Area provides a large, free range for cattle and does not include large, concentrated herds. Expansion of grazing land proposed in the Master Plan would involve a similar intensity of grazing. The primary purpose for continuing and expanding grazing on the Preserve is for the benefits that large grazing animals provide for grassland management and preservation. The Resource Management Plan for Driscoll Ranch and the *La Honda Creek Open Space Preserve Grazing Management Plan for Former McDonald & Dryer Sites* (Sage 2007) both outline a livestock management plan that involves distributing livestock across the Preserve in distinct pastures with conservative stocking rates to prevent the over-concentration of animals. Livestock would be kept out of streams through the use of fencing and natural vegetation barriers. Furthermore, water features on the Preserve do not directly drain into an above-ground domestic water supply.

The proposed Master Plan includes Environmental Protection Guidelines (WQ-1 through WQ-5) that directly incorporate mitigation measures from the Annexation EIR. These include trail siting requirements to minimize potential water pollution and stream bank erosion, which limit the placement of equestrian trails with respect to blue line streams. Also included in the Guidelines are storm water quality BMPs, including directing runoff flow to vegetated areas and away from creeks and drainages, conducting trail maintenance during low flow periods, using erosion and sediment control features such as silt fences, straw bale barriers, brush/rock filters, inlet protection, etc. Other Environmental Protection Guidelines (WQ-6 and WQ-7), which are based on recommendations in the Driscoll Ranch Resource Management Plan (2005), require trail design to blend with the natural slope, to minimize soil disturbance, to include appropriately sized culverts, to conform to the San Mateo County Surface Runoff Management Plan as well as Grading and Excavation Ordinances, and to restrict large-scale grading for trail construction.

In addition, there are currently District-wide requirements in place to protect water quality during maintenance activities. As outlined in the District's Best Management Practices and Standard Operating Procedures for Routine Maintenance Activities in Water Courses, which has been reviewed and approved by the Regional Water Quality Control Board (RWQCB) and California Department of Fish and Game, the District follows specifications and guidelines designed to protect water quality. Additionally, maintenance work in watercourses will meet standards and be consistent with the current RWQCB Memorandum of Understanding (MOU) for routine maintenance activities on District lands. These standards would be followed, as applicable, based on site conditions and specific project requirements.

Moreover, Master Plan Objective NR 4.1 is to protect water quality and improve stream habitat. This Objective includes an implementation action for the District to identify and characterize pathogens and other sources of pollutants from the property that are entering San Gregorio Creek. In the event that an issue was identified, the District would investigate the source and develop a response and restoration plan. In addition, implementation of road and trail improvements would reduce sedimentation into the streams. Overall, the Master Plan would be beneficial to water quality through continued protection of the Preserve's watersheds as permanent open space. Therefore the impact of implementation of the Master Plan on water quality standards or waste discharge requirements would be *less than significant*.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?

Less-Than-Significant. The Master Plan does not involve groundwater pumping or interference with groundwater recharge. Springs within the Preserve currently supply water to the occupied residences, and livestock are watered from stock ponds, which are replenished by seasonal rainfall and improved springs. The reintroduction of grazing into the northern portion of the Preserve would be adequately served by existing developed springs and ponds (although extensive repairs of the existing system are needed). Expansion of parking lots and other improvements would not add a substantial amount of impervious surface to the Preserve such that groundwater recharge would be adversely affected. Furthermore, the construction of any paved parking lot with an area greater than 5,000 square feet would comply with the C.3 provision of the National Pollutant Discharge Elimination System, which includes creation of self-treating recharge areas. Therefore, implementation of the Master Plan's impacts on groundwater depletion and recharge would be *less than significant*.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation?

Less-Than-Significant. Overall the proposed Master Plan seeks to maintain and improve the existing drainage patterns on the Preserve and to minimize erosion. As described under "a" above, the proposed Master Plan includes Environmental Protection Guidelines that directly incorporate mitigation measures from the Annexation EIR, including trail design guidelines and BMPs. The proposed Master Plan would include a very small increase in the impervious surfaces on the Preserve, mostly associated with parking lot and roadway improvements. Therefore, the current rate of runoff would not increase with implementation of the Master Plan. This impact is considered *less than significant*. Please also refer to the discussion under "b" in Section 3.6 "Geology and Soils" for a detailed discussion regarding erosion potential.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?

Less-Than-Significant. Very few impervious surfaces would be added to the Preserve; therefore, the rate of runoff would not substantially increase. Overall, the proposed Master Plan seeks to maintain and improve the existing drainage patterns on the Preserve. As described under "a" above, the proposed Master Plan includes Environmental Protection Guidelines that directly incorporate mitigation measures from the Annexation EIR, including trail design guidelines and BMPs. The proposed Master Plan would not substantially increase the rate or amount of surface runoff such that on- or off-site flooding would occur. This impact is considered *less than significant*.

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less-Than-Significant. The proposed Master Plan would not substantially adversely affect the drainage patterns or rate of runoff on the Preserve because the Master Plan seeks to maintain or improve the existing drainage patterns. As described under "a" above, the proposed Master Plan includes Environmental Protection Guidelines that directly incorporate mitigation measures from the Annexation EIR, including trail design guidelines and BMPs. The proposed Master Plan would not substantially increase the rate or amount of surface runoff such that exceedance of drainage system capacity would occur. This impact is *less than significant*.

f) Otherwise substantially degrade water quality?

Less-Than-Significant. The impacts of trail and parking area construction would be reduced by adherence to the District's Resource Management Policies and Best Management Practices to minimize interference with the natural flow of surface water and ground water, which includes minimizing soil disturbance and controlling erosion, and to prevent unnatural soil erosion and sedimentation from construction, maintenance, and use of Preserve facilities and grazing operations. The *La Honda Creek Open Space Preserve Grazing Management Plan for Former McDonald & Dryer Sites* (Sage 2007) includes recommendations to reduce the potential for erosion, including prescribing appropriate stocking rates, repairing fencing along riparian areas, boxing/fencing around on-site springs, provision of larger water troughs to draw cattle away from water bodies, maintaining wetland/riparian functionality, and a monitoring program. These measures are incorporated into the Master Plan and will be implemented prior to reintroducing cattle. In addition, the District has prepared Road and Trail Typical Design Specifications (MROSD 2008). These specifications identify specific actions for the prevention of erosion and protection of water quality during trail construction. These actions would be incorporated into the project and include activities such as thoughtful design and construction of trails to provide adequate drainage to handle large storm events without eroding the trail surface or surround areas, limiting trail grades to less than 15% where possible; preserving as much existing vegetation as is feasible; and applying native mulch and straw rolls for erosion control in disturbed areas during construction. This impact would be *less than significant*.

g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?

No Impact. The Master Plan does not include any new housing. Furthermore, the entire Preserve is outside both the 100-year and 500-year flood zones according to the Federal Emergency Management Agency Flood Insurance Rate Maps. Therefore, there would be *no impact* related to flood hazards and housing.

h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?

Less-Than-Significant. The entire Preserve is outside both the 100-year and 500-year flood zones according to the Federal Emergency Management Agency Flood Insurance Rate Maps. The proposed trail system would involve the construction of watercourse crossings consisting of culverts, rock fords, bridges, and/or low puncheons (boardwalks). All proposed stream crossings would be designed to accommodate major flood events and would not be large enough to substantially impede or redirect flood flow. Proposed trails are unlikely to have any impact on peak flows. In addition, trail decommissioning or removal would improve drainage by restoring the original hydrology that was altered at the time of original road construction. Therefore there would be a *less-than-significant* related to 100-year flood flows.

i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?

Less-Than-Significant. While there are no levees or dams in the Preserve, heavy winter rainfall can cause local creeks to flood, which could increase risk to preserve users or District staff passing through natural stream areas during and immediately following significant storm events. Per District standard practice, District staff regularly check drainage structures during and after storms and provide signage and barricades to close unsafe areas to public use. The District also maintains drainage structures to ensure proper functioning and to reduce the possibility that the project would expose people to significant flood risk. The Master Plan does not propose the construction of new structures (the plan does include potential upgrades to an existing non-habitable structure for a potential environmental interpretive facility). The proposed Master Plan includes Environmental Protection Guidelines that directly incorporate mitigation measures from the Annexation EIR, including the provision that structures over water courses shall be carefully placed to minimize disturbance and would be located two feet above both the 100-year flood elevation and the Flood Hazard Insurance Rate Map flood elevation. Furthermore, the likelihood for users and/or staff to be accessing the Preserve during or immediately following a heavy storm event is unlikely. This would ensure that impacts from exposure to flooding would be *less than significant*.

j) Result in inundation by seiche, tsunami, or mudflow?

Less-Than-Significant. The Preserve is more than 200 feet above sea level at its lowest point. Seiche or tsunamis from the Pacific Ocean are located too far away to impact on the Preserve. The soil conditions and potential for prolonged rain events in the Preserve have the potential to produce mudflows. A mudflow could expose District personnel or members of the general public to potentially life threatening situations if they were present while a mudflow event occurred. As described in the Annexation EIR (p. Page IV-H-8), the low probability of such an event and the limited likelihood of District personnel or the public to be in harm's way during an intense storm necessary to precipitate such an event reduce this potential impact to a less than significant level.

3.10 LAND USE AND PLANNING

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
X. Land Use and Planning. Would the project:				
a) Physically divide an established community?	☐	☐	☒	☐
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

3.10.1 ENVIRONMENTAL SETTING

The Preserve is located in the rural western portion of unincorporated San Mateo County in the Santa Cruz Mountains. The property is currently used as an open space preserve and for agricultural operations. Although there are a few isolated houses there is no established residential community located within the Preserve.

The San Mateo County General Plan designates the Preserve as Open Space, Public Recreation and Timber Production, which allow for resource management, recreation and agricultural uses. The Preserve is zoned RM (Resource Management), RM-CZ/CD (Resource Management – Coastal Zone) and TPZ (Timberland Preserve Zone). These zoning designations provide for park, open space and recreational uses.

The San Mateo County Trails Plan identifies the Preserve area as a route for the Harrington Creek Trail and the Bay Area Ridge Trail.

3.10.2 DISCUSSION

a) Physically divide an established community?

Less-Than-Significant. The Preserve is within a rural area that is sparsely populated. Most of the Preserve is currently not accessible by the public. Implementation of the Master Plan would provide increased public access, including access by residents of the surrounding community. Therefore, the proposed Master Plan would not divide an established community but would provide increased access and connectivity. This impact is *less than significant*.

b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact. As indicated above under "Environmental Setting," the San Mateo County General Plan designates the Preserve as Open Space, Public Recreation and Timber Production, which allow for resource management,

recreation and agricultural uses. The Preserve is zoned RM (Resource Management), RM-CZ/CD (Resource Management – Coastal Zone) and TPZ (Timberland Preserve Zone). These zoning designations provide for park, open space, recreation, and resource management uses. The Goals, Policies, and Objectives of the proposed Master Plan are designed to carefully balance natural resource management with increasing public access and recreation opportunities. Implementation of the proposed Master Plan would not conflict with the County's land use designation and zoning for the Preserve. In addition, the San Mateo County Trails Plan highlights the Preserve area as a route for the Harrington Creek Trail and the Bay Area Ridge Trail. Both of these regional trails are proposed in the Master Plan, and therefore the Master Plan is consistent with the San Mateo County Trails Plan. Implementation of the Master Plan would have *no impact* to any applicable land use plan, policy or regulation.

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

No Impact. The Preserve is not located within the jurisdiction of a known Habitat Conservation Plan or Natural Community Conservation Plan. Therefore, the Master Plan would have *no impact* to any habitat conservation plan.

3.11 MINERAL RESOURCES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. Mineral Resources. Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☒	☐
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☒	☐

3.11.1 ENVIRONMENTAL SETTING

The San Mateo County General Plan identifies a Significant Mineral Resource Area in the southwest portion of the Preserve, in the former Driscoll Ranch property. This resource is identified in the County General Plan as the La Honda Oil Field, which was closed in the early 1990s by sealing the wells and removing the pipelines to the above ground storage tanks. The closure of this oil field has not been updated on the Mineral Resources Map, since the last update to the County General Plan was in 1985. Some oil speculators believe that there may still be a moderate amount of oil in the La Honda Oil Field; however these theories have not been validated and recovery costs and technology for extraction have not been proposed. Therefore, the ability to economically extract oil is speculative.

3.11.2 DISCUSSION

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

Less-Than-Significant. All oil wells on the Preserve have been abandoned. No other mineral resources are located on the Preserve. Under existing conditions, oil drilling would not be permitted on the District's La Honda Creek Open Space Preserve because it is not consistent with the District's mission to protect and restore the natural environment. Implementation of the proposed Master Plan would not result in the loss of availability of a known mineral resource and would result in a *less-than-significant* impact.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

Less-Than-Significant. The La Honda Oil Field was identified as a Significant Mineral Resources Area in the San Mateo General Plan. As described under "a" above, implementation of the proposed Master Plan would result in a *less-than-significant* impact related to availability of a locally important mineral resource.

3.12 NOISE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XII. Noise. Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

ENVIRONMENTAL SETTING

Existing conditions are governed by the presence of noise-sensitive receptors, the location and type of noise sources, and overall ambient levels. Noise-sensitive land uses are generally considered to consist of those uses where noise exposure could result in health-related risks to individuals, as well as places where a quiet setting is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, schools, historic sites, cemeteries, and recreation areas are also generally considered sensitive to increases in exterior noise levels. Places of worship and transit lodging, and other places where low interior noise levels are essential are also considered noise-sensitive. Those noted above are also considered vibration-sensitive land uses in addition to commercial and industrial buildings where vibration would interfere with operations within the building, including levels that may be well below those associated with human annoyance.

La Honda Creek Open Space Preserve is located in the northern Santa Cruz Mountains within unincorporated San Mateo County, fewer than 5 miles east of the Pacific Ocean (see Exhibit 2-1). Onsite sensitive receptors include a few residences scattered throughout the Preserve. The nearest off-site sensitive receptors are La Honda Elementary school, located adjacent to the Preserve property but 700 feet away from the proposed parking lot, and residences located approximately 380 feet away in the community of La Honda, located across Highway 84 just southeast of the Preserve.

The existing noise environment at the Preserve is primarily influenced by vehicle traffic from surrounding roadways. The nearby highways are two lanes and moderately traveled. Other nearby roadways are rural roads and private drives. The level of vehicle traffic varies depending on the regional nature of the road and the time of the day (i.e., peak traffic hours). Other noise sources that contribute to the existing noise environment consist of human activity from low-impact recreational activities (e.g., sightseeing, hiking, biking, horseback riding) taking place on the preserve, noise from nearby residential neighborhoods (e.g., landscape maintenance, dogs barking, people talking), aircraft flyover, and natural sounds such as leaves rustling and birds chirping.

Various private and public agencies have established noise guidelines and standards to protect citizens from potential hearing damage and other adverse physiological and social effects associated with noise. Applicable policies and regulations are contained in the San Mateo Zoning Regulations and are shown below.

The District's Resource Management Policies include a policy to minimize unnatural noise within preserves, which includes preventing or reducing unnatural sounds that adversely impact preserves resources or visitors' enjoyment. The Coastal Service Plan also includes Guidelines that require noise control especially during construction near historic structures.

COUNTY OF SAN MATEO ZONING REGULATIONS

SECTION 6163.6 PERFORMANCE STANDARDS

All uses, facilities and operations must conform to the following performance standards:

1. **Noise**. No use, facility or operation shall create any unusually loud, uncommon noise which would disturb the neighborhood peace.

The maximum noise level permitted, measured at the building site boundary, shall be:

Time of Day	Maximum Noise Level (dBA)		
	30 Minutes in Any Hour	15 Minutes in Any Hour	5 Minutes in Any Hour
7:00 a.m. to 10:00 p.m.	55	60	65
10:00 p.m. to 7:00 a.m.	50	55	60

Short-term construction noise may exceed these standards, providing that all construction activities are limited between 7:00 a.m. and 5:00 p.m.

DISCUSSION

a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?

Less-Than-Significant. The proposed project would result in demolition of existing dilapidated structures and various site improvements such as increased parking, permanent restroom facilities, new signage, and new trail connections. No new stationary noise sources or would occur and therefore, construction activities associated with onsite improvements would result in the loudest noise levels.

Noise would result from the use of heavy construction equipment during the demolition of existing structures, which will be temporary and minimal for each demolition site, and construction of proposed site improvements

(e.g., parking lots, restrooms, trail work).To assess noise levels associated with the various equipment types and operations, construction equipment can be considered to operate in two modes, mobile and stationary. Mobile equipment sources move around a construction site performing tasks in a recurring manner (e.g., loaders, graders, dozers). Stationary equipment operates in a given location for an extended period of time to perform continuous or periodic operations. Operational characteristics of heavy construction equipment are additionally typified by short periods of full-power operation followed by extended periods of operation at lower power, idling, or powered-off conditions.

Additionally when construction-related noise levels are being evaluated, activities that occur during the more noise-sensitive evening and nighttime hours are of increased concern. Because exterior ambient noise levels typically decrease during the late evening and nighttime hours as traffic volumes and commercial activities decrease, construction activities performed during these more noise-sensitive periods of the day can result in increased annoyance and potential sleep disruption for occupants of nearby residential uses. Section 6163.6 of the San Mateo County Noise Ordinance exempts construction-related noise from their noise standards, provided that all activity would take place between 7:00 a.m. and 5:00 p.m. daily.

The site preparation phase typically generates the most substantial noise levels because of the onsite equipment associated with grading, compacting, and excavation are the noisiest. Site preparation equipment and activities include backhoes, bulldozers, loaders, and excavation equipment (e.g., graders and scrapers). Minimal site preparation and grading would be required for new facilities. Trail recontouring and erosion control activities could require some earth movement and truck hauling. Trail improvement activities could require the use of some motorized equipment such as graders and trucks. Much of the finishing work for trail construction would be completed using hand held tools (e.g., shovels, garden hoes). Overall, the proposed construction activities would be minimal.

Noise generated from these pieces of equipment would be intermittent and short in duration as typical use is characterized by short periods of full-power operation followed by extended periods of operation at lower power, idling, or powered-off conditions. In addition, the proposed noise generated activities would be minimal and would be largely limited to the demolition of a few small dilapidated residences and the construction and maintenance of facilities including parking lots and; would generally be located in remote regions buffered from adjacent properties by distance, elevation, and vegetation. Further, as included in the Environmental Protection Guidelines (NOI-1), all construction activity would take place during the less sensitive daytime hours between 7:00 a.m. and 5:00 p.m. daily, and therefore construction related noise would be exempt from the San Mateo County Noise Ordinance. For these reasons, project-related activities would not result in the exposure of persons to or generation of noise levels that exceed applicable standards. This would be a *less-than-significant* impact.

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?

No Impact. The proposed project could involve the use of some heavy-duty construction equipment for various site improvement activities. These activities include, primarily the demolition of few existing structures and the site preparation and construction of new access facilities. No heavy impact equipment such as drilling or blasting would occur. The types of construction activities that are proposed include minimal site disturbance and are not the types of activities that could result in excessive ground vibrations and, therefore, the proposed project would not expose people to excessive ground vibration. The project would result in *no impact*.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

No Impact. Implementation of the proposed project would not result in any new or additional stationary noise sources. However, site improvements (e.g., parking facilities, improved access, trail connections) could result in up to 182 new weekend peak hour visitors at the Preserve. An increase in visitors to the Preserve could lead to increases in ambient noise due to increased traffic on surrounding roadways (mobile-source), more vehicles in parking lots (e.g., doors slamming, car alarms, engines starting) at the preserve, and increases in human activity (e.g., people talking, people walking, dogs barking).

Generally, a doubling of the number of noise sources (or doubling the amount of noise as measured in Hertz) results in an increase of 3 decibels, which is perceived as barely noticeable by humans (Egan 2007). Thus, in regard to traffic noise specifically, a noticeable increase in traffic noise could occur with a doubling in the volume of traffic on a roadway. Based on Caltrans 2010 Traffic Volumes for California highways, the existing peak hour volumes on Highway 84 near the La Honda community are 560 and the average annual daily trip volume is 5,100. A peak hour increase of 182 trips would not result in a doubling of traffic on Highway 84 and consequently would not result in a substantial increase in traffic noise.

Increases in visitors could also result in increases in noise associated with parking lots and human activity. With regards to additional parked vehicles in the Preserve, parking facilities would be relatively small and would accommodate up to 25 cars and 6 horse trailers. Additionally, noise generated from parking lots (e.g., horns honking, engines starting, doors slamming) would be short in duration, intermittent throughout the day, and be the loudest during peak hours when visitation to the Preserve would be the highest. Noise related to human activity (e.g., hiking, talking,) is not associated with high noise levels. No new stationary noise sources would be included in the project. For these reasons, the proposed project would not result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. This impact would be less than significant.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

Less-Than-Significant. As discussed under "a" above, the proposed project would involve the use of some noise-generating construction equipment. These types of noise-generating equipment do not operate for extended periods of time and all noise-generating construction activities would take place during the less sensitive daytime hours (i.e., 7:00 AM to 5:00 PM), as required by Environmental Protection Guideline NOI-1, when people are not likely to be sleeping or to be in their homes.Therefore, this temporary increase in ambient noise would not result in a significant increase in noise levels at sensitive receptors. This impact would be less than significant.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

Response for Items e and f:

No Impact. There are multiple airports in San Mateo County (e.g., San Francisco International Airport, Half Moon Bay Airport, and San Carlos Airport), however based on the San Mateo County Comprehensive Airport Land Use Plan, the Preserve is not included in the planning area (or influence areas) as defined by this plan (San Mateo County 1996). The Preserve is not located within two miles of any other public airport. Additionally, the proposed project would not include any new residential land uses or permanent new structures where people would live or work. Therefore, because the Preserve is not located within close proximity to an airport or private airstrip, the proposed project would not expose people to excessive noise levels from airports or airstrips. There would be no impact.

3.13 POPULATION AND HOUSING

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIII. Population and Housing. Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b) Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?	☐	☐	☒	☐
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.13.1 ENVIRONMENTAL SETTING

According to the US Census Bureau, in 2010 San Mateo County's population totaled 718,451 with 718,451 total housing units and an occupation rate of 2.72 persons per household. (US Census Bureau 2012) Located in the unincorporated area of San Mateo County, the Preserve and the surrounding area are sparsely populated, with housing consisting mostly of rural residences, farmhouses, and estates.

3.13.2 DISCUSSION

a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less-Than-Significant. The Master Plan does not include construction of new housing or commercial business. Therefore, no direct population growth would result from implementation of the Master Plan. It is anticipated that approximately 5 new staff (2 rangers and 3 maintenance staff) would be needed to manage/maintain the additional open space acreage. These staff may be new hires, or may transfer from existing positions at other open space facilities, based on overall District needs. Also, due to the remoteness of the Preserve, staff would likely commute from outside of the area. Therefore, even this miniscule addition to housing/business needs would not likely be confined to a specific geographic area.

Although providing additional public open space would better accommodate the existing and future recreational needs of the region, open space is not considered "infrastructure" that can support housing/business growth. These types of infrastructure typically include facilities such as roadways, pipelines, and treatment facilities, which facilitate development. For example, in areas where wastewater treatment is provided exclusively by septic systems, which require a substantial amount of space for leach fields, extension of a sewer line to such an area could facilitate (space necessary for leach fields) higher density development. Opening new open space areas to public use and implementing other goals of the Master Plan would not result in infrastructure-support facilities and neither remove nor create such a barrier to growth. Implementation of the Master Plan would

provide a higher quality of life for existing and future residences and visitors of the region. This impact is *less than significant*.

b) Displace substantial numbers of existing homes, necessitating the construction of replacement housing elsewhere?

Less-Than-Significant. Implementation of the proposed Master Plan would involve demolition of several unoccupied structures, including mobile homes. These structures are in state of disrepair and are not fit for habitation. Therefore, removal of these unoccupied residential structures would not require construction of replacement housing. The impact is *less than significant*.

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

No Impact. As described under "b" above, existing residences proposed for demolition are currently unoccupied and are in a condition that renders them unfit for habitation. Removal of these structures would not displace any existing residents and there would be *no impact*.

3.14 PUBLIC SERVICES

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XIV. Public Services. Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☒	☐
Other public facilities?	☐	☐	☐	☒

3.14.1 ENVIRONMENTAL SETTING

FIRE PROTECTION

The District participates in fire protection of the Preserve in collaboration with other agencies, and primarily relies on the jurisdictional fire agencies of CAL FIRE/County of San Mateo Fire Department (CAL FIRE/County Fire) and La Honda Fire Brigade, with first response and support to the jurisdictional fire agencies by District staff. Through CALFIRE's Cooperative Fire Protection Program, San Mateo County has contracted with CALFIRE for Fire Protection since 1962. CAL FIRE/County Fire responds to wildland fires, structure fires, medical emergencies, motor vehicle accidents, hazardous material spills, swift water rescues, cliff rescues, floods, civil disturbances, and earthquakes. CAL FIRE/County Fire operates five fire engines out of four county owned fire stations. These five engines are each staffed with three firefighters, one of which is a paramedic. Additionally, in declared fire season, one wildland engine is staffed at three of those stations, and one bulldozer is staffed at the headquarters station (in San Mateo). (San Mateo County 2012)

La Honda Fire Brigade (also called Volunteer Company 57) is a part of the 911 system within the County Fire System. La Honda Fire Brigade, which operates out of Station 57 located at 8945 La Honda Road (within ¼ mile of the Preserve), is a Basic Life Support Engine Company and responds to several types of non-law-enforcement emergencies, including structure fires, wildland fires, medical aid, vehicle accidents, cliff rescues, hazardous materials incidents, confined space and trench rescues, swift water rescues, as well as several types of storm-related emergencies. La Honda Fire has 16 current members with an authorized strength of 20. The company has two senior officers (a Chief and an Assistant Chief) and three supervising officers (a Captain and two Lieutenants). (La Honda Fire 2012)

The District maintains a fire program to assist these agencies with fire response. If a fire occurs on or is threatening District lands, District staff helps establish Incident Command if first on scene, evacuates or closes

the Preserves for visitor safety, performs initial attack when safe and effective to do so, provides logistical assistance given staff knowledge of the property, monitors and attacks spot fires, and supplies additional water for primary agency engines. The District operates a maintenance-style water truck for use in providing water for fire suppression.

POLICE PROTECTION

District rangers are peace officers authorized to carry out duties in patrolling District preserves to promote visitor safety and provide for the protection of the natural resources of the preserves. The District has a total of 25 badged rangers (who have attended a District approved Academy and wear a peace officer badge). In an emergency, any or all of these personnel could be summoned to assist at an incident. The San Mateo Sheriff's Department is the primary jurisdictional law enforcement agency that provides law enforcement service to unincorporated areas of San Mateo County, including the Preserve. District staff is responsible for enforcing District regulations most importantly pertaining to vandalism, bicycle speed, bicycle helmets, dogs off leash, dogs in closed area, and parking, while the San Mateo County Sheriff's Department is primarily responsible for criminal enforcement and all other code sections.

SCHOOLS

The Preserve is located within the La Honda Pescadero Unified School District. The closest school to the project site is La Honda Elementary School, located immediately adjacent to the Preserve on Sears Ranch Road.

PARKS

Several large open space preserves are located in the vicinity of the La Honda Creek Open Space Preserve, including the Russian Ridge Open Space Preserve (MROSD Preserve located approximately three miles east of the site), Windy Hill Open Space Preserve (MROSD Preserve located approximately 3 miles northeast of the site), Sam MacDonald and Pescadero Creek County Parks (located approximately 2 miles south of the site), El Corte Madera Creek Open Space Preserve (MROSD Preserve located approximately 1 mile northwest of the site), and Wunderlich County Park (located just north of the site).

3.14.2 DISCUSSION

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

Fire protection?

Less-Than-Significant. The District assists with fire protection of the Preserve in collaboration with other agencies, primarily in reliance on the jurisdictional fire agencies of CAL FIRE/County of San Mateo Fire Department (CAL FIRE/County Fire) and La Honda Fire Brigade, with first response and support to the jurisdictional fire agencies provided by District staff. The proposed Master Plan does not include development of structures in an area where no structures currently exist. In addition, as described in Section 3.8 "Hazards and Hazardous Materials," implementation of the proposed Master Plan would not result in a substantial increase in risk of wildland fire. Therefore, a substantial increase in demand for fire protection service would not occur,

such that new or expanded facilities would be required to maintain appropriate level of service. In addition, Environmental Protection Guideline PS-3, which is directly incorporated from Mitigation Measure PSI-1 from the Annexation EIR, requires the District to have personnel and equipment available to manage public access such that there would be no significant negative impact on existing services and there would be adequate stewardship to protect natural and agricultural resources. This impact is considered *less than significant*.

Police protection?

Less-Than-Significant. Law enforcement service at the Preserve is currently provided by the San Mateo County Sheriff's Department (criminal) and District rangers (resource protection). Implementation of the Master Plan would expand public access to areas that are not currently accessed by the public. Most emergency responses would be handled internally by District staff and would not tax other law enforcement agencies. In addition, the Master Plan calls for additional ranger and maintenance staff in the future as Master Plan phases are implemented, in order to properly respond to and manage visitor use. A total of approximately 2 new rangers would be hired to patrol the Preserve. In addition, Environmental Protection Guideline PS-3, which is directly incorporated from Mitigation Measure PSI-1 from the Annexation EIR, requires the District to have personnel and equipment available to manage public access such that there would be no significant negative impact on existing services and there would be adequate stewardship to protect natural and agricultural resources. Existing structures on the site provide opportunities for conversion into employee/ranger housing. Therefore, implementation of the proposed Master Plan would not result in increased demand for police protection such that new or expanded facilities are necessary to maintain current service levels. This impact is *less than significant*.

Schools?

No Impact. The Master Plan does not include development of new residences and therefore would not result in a substantial effect on the permanent population in the area that would increase the demand for educational services. Implementation of the Master Plan would have *no impact* on schools.

Parks?

Less-Than-Significant. Implementation of the Master Plan would provide 4,725 additional acres of publicly-accessible open space to the public with a network of trails and other recreational opportunities. Although the proposed trail connections to other parks and open space preserves in the area may slightly increase demand for those parks and open space facilities, the increase in demand would not be substantial, such that new or expanded facilities would be required. This impact is *less than significant*.

Other public facilities?

No Impact. The Master Plan does not include development of new residences and therefore would not result in a substantial effect on the permanent population in the area that would increase the demand for other services such as libraries, community centers, etc. Implementation of the Master Plan would have *no impact* on these other services.

3.15 RECREATION

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XV. Recreation. Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☒	☐

3.15.1 ENVIRONMENTAL SETTING

As mentioned in Section 3.14 "Public Services" above, there are several large open space preserves and parks located in the vicinity of the La Honda Creek Open Space Preserve. The open space and park facilities are primarily either owned/maintained by San Mateo County or the District. The most notable of these facilities include the Russian Ridge Open Space Preserve (MROSD Preserve located approximately three miles east of the site), Windy Hill Open Space Preserve (MROSD Preserve located approximately 3 miles northeast of the site), Sam MacDonald and Pescadero Creek County Parks (located approximately 2 miles south of the site), El Corte Madera Creek Open Space Preserve (MROSD Preserve located approximately 1 mile northwest of the site), and Wunderlich County Park (located just north of the site).

3.15.2 DISCUSSION

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Less-Than-Significant. Implementation of the Master Plan would provide an additional 4,725 acres of publicly-accessible recreational open space. The Master Plan has several goals related to public access on the Preserve, including:

- Goal PA-1: enhance the recreational opportunities in the Preserve by opening additional areas within the Preserve to the public for low intensity recreation.
- Goal PA-3: enhance the Preserve trail system by providing loops and trails to key destination sites and newly opened areas of the Preserve.
- Goal PA-4: expand opportunities for people with diverse physical abilities to enjoy passive recreational and educational activities in order to provide trails that serve a diverse population.
- Goal PA-5: promote regional trail connections with other public open space lands and with a designated segment of the Bay Area Ridge Trail through the Preserve.
- Goal PA-7: enhance the trail experience by providing trail-related amenities and removing obstructions to important viewsheds.

Implementation of the Master Plan would provide additional low intensity recreation opportunities for the public. It is possible that the regional connections with the Preserve to other public open spaces might increase visitation at nearby parks. However, the amount of visitor usage increase to other Preserves as a result of the increase of regional connections would be negligible, especially given the expansion of recreational opportunities within the Preserve. The vast majority of visitors are expected to stay within the Preserve and use the trails and other recreational facilities that this Preserve will provide. It is also possible that opening the additional acreage of the Preserve to the public may result in dispersing recreational use in the region, thereby reducing the density of recreational use on other nearby public lands. In either scenario, the impact to other open space and park facilities would be less than significant.

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

Less-Than-Significant. Implementation of the Master Plan would include the construction and expansion of recreational trails, four parking areas, interpretive signage, horse troughs, two picnic areas, and memorial benches. Construction of these facilities would adhere to the District's Resource Management Policies and Master Plan Objectives. Any existing roads on the Preserve would remain closed until improvements have been made to District standards to sustain the type and amount of use expected. The types of recreation proposed on the Preserve are low intensity. Amenities and trails on the Preserve would adhere to a low intensity design consistent with the look and feel of the rural landscape. Therefore, construction of recreational facilities would not have a significant adverse effect on the environment. The Master Plan also calls for upgrades to existing roads before they are made open to use. Therefore, opening new areas to public access will not result in significant impacts to the physical environment. Implementation of the proposed Master Plan would result in a *less-than-significant* impact.

3.16 TRANSPORTATION/TRAFFIC

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVI. Transportation/Traffic. Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
e) Result in inadequate emergency access?	☐	☐	☒	☐
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☒	☐

3.16.1 ENVIRONMENTAL SETTING

State Routes 35 (also called SR 35 or Skyline Boulevard) and SR 84 (also called Woodside/La Honda Road) are two-lane rural highways located near the Master Plan Area. The Preserve is currently accessed via private gates along these two roadways, as well as the existing public access point on Allen Road, which is accessed from SR 35 via Bear Gulch Road.

3.16.2 DISCUSSION

a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Less-Than-Significant. Traffic impacts to the level of service (LOS) standard for State Routes (SR) 35 and 84 are evaluated based on comparisons with the Level of Service (LOS) standards specified in the San Mateo County Local Coastal Program (LCP) adopted in June 1998. LOS is a qualitative description of a roadways operating condition and is designated by a letter grade ranging from A (free-flow conditions with little or no delays) to F (jammed conditions with excessive delays). The LCP specifies that a roadway LOS Standard of D (approaches unstable flow and heavy volumes) is acceptable for peak commuter periods and an LOS Standard of E (extremely unstable flow and poor maneuverability) is acceptable during recreation peak periods. Peak weekday commuter periods used in the traffic analysis are 7am to 9am and 4pm to 6pm. The peak commuter period for the weekend varies on the land use and area. Hexagon Traffic Consultants determined that the peak commuter period for the weekend was 10am to 2pm based on Caltrans traffic count data. Although SR 35 and SR 84 are not entirely within the San Mateo County Local Coastal Zone, the LOS standards in the LCP are used for this evaluation instead of the San Mateo County Congestion Management Plan because the Congestion Management Plan only applies to normal weekday commuter periods and does not address peak recreational periods, which is when Preserve use levels and Preserve generated traffic would be greatest.

Recent traffic count data for AM and PM weekday peak hours and for the weekend mid-day peak hour were conducted by Caltrans for SR 35 and SR 84. To calculate the potential increase in traffic attributable to opening and operating Honda Creek Open Space Preserve, traffic count data were collected by Hexagon Transportation Consultants at two of the District's existing preserves, Windy Hill (1,132 acres) and Purisima Creek (2,633 acres). These two preserves are representative of the predominant land types and staging areas that would be typical at La Honda Creek Open Space Preserve.

The 1,132-acre Windy Hill Open Space Preserve generated 34 total peak hour trips (total trips are equal to the sum of inbound and outbound trips), an average of roughly one trip per 33 acres. The 2,633-acre Purisima Creek Open Space Preserve generated 83 total peak hour trips, an average of roughly one trip per 31 acres of preserve space.

Based on these data, the weekend peak hour trip generation for open space preserves similar to La Honda Open Space Preserve was calculated to be one trip per 32 acres of open space for the Preserve. The Master Plan is expected to add approximately 5,760 acres of open space (note that 1,035 acres is already open to use, but use is limited to walk-in visitation and parking by permit. Therefore, the entire Preserve acreage is considered here as a conservative measure). Based on this total acreage, the weekend peak hour trip generation rate for the expected additional acreage would be approximately 180 weekend peak hour trips. Hexagon Transportation Consultants conducted a study to determine the traffic impacts of implementation of the Master Plan. The transportation study analysis assumes that 90 percent of the trips would be distributed over the segment of SR 84 east of Skyline Boulevard (SR 35) and that 10 percent of the related trips would be distributed over the segment of SR 84 that leads west towards La Honda. At SR 35, 25 percent of the related trips are assumed to go north on SR 35, and 75 percent are assumed to continue on SR 84. Trip distribution assumptions are based on the general distribution of population relative to the location of the Preserve. Exhibit 3.16-1 illustrates how the 180 weekend peak hour trips (90 vehicles going to and from the Preserve) would likely be distributed at Caltrans count locations along SR 35 and SR 84 based on the above assumptions from the Hexagon study.

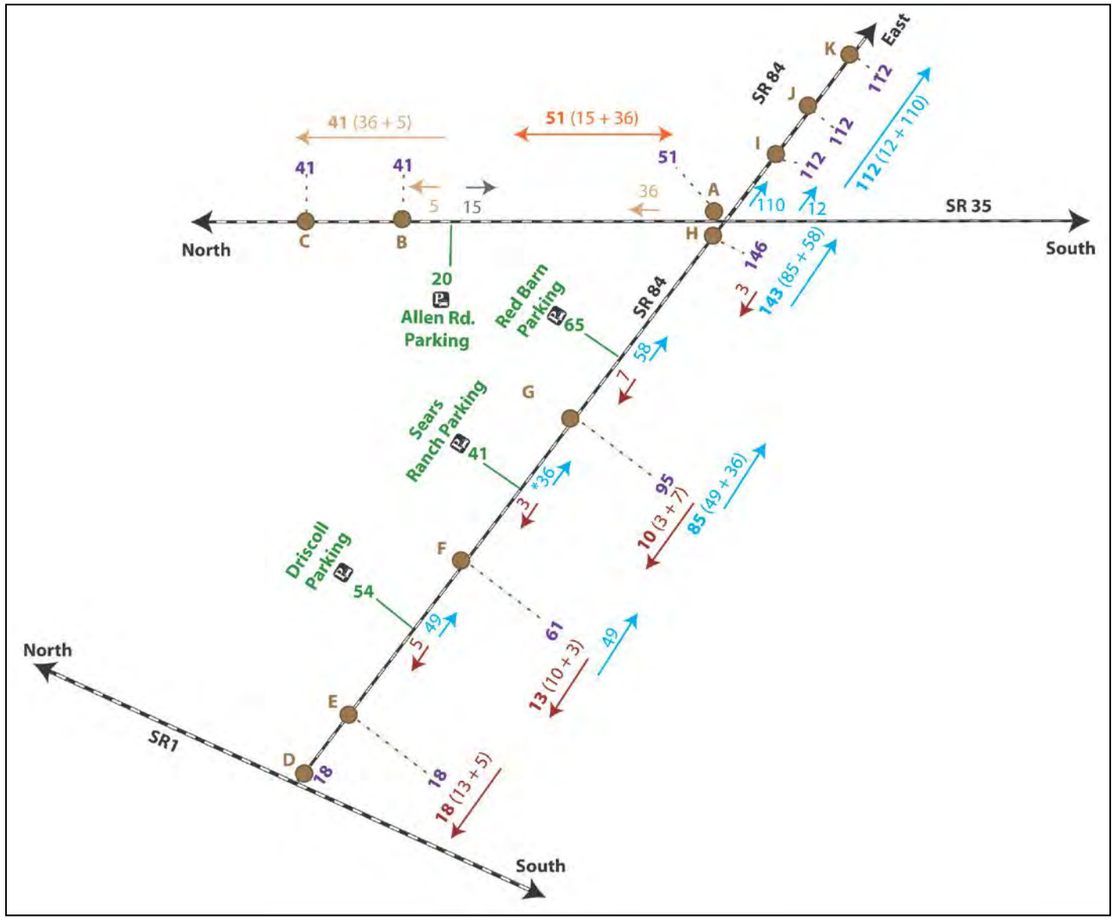
To determine the impact on LOS standards, the Hexagon study compares the LCP standards with the LOS standards for the following three scenarios, as presented in Table 3.16-1:

- Existing conditions, which is determined from the traffic data;
- Existing plus background conditions, which adds to the existing traffic data the projected increase in traffic volumes due to population growth in the area. The Hexagon study assumes that there would be a 10.5 percent increase in traffic on the specified highway segments over the next 15 years.
- Existing plus background conditions and project conditions, which includes project-related trips and the above-described background conditions.

Open space preserves are used less frequently during midweek periods. The Hexagon study assumes that 50 percent fewer weekday peak hour trips would be generated in comparison to a typical weekend peak hour. This assumption is based on existing Caltrans count data which show a higher traffic volume on the weekend. The same directional distribution of project trips has been assumed for weekday peak hours.

The Percent Time Spent Following (PTSF) is a measure of drivers' freedom to maneuver and to freely select the speed at which they wish to travel on a highway segment. PTSF is used to determine highway LOS as prescribed in the 2000 Highway Capacity Manual. As shown in Table 3.16-1, the change in PTSF between background trips and project trips is under five percent at all Caltrans count locations during both weekday AM and PM peak hours and the weekend mid-day peak hour.

As demonstrated in Table 3.16-1 and Exhibit 3.16-1, although future traffic would increase due to both background population growth and the project, including development of parking facilities, the increase would not result in significant traffic impacts as defined by the LCP LOS standards. The LCP specifies that a roadway LOS Standard of D is acceptable for peak commuter periods and an LOS Standard of E is acceptable during recreation peak periods. Table 3.16-1 illustrates what the current LOS is at each Caltrans count location, what the background LOS is projected to be, and what the LOS is expected to be with the increase in background traffic and with implementation of the Master Plan. The LOS of the project, which includes background trips, does not deteriorate below D during peak commuter periods or below E during recreation peak periods. Therefore, the vehicular traffic generated by implementation of the proposed Master Plan would have a *less-than-significant* impact on the LOS for SR 35 and SR 84 for the weekday AM and PM peak hours and for the weekend mid-day peak hour.



Driscoll Parking:
Of the 54 cars entering/exiting Driscoll, 49 are going to/from SR 84 towards SR35, and 5 are going to/from SR 84 towards SR1. At locations E D, the project trips will be 18 (13 from location F and 5 leaving Driscoll).

Sears Ranch Parking:
Of the 41 cars entering/exiting Sears Ranch, 36 are going to/from SR 84 towards SR35, and 3 are going/to from SR 84 towards SR1. At location F there are 61 cars, 49 going east from Driscoll and 10 going west from Sears Ranch and Red Barn.

Red Barn Parking:
Of the 65 cars entering/exiting the Red Barn, 7 are going to/from SR 84 towards SR1, and 58 are going to/from SR 84 towards SR35. At location G there are 95 cars, 10 going west from the Red Barn and from Allen Rd., and 85 going east from Driscoll and Sears Ranch. At location H there are 146 cars, 143 going east from Red Barn, Sears Ranch, and Driscoll, and 3 going west from Allen Rd.

Allen Road Parking:
Of the 20 cars entering/exiting Allen Road, 5 are going to/from SR 35 towards SR 92, and 15 are going to/from SR 35 towards SR 84. At location B and C there are 41 cars, 5 from Allen Road, and 36 from Driscoll, Sears Ranch, and the Red Barn, who are going to/from SR 35 at the intersection of SR 35 and SR 84.

Locations A, I, J, K have 122 cars going to/from SR 84 East. Of the 146 cars from Driscoll, Sears Ranch, and the Red Barn, 112 continue east on SR 84. Of the 15 from Allen Rd., 12 continue east on SR 84 and 3 continue west.

Caltrans Count Location

Segment	Segment Description
Highway 35	
A	Woodside , Jct Rte. 84
B	Kings Mountain Rd.
C	Jct. Rte. 92
Highway 84	
D	San Gregorio, Jct. Rte. 1
E	San Gregorio, Stage Rd.
F	Pescadero Rd., La Honda
G	La Honda
H	Woodside Jct. Rte. 35
I	Woodside, Portola Rd.
J	Woodside, Kings Mt. Rd.
K	Woodside, Canada Rd.

Exhibit Key

- Weekend Peak Hour Project Trips (PT) parking destination (180 total)
- 10 % of PT's going to/from SR1
- 90% of PT's going to/from SR35
- 25% of PT's going north on SR35
- 75% of PT's going south on SR35 before turning east on SR 84
- Number of PT's going north and south on SR 35 between locations A and B.
- Project Trips at Caltrans count location (see table 7). This is the number of vehicles at that location, including the number of vehicles coming from other parking lots from the Preserve.
- * Number is slightly less due to rounding

Exhibit 3.16-1

Traffic Distribution

Table 3.16-1 Two-Way Two-Lane Highway Level of Service Summary												
Caltrans Count Location (Segment Description)	LOS Standard[1]	Peak Hour	Existing Count	Existing % Time-Spent-Following[2]	LOS (Existing)	Background[3] % Time-Spent-Following	LOS (Background)	Project % Time-Spent-Following	LOS (Project & Background	% Change	Project Trips[4]	Project & Background Volume
HIGHWAY 35												
Woodside, Jct. Rte. 84 (s/o Alan Rd. Driveway)	D	AM	158	51.7%	B	53.0%	B	55.0%	C	+2.0%	26	201
		PM	201	48.0%	B	49.9%	B	52.1%	B	+2.2%	26	248
	E	SUN	317	58.1%	C	60.1%	C	58.8%	C	-1.3%	51	401
Kings Mountain Road (n/o Alan Road Driveway)	D	AM	128	38.5%	A	40.3%	B	42.9%	B	+2.6%	20	161
		PM	109	39.0%	A	40.1%	B	42.2%	B	+2.1%	20	140
	E	SAT	215	49.6%	B	52.2%	B	55.6%	C	+3.4%	41	279
Jct. Rte. 92 (n/o Alan Road Driveway)	D	AM	243	53.0%	B	55.2%	C	56.5%	C	+1.3%	20	289
		PM	282	54.4%	B	56.9%	C	58.4%	C	+1.5%	20	332
	E	SAT	249	52.4%	B	54.7%	B	57.7%	C	+3.0%	41	316
HIGHWAY 84												
San Gregorio, Jct. Rte. 1 (w/o Driscoll Ranch ED Driveway)	D	AM	57	34.0%	A	34.6%	A	35.7%	A	+1.1%	9	72
		PM	191	47.5%	B	49.3%	B	50.1%	B	+0.8%	9	220
	E	SAT	879	75.5%	D	76.4%	D	76.8%	D	+0.4%	18	989
San Gregorio, Stage Road (w/o Driscoll Ranch ED Driveway)	D	AM	81	36.0%	A	37.0%	A	38.0%	A	+1.0%	9	99
		PM	204	48.7%	B	50.5%	B	51.2%	B	+0.7%	9	234
	E	SAT	594	64.9%	C	67.0%	C	67.7%	C	+0.7%	18	674
Pescadero Road, La Honda (from Driscoll Ranch Drv. To Sears Ranch Road)	D	AM	92	37.0%	A	38.1%	A	41.2%	B	+3.1%	30	132
		PM	243	53.2%	B	55.2%	C	57.4%	C	+2.2%	30	299
	E	SAT	599	65.3%	C	67.5%	C	69.8%	C	+2.3%	61	723
La Honda (Sears Ranch Road Drv. To Red Barn Driveway)	D	AM	330	59.1%	C	60.9%	C	59.5%	C	-1.4%	46	411
		PM	152	41.6%	B	43.8%	B	49.8%	B	+6.0%	46	214
	E	SAT	467	61.7%	C	63.3%	C	65.9%	C	+2.6%	95	611
Woodside Jct. Rte. 35 (e/o Red Barn Driveway	D	AM	396	58.8%	C	61.1%	C	63.5%	C	+2.4%	73	511
		PM	490	62.7%	C	63.8%	C	65.2%	C	+1.4%	73	614
	E	SAT	607	65.0%	C	67.5%	C	72.6%	D	+5.1%	146	817
Woodside, Portola Road (e/o site and SR 35)	D	AM	532	64.8%	C	65.7%	C	67.5%	C	+1.8%	61	649
		PM	830	73.0%	D	75.4%	D	75.5%	D	+0.1%	61	978
	E	SAT	1271	82.0%	D	84.3%	D	86.0%	E	+1.7%	122	1526

Table 3.16-1 Two-Way Two-Lane Highway Level of Service Summary

Caltrans Count Location (Segment Description)	LOS Standard[1]	Peak Hour	Existing Count	Existing % Time-Spent-Following[2]	LOS (Existing)	Background[3] % Time-Spent-Following	LOS (Background)	Project % Time-Spent-Following	LOS (Project & Background	% Change	Project Trips[4]	Project & Background Volume
Woodside, Kings Mountain Road (e/o site and SR 35)	D	AM	520	63.3%	C	64.8%	C	66.5%	C	+1.7%	61	636
		PM	637	66.0%	C	68.6%	C	70.8%	D	+2.2%	61	765
	E	SAT	962	75.1%	D	77.5%	D	80.0%	D	+2.5%	122	1185
Woodside, Canada Road (e/o site and SR 35)	D	AM	936	74.4%	D	76.8%	D	78.1%	D	+1.3%	61	1095
		PM	1182	79.8%	D	82.4%	D	83.4%	D	+1.0%	61	1367
	E	SAT	1399	83.9%	D	86.1%	E	87.7%	E	+1.6%	122	1668

Notes:
[1] Level of service standard obtained from the *Local Coastal Program Policies* (June 1998), San Mateo County. It is a qualitative measure to describe operational conditions in a stream of traffic. A = Free flow. B = Free to stable flow, light to moderate volumes. C = Stable flow, moderate volumes. D = Approaches unstable flow, heavy volumes. E = Extremely unstable flow, maneuverability extremely poor. Highway level of service based on the Two-Way Two-Lane Highway Segment LOS Methodology from Chapter 20 of the 2000 Highway Capacity Manual.
[2] Percent-Time-Spent-Following (PTSF) is a measure used to determine highway level of service as prescribed in the 2000 Highway Capacity Manual. For two-lane highways, PTSF is a measure of the driver's freedom to maneuver and to freely select the speed at which they wish to travel on the subject highway segment.
[3] Background refers to the growth rate of traffic that would occur without implementation of the project.
[4] Project Trips are the number of two-way trips added to the roads as a result of the project during weekend peak-hour use. Please see figure 1 for details.

b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Less-Than-Significant. As described above under "a," implementation of the proposed Master Plan would not degrade existing or future roadway LOS to an unacceptable level and would therefore not conflict with an applicable congestion management plan. The impact is *less than significant*.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. Implementation of the Master Plan does not involve development of any tall structures and would not alter air traffic patterns. The proposed project would result in *no impact*.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less-Than-Significant. Under the Master Plan, public vehicle access is proposed at three new parking/staging areas. Line-of-sight is an important criterion in the selection of a new access point. In 2007, Hexagon Transportation Consultants conducted a line-of-sight evaluation for six existing Preserve driveways/gates that could be used as potential access points. Table 3.16-2 below shows the results of the line-of-sight analysis. As shown in Table 3.16-2, potential access points at the Driscoll Ranch West Gate, Sears Ranch Road Gate, and Red Barn Lower Gate provide adequate line of site, whereas access points at Driscoll Ranch East Gate, East Access Gate, and Red Barn Upper Gate do not provide the minimum site distance required by Caltrans. At all but one access location, sight distance can be feasibly improved to meet the minimum required sight distance by moving

the driveway location and configuring the intersection as recommended by Hexagon. However, at the Red Barn Upper Gate, satisfying the minimum sight distance requirement would be infeasible. For this reason, the Red Barn Upper Gate has been eliminated as a potential access point from the Master Plan. Access to the Red Barn would be provided via the Red Barn Lower Gate, which has adequate line of site.

Table 3.16-2 Sight Distance at Proposed Access Gates

Gate	Location	Min. Req'd Sight Distance	Measured Sight Distance		Key Issues
			North/ East	South/ West	
Driscoll Ranch West Gate	North side of Hwy 84, across from Driscoll Ranch Event Center	580	1,405'	610'	This location provides adequate sight distance and is a good candidate for access to the southern portion of the Preserve.
Driscoll Ranch East Gate	North side of Hwy 84, across from Driscoll Ranch Event Center	580	275'	1,685'	Sight distance to the east is less than Caltrans' minimum requirement. The driveway would need to be moved approximately 305 feet to the west in order to meet the minimum sight distance requirement.
Sears Ranch Road Gate	At the northern terminus of Search Ranch Road	n/a	n/a	n/a	The existing road ends at the gate; therefore sight distance is not an issue at this gate since. La Honda Elementary school is located on Sears Ranch Road near this gate. Any potential safety concerns associated with school children in the area should be addressed if the gate is used.
East Access Gate	West side of Hwy 84, southeast corner of Preserve	430	400'	400'	Driveway needs to move approx. 150 ft. to the north to improve sight lines at the intersection. An inbound left-turn lane on the hwy would be required since sight lines to the north will be reduced.
Red Barn Lower Gate	West side of Hwy 84, Immediately east of Red Barn	430	520'	515'	This driveway provides adequate sight distance. The grade of the driveway leading down to the Red Barn site would need to be reduced to provide for safe and efficient vehicular access.

Source: MROSD 2007 (adapted for the proposed Master Plan)

The proposed Master Plan includes Environmental Protection Guideline TRAF-1 that requires coordination with Caltrans regarding access location and configuration. The Guidelines include specific driveway siting requirements provided by Hexagon Transportation Consultants. It is anticipated that Caltrans recommendations would be consistent with the Hexagon's recommendations; however, Caltrans may provide additional measures to ensure their standards are met. Meeting Caltrans standards for access location/configuration would ensure that the access points are safe for vehicles to access. This impact would be *less than significant*.

e) Result in inadequate emergency access?

Less-Than-Significant. The proposed Master Plan includes Environmental Protection Guidelines that directly incorporate mitigation measures from the Annexation EIR, including HAZ-6, HAZ-8, and HAZ-9, which requires several measures to facilitate emergency access including design of entrance and road shoulders, minimum 12-foot gate width and trail design to serve as emergency access routes. Furthermore, as discussed under "d"

above, access points would be designed consistent with Caltrans standards and would provide appropriate emergency vehicle access. This impact is *less than significant*.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

Less-Than-Significant. There are currently no bike paths or bike lanes along SR 35 and SR 84, although bicyclists do use these routes. There is currently no bus service to the Preserve. San Mateo County does not have a plan to provide new bus service to the vicinity of the Preserve as new bus service requires funding, strong ridership demand, and a large activity center, none of which exist or are proposed in the area or as part of the Master Plan. The Preserve also does not meet the criteria for a critical destination, such as a school or hospital, that would necessitate provision of transit service. San Mateo County does not designate SR 35 or SR 84 in the vicinity of the Preserve as a key congested area. There are also no existing or planned pedestrian paths along SR 35 and SR 84. Therefore, the proposed Master Plan would not conflict with policies, plans, or programs regarding public transit, bicycle or pedestrian facilities.

Providing bicycle access on the Preserve could result in slight increased bicycle use on these roadways; however, the bicycle trails on the Preserve would not be paved and would not typically be accessed by road bikes, which are the most common bicycle used for riding on SR 35 and SR 84. Although some bicyclists may ride mountain or trail bikes on these roadways to access the Preserve, this would likely be uncommon. Most bicyclists accessing the Preserve would transport their mountain/trail bikes by car. Any increase in bicycle use on SR 35 or 84 would likely be negligible.

When multiple user types are allowed on trails (i.e. bicyclists, equestrians, and hikers) there is generally a perception that safety issues will arise due to user conflict. For example hikers and equestrians often feel unsafe sharing trails with mountain bikers, especially on narrow, single-track trails on steep grades. Many of the trail alignments identified in the master plan for bicycle use are on existing ranch roads (unpaved). These are wide and provide ample room for safe passing. Also, new multi-use trails would be designed and maintained with a width that is safe for passing. Furthermore, the Master Plan includes Environmental Protection Guidelines that directly incorporate mitigation measures from the Annexation EIR. Guideline LU-2 ensures safe trail use by multiple users by allowing consolidation of trail uses only where safe within the same trail way, depending on the steepness, available right-of-way, safety, user frequencies and other conditions. The Guidelines require clear signage and appropriate barriers where trail segments are restricted to a certain user type. The Guidelines (PS-2) also require a maximum 15 mph speed limit for bicyclists. Impacts related to the safety of bicyclists, pedestrians, and equestrians are *less than significant*.

3.17 UTILITIES AND SERVICE SYSTEMS

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVII. Utilities and Service Systems. Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☒	☐
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

3.17.1 ENVIRONMENTAL SETTING

The four existing residences in the Preserve rely on septic systems to handle wastewater and springs to supply domestic water. Stormwater run-off drains naturally from the Preserve. There is no municipal or other formal drainage system; however, culverts and other drainage facilities convey stormwater flow across or through roadways.

The District does not provide regular trash collection services. District ordinance requires users to dispose of refuse brought to the Preserve and prohibits public littering or dumping of any material onto the Preserve. Illegal trash is removed from the Preserve by District staff and properly disposed of.

3.17.2 DISCUSSION

a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

No Impact. As mentioned above under the Environmental Setting, the four existing residences in the Preserve rely on septic systems to handle wastewater. The Master Plan includes restroom facilities with standard vault pit toilet facilities that require no waste water connections. The waste effluent would be removed and properly disposed of as needed. Implementation of the Master Plan would not add municipal wastewater facilities (i.e. pipelines and/or connections to a municipal wastewater service) and would not require wastewater treatment. Therefore, there would be *no impact* related to potential exceedance of applicable wastewater treatment requirements or construction or expansion of wastewater treatment facilities.

b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

No Impact. Please see the discussion under "a" above, which indicates that implementation of the proposed Master Plan would result in *no impact* related to the need to expand or construct wastewater treatment facilities.

c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less-Than-Significant. For the most part, drainage of stormwater runoff occurs naturally on the Preserve, with the exception of features such as culverts that convey drainage through roadways. The Master Plan involves drainage improvements to prevent erosion and improve water quality, including construction of new culverts, installation of energy dissipaters at outfalls, and redirection of drainage on roadways, etc. Environmental impacts associated with these improvements are evaluated in this IS. With implementation of Environmental Protection Guidelines included in the Master Plan, impacts associated with installing these drainage facilities are *less than significant*.

d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

Less-Than-Significant. The Master Plan does not include the provision of municipal water service. The reintroduction of grazing into the northern portion of the Preserve would not require more water than is already available from springs and ponds, and no other irrigation would be needed. The four existing residences do not require additional water facilities. Reuse of any existing structures, including the proposed environmental education classroom, would not require significant water consumption and would connect to existing water infrastructure supplied by springs located on the property. Therefore, implementation of the proposed Master Plan would result in a *less-than-significant* impact related to water supply.

e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand, in addition to the provider's existing commitments?

No Impact. Please see the discussion under "a" above, which indicates that implementation of the proposed Master Plan would not require municipal wastewater service or treatment, and would therefore result in *no impact* related to wastewater treatment capacity.

f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Less-Than-Significant. A number of dilapidated structures and remnant ranching facilities are proposed for demolition and removal. None of the structures are large and many are manufactured homes, which generally have less mass than standard structures (especially because these structures generally lack a substantial foundation). Demolition of these structures would generate solid waste. Material would be recycled to the greatest extent possible and otherwise hauled to appropriate disposal facilities. Any hazardous material would be abated first per state requirements (see Hazards section) and would be disposed of at appropriate hazardous waste disposal facilities. The volume of solid waste generated during demolition would not be substantial.

As mentioned under the Environmental Setting, the District does not provide regular trash collection services. Visitors are required to dispose of their own trash. The District prohibits public littering or dumping of any material onto the Preserve. District staff removes any illegal trash, which is typically not substantial in volume, and properly disposes of it. Because implementation of the proposed Master Plan involves very limited generation of solid waste the Master Plan would not conflict with solid waste regulations and impacts to landfills will be *less-than-significant*.

g) Comply with federal, state, and local statutes and regulations related to solid waste?

Less-Than-Significant. As described under "f" above, the proposed Master Plan involves very limited solid waste generation and would not conflict with federal, state, and local statutes or regulations related to solid waste. The impact is *less than significant*.

3.18 MANDATORY FINDINGS OF SIGNIFICANCE

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XVIII. Mandatory Findings of Significance.				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	☐	☐	☒	☐
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Authority: Public Resources Code Sections 21083, 21083.5.
Reference: Government Code Sections 65088.4.
Public Resources Code Sections 21080, 21083.5, 21095; *Eureka Citizens for Responsible Govt. v. City of Eureka* (2007) 147 Cal.App.4th 357; *Protect the Historic Amador Waterways v. Amador Water Agency* (2004) 116 Cal.App.4th at 1109; *San Franciscans Upholding the Downtown Plan v. City and County of San Francisco* (2002) 102 Cal.App.4th 656.

3.18.1 DISCUSSION

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of an endangered, rare, or threatened species, or eliminate important examples of the major periods of California history or prehistory?

Less-Than-Significant. As described in the biological resources analysis of this IS (Section 3.4), implementation of the proposed Master Plan, including Environmental Protection Guidelines and mitigation measures included in this IS/MND would result in less-than-significant impacts related to biological resources. Natural Resource Management is one of the overarching goals of the Master Plan, including protecting and enhancing habitat and wildlife populations. The proposed Maser Plan does not have the potential to substantially degrade fish or wildlife habitat, adversely affect wildlife populations, or restrict the range of special-status species. Also, as indicated in the cultural resources analysis of this IS (Section 3.5), implementation of the proposed Master Plan would not adversely affect existing historic structures and Environmental Protection Guidelines would prevent

substantial adverse effects to unknown archaeological resources or human remains. These impacts are considered *less than significant*.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

Less-Than-Significant. The proposed Master Plan includes very little soil disturbance and does not include construction of new structures or substantial impervious surfaces. The proposed Management Plan is designed to protect and enhance existing natural and cultural resources. As indicated throughout this Initial Study, implementation of the proposed Master Plan would not result in any individually significant impact. In addition, the effects of the proposed project would not combine with the effects of other past, present, or future projects in a cumulatively considerable fashion. The cumulative impacts associated with the proposed Master Plan are *less than significant*.

c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

Less-Than-Significant. The proposed Master Plan does not include any new sources of pollution and would not generally involve the use, handling, or transport of hazardous materials. Demolition of existing structures would be carried out in compliance with existing OSHA and BAAQMD standards for handling of hazardous building materials such as asbestos and lead. This impact is *less than significant*.

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TABLE OF CONTENTS

1.0 INTRODUCTION

This report summarizes the preliminary findings of a road and trail erosion inventory of 17 miles of road on the Driscoll Ranch property. This investigation was undertaken at the request of the Mid Peninsula Open Space District (District) to evaluate the condition of roads and trails with respect to erosion and to identify maintenance and management needs.

Driscoll Ranch is a 3,635 acre parcel located within the La Honda Creek and San Gregorio Creek drainages (Figure 1). The San Gregorio Creek is listed as impaired by sediment under the Clean Water Act, Section 303(d) and provides habitat for steelhead trout and coho salmon. Steelhead trout are listed as threatened and coho salmon as endangered under the U.S. Endangered Species Act (ESA).

The subject area is underlain by erodible and potentially unstable geologic substrate and field observations reveal that roads have been and continue to be a significant source of anthropogenic sediment in the watershed. Although erosion in this area is a natural process acting within any watershed, problems may arise when more sediment is contributed to the watercourse than the stream can mobilize. This can result in modifications to the stream geometry, increased turbidity and local degradation of water quality. An important component of watershed protection is to minimize the degree of sediment delivery from roads.

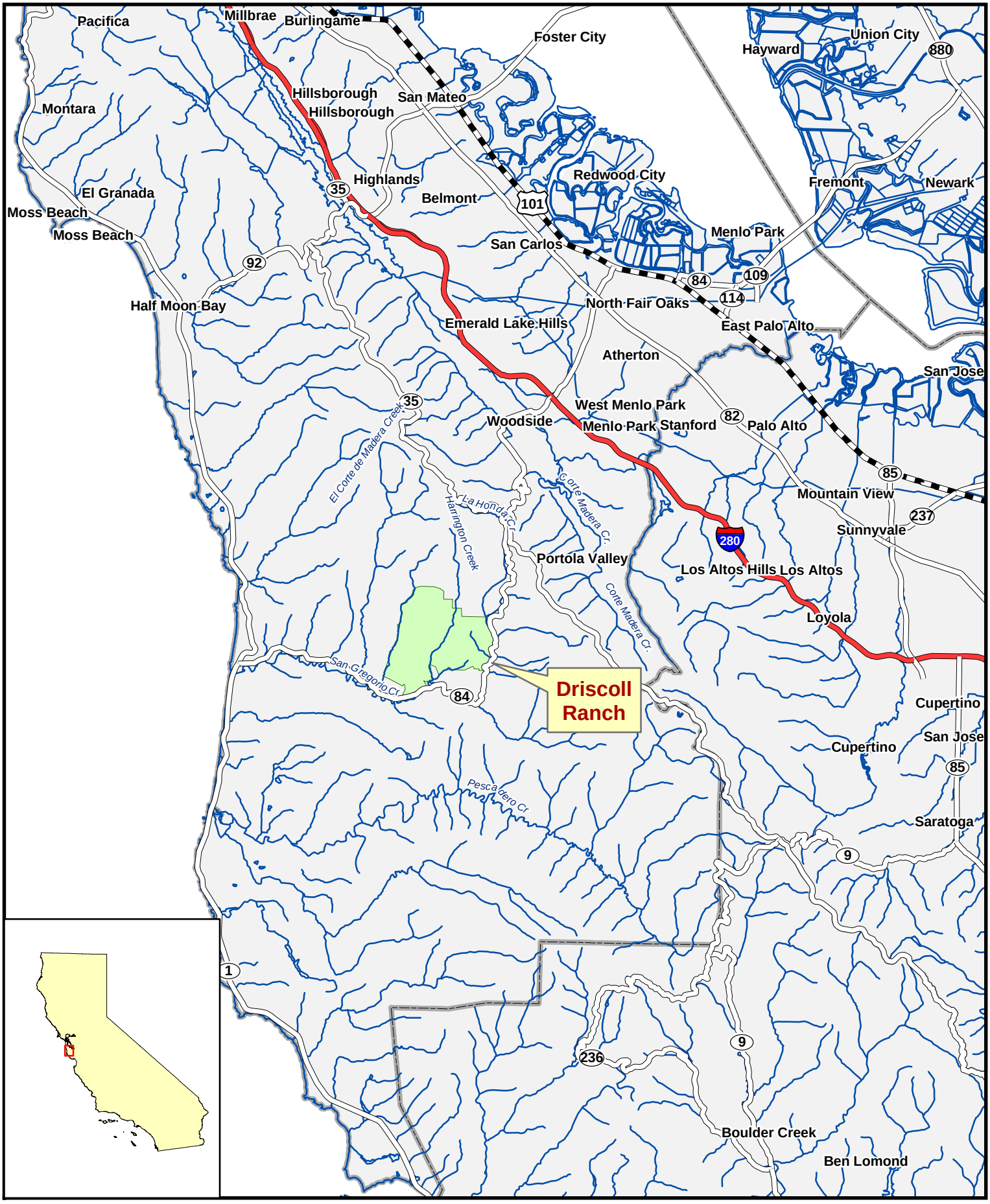
The property is currently used for cattle ranching with a few caretaker homes on the property. Driscoll Ranch is presently closed to the public.

The District is in the process of evaluating the resources in Driscoll Ranch in order to prepare a long term master plan for the property. Part of that process is to evaluate the existing conditions of the road network with respect to erosion and sedimentation and to assess the suitability of those roads for future use. This will aid managers in determining possible efforts to improve road conditions and in setting goals for future landuse. The District's objectives are to develop a suitable road network, reduce sediment delivery to the aquatic system, and to reduce maintenance costs by upgrading or decommissioning roads according to District standards.

1.1 OBJECTIVES

The stated objectives of the road and trail inventory are:

- Systematically inventory the condition and erosion potential along approximately 17 miles of roads and trails in the property. The inventory focuses on those sties where 1) there is an existing or potential risk for future sediment delivery to streams that could significantly impact water quality and/or 2) where significant road damage has or could occur and where upgrading the road or trail will be required.
- Assess long-term stability and maintenance requirements associated with the existing road and trail network.
- Develop appropriate and feasible repairs to minimize future erosion and/or repair damaged segments of the road and trail system.
- Prioritize implementation treatments to assure economic, biological, management and physical effectiveness.



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SITE MAP
DRISCOLL RANCH

FIGURE 1
Job: MPEN-DRISCOLL-374
Date: 8/1/2005

2.0 PHYSICAL ENVIRONMENT

2.1 GEOGRAPHIC SETTING

The study area is located in the central portion of the Coast Range Physiographic Province of California. The Coast Range Province is a series of coastal mountain ranges paralleling the pronounced northwest-southeast structural grain of California.

The Driscoll Ranch occupies 3635 acres in the lower portion of Harrington and Bogess Creek watersheds, tributaries to San Gregorio Creek (Figure 1). The area is characterized by open prairie grasslands of moderate to steep terrain dissected by narrow and steep gradient ephemeral to perennial streams. Slopes range from 20% near the ridge top to 65+% locally along the valley bottoms of the larger tributaries. The hillslopes are slightly convex, rounded toward the ridge tops with local steep streamside slopes found at the base of the hillsides. The ground is locally benchy consistent with deep-seated landsliding. Elevations range from 360 feet along the valley bottom of La Honda Creek to 1280 feet along the upper most ridge top.

The property has historically been used for cattle ranching and that use is expected to occur into at least the near future. There are several residential homes used mainly by the caretakers of the ranch. Several exploratory oil wells were reportedly drilled several decades ago. There are an estimated 30 miles of roads and tractor trails on the property.

2.2 GEOLOGIC SETTING

2.2.1 Bedrock geology

The preserve is underlain by a sequence of tightly folded and faulted Tertiary-age marine sediments of the undifferentiated Lambert Shale and San Lorenzo Formation (Tls) and Tahana (Tpt) and Pomponio (Tpp) members of the Purisima Formation (Brabb et al., 1998) (Figure 2) These rocks consist primarily of fine-grained sandstone, siltstone and mudstone and shale. Field observations of these rocks are consistent with regional bedrock descriptions.

The relative stability of slopes is often influenced by the abundance of shale, which is more susceptible to surficial weathering processes, and the frequency and orientation of joints and shears. Steeper slopes tend to be underlain by more competent bedrock and the gentler slopes underlain by less resistant and weaker shale.

2.2.2 Soils

Much of the preserve is underlain by relatively soft prairie soils derived from shale and mudstone. These soils are typically found in the open grassland areas that dominate the property. Soils in these areas can be wet in the winter and inherently prone to erosion especially where water is concentrated. Roads crossing these soils tend to rut easily with winter use and large gullies form were road runoff is concentrated and discharged off of the road. A brief inspection of nearby ranch areas showed that many year round roads routed through the open grassland areas are graveled to prevent them from rutting in the soft soils.

2.2.3 Landsliding

Regional landslide mapping and review of aerial photographs reveal that large portions of the preserve are underlain by large-scale deep-seated translational landslide/earthflow complexes

(Wentworth et al., 1997). Earthflows are typically characterized by slow progressive deformation or creep of the slide mass in a semi-viscous, plastic state. In contrast, translational slides are characterized by a somewhat cohesive slide mass. Combinations of the two are quite common. In general, these landslides commonly consist of several smaller slide blocks that coalesce together to form the larger landslide complex. Differential movement between individual slide blocks is common.

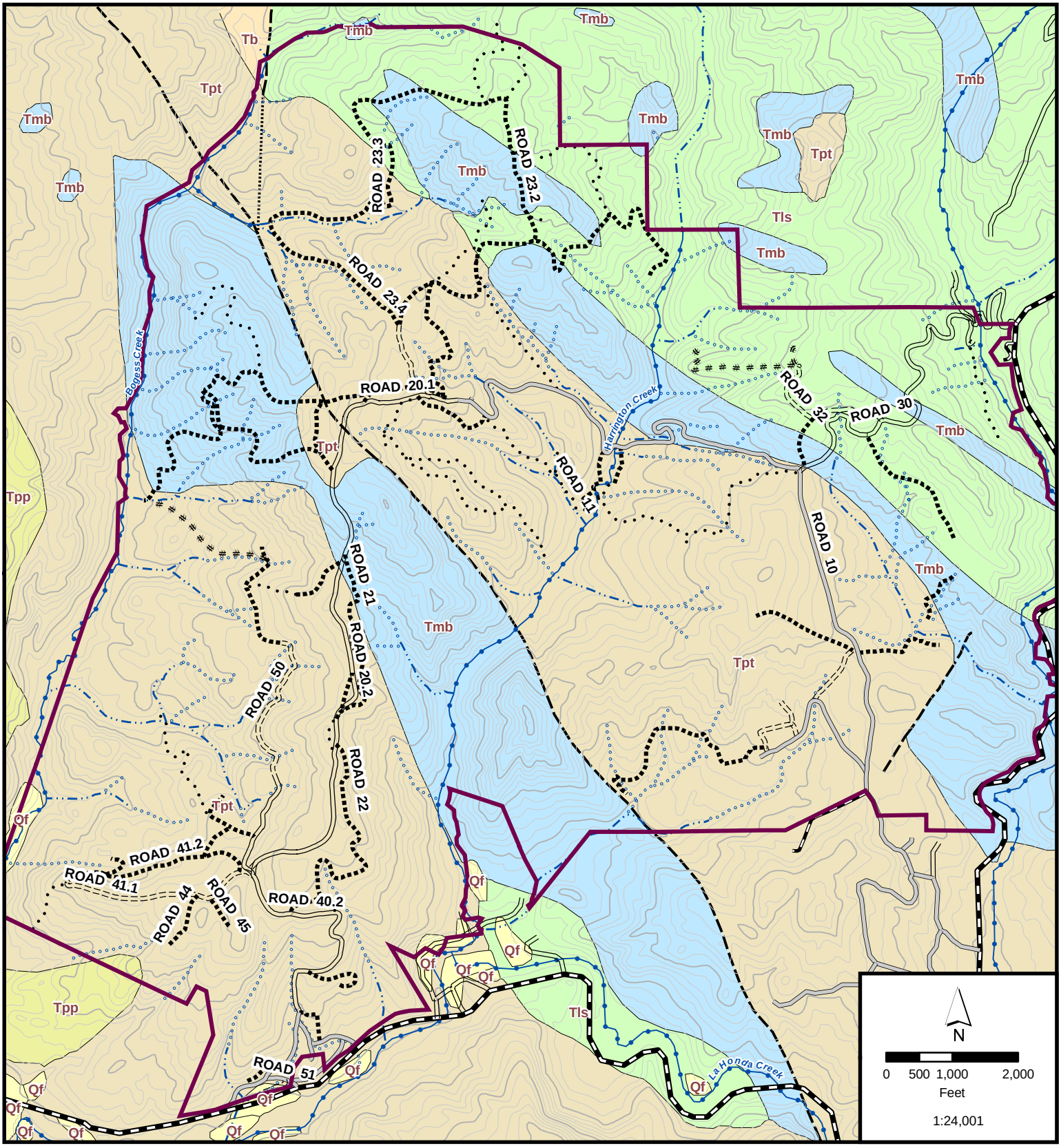
These slides are identified by a series of broad discontinues arcuate crown and internal scarps, hummocky topography and series of small nested mid-slope benches on what is otherwise moderately sloping terrain.

The slides exhibit varying degrees of activity. Portions of slide complexes are old and dormant (characterized as dormant–young per (Keaton and DeGraff, 1996)), whereas other portions of the slides show clear signs of recent small-scale incipient movement based on the presence of localized discontinuous scarps. The general morphology of the hillside suggests that discreet portions of the slide complexes have probably been episodically active for centuries, if not longer. Many of the watercourses are poorly to moderately incised into the landscape indicating that slide movement is continuing to infill the stream channel.

Natural slide movement is attributed to the weak earth materials that underlie much of the hillside in concert with high groundwater conditions. Due to the proximity of the San Andreas and San Gregorio fault zones to the plan area, I believe that high ground accelerations experienced during earthquakes are a contributing factor in the reactivation of many of the deep-seated landslides within the watershed.

Sediment from deep-seated landslides is delivered to the stream system by bank erosion along the toe of the slides as well as from all watercourses draining the interior of the slide mass. Bank erosion and gullies are apparent on many of the steep first and second order channels especially in the grasslands where they can produce significant quantities of sediment. The higher rate of erosion in the grassland areas is due to weaker soils and lack of root reinforcement that effectively armors the banks.

However, if use changes, for example from seasonal to year round use or from infrequent ranch to multi use patrol road then the potential for future erosion and need for treatment may change as well. To the extent feasible, these issues have been described in the road log.



Geologic Contact

- Geologic Contact
- Fault - approximate
- Fault - concealed

Geologic Units

- Qf: Fluvial terrace deposits
- Tpt: Tahana Member
- Tpp: Pomponio Member
- Tmb: Midego Basalt
- Tls: Lambert Shale / San Lorenzo Formation
- Tst: Two Bar Shale
- Tb: Butano Formation

Roads

- Highway
- Paved
- Permanent
- Principal
- Secondary
- Ranch
- Tractor
- Abandoned

Streams

- Ephmerial
- Intermittent
- Perennial

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REGIONAL GEOLOGIC MAP
DRISCOLL RANCH
Midpeninsula Regional Open Space Preserve

FIGURE 2
Job: MPEN-DRISCOLL-374
Date: 8/1/2005

3.0 METHODOLOGY

The inventory of sediment sources along roads follows a modified and simplified version of the Redwood National Park road inventory procedure, which has been used successfully by many researchers in the Pacific Northwest. A copy of the data collection form is found in Appendix 4.

Existing and potential erosion problems were systematically inventoried along the subject roads and trails. At each problem site and at each stream crossing a variety of information was collected, including:

- Dominant erosional process
- Nature and magnitude of existing and potential erosion problems
- Measurements of key geomorphic features (to aid in assessing the potential risk of erosion)
- Treatment prescriptions
- Site photo and sketch at the larger sites

3.1 TREATMENT PRESCRIPTIONS

Preliminary appropriate and cost-effective prescriptions were developed for each site or road/trail reach to minimize or prevent future erosion and to upgrade the road/trail to acceptable standards generally specified by International Mountain Biking Association (IMBA, 2001), California Forest Practice Rules, Handbook for Forest and Ranch Roads (PWA, 1994) and San Mateo County 2001 Trails Plan. Where feasible, emphasis was placed on developing prescriptions that minimize future maintenance. Treatment prescriptions outlined in this document are preliminary and additional work may be required to conform to regulatory permitting requirements.

3.2 TRAIL CONDITIONS AND TREATMENT PRIORITY

Treatment priorities were qualitatively assigned to each inventory site based upon a number of independent factors, including expected potential and magnitude for future erosion, degree of existing or potential road /trail damage and cost effectiveness of treating the site.

TREATMENT PRIORITY	
HIGH	Sites where significant road/trail damage has or could occur that impedes usage or result in high maintenance costs, and/or have the potential for greater than 10 cubic yards of future sediment delivery, and/or have the potential for chronic fine-grained sediment input. Expected to erode during average winter storms and/or have the potential to result in significant erosion/trail damage during infrequent large magnitude storms.
MODERATE	Expected to erode during less frequent storm events damaging the road/trail and impeding access and/or delivering greater than 10 cy of sediment to the aquatic system. Includes all stream crossings where culverts are rusted or significantly undersized but have not yet failed.
LOW	Unlikely to erode more than 10 cy of sediment during large infrequent events, or have low potential of sediment delivery to the aquatic environment.

It is important to keep in mind that the primary use of the property is for ranching. Gravel roads leading to homes are used year round but the remainder of the roads are used mainly for ranch access and thus receive little use. The condition and treatment needs are based on this current

condition.

4.0 RESULTS AND DISCUSSION

This report provides basic information to facilitate road and trail upgrades to improve water quality, while maintaining opportunities for ranger patrol and public recreation to the extent feasible. Road/trail inventory information contained herein includes inventory site locations, site descriptions, site rankings, site photos and sketches on larger sites. It provides approximate estimated repair costs that will assist the District in implementing corrective actions to damaged roads/trails while improving watershed quality and maintaining recreational opportunities. Results of the road/trail inventory are summarized as follows:

TABLE 3: Summary of Inventory Sites

The table provides a summary of inventoried site descriptions, treatment prescription, treatment priority and approximate cost estimate for all inventoried sites.

APPENDIX 1: Road Summary

- Describes general overall condition of all roads inventoried during the course of this study
- Outlines road surfacing, general drainage problems, and current use
- Summarizes erosion risks and use constraints.

APPENDIX 2: Road Erosion Inventory Log

- Identifies and describes all sites inventoried during the course of this study
- Outlines treatment prescriptions and limitations
- Evaluates erosion potential, degree of road damage and treatment priority
- Summarizes necessary permits for upgrades

APPENDIX 3: Site Photographs

- Photographs of selected inventoried sites.

The **Road Summary** provides a general description of each of the roads and constraints upon their potential use. This appendix will be most useful to land managers in overall Preserve planning. The **Road Log** is a detailed description of each site inventoried. This appendix is likely most useful for identifying specific sites in need of repair or upgrades.

Map of all inventoried sites is found in figures 3A, 4B and 4C.

4.1 ROAD CLASSIFICATION

There are at least 30 miles of roads on the property (Figure 3). This includes frequently used residential access roads and infrequently used ranch and tractor roads. For the purpose of this study roads are broken into 6 categories as outlined in Table 1 below.

TABLE 1: ROAD TYPES
Driscoll Ranch

TYPE	SURFACE	CURRENT USE	MILES
Permanent	Gravel	Year round residential access	3.8
Principal	Native	Mainline roads accessing key portions of the property. Roads probably receive year-round use.	3.8
Secondary	Native	Seasonal infrequently used roads accessing the more remote areas of the property.	2.3
Ranch	Native	Small very infrequently used roads accessing the remote areas of the property. Many of these roads are grassed over and some are no longer passable by large vehicles.	12.3
Tractor	Native	Temporary access roads often constructed in a manner incompatible with large vehicles. Many of these roads are constructed at a very steep grade. These roads may be used by ATV for ranch access	6.2
Abandoned	Native	Roads no longer used	0.9
Unclassified		These roads have not been inspected	0.6
TOTAL			**29.9**

Most of the secondary and smaller roads were constructed for ranch operations and have received little maintenance over the years. With the exception of the main gravel road that accesses residences roads were constructed with low initial cost and with little consideration given to long-term maintenance needs. This often resulted in inadequately designed, constructed or maintained stream crossings, and/or inadequate road drainage. Many of the stream crossings and ditch relief culverts use the 12" diameter drill stem left over from the exploratory oil wells.

4.2 EROSION INVENTORY

The condition of roads on the property is variable. Most problems are found on the permanent, principal and secondary roads which are used most frequently. Relatively few problems were observed on the ranch and tractor trails.

A total of 61 sites were inventoried along the 17 miles of road. Inventoried sites included all stream crossings, areas of poor road drainage, and landslides. For the purpose of this study all stream crossings and ditch relief culverts were inventoried regardless of condition. Road drainage and landslide sites were only inventoried if they had the potential to result in significant future erosion or road damage.

Of the 61 sites 40 have a Moderate to High treatment priority and therefore are recommended for some corrective measures to reduce the potential for sediment delivery or to repair damaged segments of the road (Table 2).

TABLE 2:
NUMBER OF SITES BY EROSION PROCESS AND TREATMENT

	TREATMENT PRIORITY			
	High	*Moderate*	*Low*	***TOTAL***
Stream Crossings	6	7	9	**22**
Road Drainage	6	20	12	**38**
Other	0	1	0	**1**
TOTAL	**12**	**28**	**21**	**61**

As mentioned earlier, treatment priority is a function of use and desired level of stability. Therefore treatment priority may change based on the level of use the roads are to experience in the future. The recommendations outlined in Appendix 2 and summarized in Table 3 are based on the current level of use and for a relatively high level of long term road stability.

4.2.1 Stream Crossings

All stream crossings on the property were inventoried regardless of their condition. The inventory identified 22 stream crossings: 19 culverts, 2 unculverted fords, and one bridge. Of these sites, 13 were rated with Moderate or High treatment priority and are recommended for upgrades. A few others may need to be upgraded if use on the property changes or increases.

With few exceptions, most of the crossings on the property are presently functioning but many are at risk of failure because they are either starting to rust or are undersized and therefore at risk of plugging. Many of the culverts consist of 12 inch diameter drill stem left over from when several oil wells were drilled on the property several decades ago. A few of these pipes have or are starting to rust out and therefore are in need of replacement. Damaged culverts (i.e. rusted or crushed) and

grossly undersized pipes are recommended for replacement. For example, at MP 16 on the main gravel road, the crossing consists of a 24 inch by 80 foot plastic pipe that was installed after the 1996 storms when the previous crossing washed out. The 24 inch pipe is sized only for a 5 year storm event and was installed at a somewhat shallow gradient placing the pipe at risk of failure.

Three crossing are actively eroding and are recommended for immediate replacement. One of the crossings (MP 36) is located on the main access road. This crossing appears nearly completely rusted out with streamflow piping below the fill. Complete failure of the crossing is expected in the near future. At MP 55, located on a seldom used ranch road, the existing culvert was undersized and plugged with sediment diverting the stream down the road where it has eroded a very large gully. This crossing is recommended to be removed.

The ford crossings showed little signs of significant erosion but can be a chronic source of fine grained sediment. Because these are located on seldom used ranch or tractor trails, treatment at these sites is not warranted at present.

There is one bridge crossing on the property which consists of an old rail car. This bridge is located in the 100-year flood plain of Harrington Creek and was reportedly overtopped during the 1996 El Niño Storms. The long term stability of this bridge was not evaluated.

4.2.2 Road Surface Erosion

Road conditions within the preserve are mixed. Portions of the road network are well drained with few signs of significant erosion. Other segments are poorly drained and although significant erosion is not presently apparent, there is the potential for future erosion to occur.

Much of the road network is drained by inboard ditches to ditch relief culverts. Often the spacing between culverts is too long allowing water to concentrate and causing erosion of either the inboard ditch or of the hillside below where water is eventually discharged off the road. A total of 19 ditch relief culverts, 32 rolling dips and 700 feet of rocked inboard ditch are proposed for the Moderate to High priority sites. In addition, portions of the permanent rocked road are in need of maintenance to regrade and rerock segments that have broken down and are at risk of future erosion. Roughly 4800 feet of road will need to be regraded and 2800 feet of road rock applied.

Most of the ranch and tractor trails are “rough” in places, but do not show signs of significant erosion. This is largely a function of the low use these roads receive in concert with roads being overgrown with grass thereby protecting them from erosion. Several of the stream crossings on these roads, however, have not received maintenance and have or could fail and therefore should be either upgraded or removed.

Several segments of steep gradient roads are proposed to be abandoned. On inclined roads in grassland areas, even with a mild gradient, this can result in chronic fine-grained sediment to be delivered to watercourses. As mentioned earlier, most of these roads are not actively eroding primarily because the road segments are mostly grassed over which protects them from erosion.

4.2.3 Landslides

The road inventory did not identify any areas where landsliding has significantly impacted the roads. This is probably because most of the roads do not cross very steep slopes. It should be recognized,

however, that much of the preserve is underlain by large-scale deep-seated landslides and several of these in the southern portion of the preserve are probably periodically active. Future movement on these slides could impact the road/trail network. The most likely scenario would be small scale cracks offsetting the road prism that would require short segments of road to be reconstructed. There is little evidence of large-scale catastrophic failures.

4.3 TREATMENT COSTS

The total cost to upgrade the 45 sites with a moderate to high sediment treatment priority is estimated at $153,000. An estimated cost per each site is summarized in Table 3. Estimated costs exclude administration, construction control, and work required obtaining necessary permits. These costs could be as much as 75% of the estimate cost outlined above. All costs should be viewed as approximate and are presented in this report for general planning purposes only.

5.0 RECOMMENDATIONS

The recommendations outlined in this report are based on the assumption that the District's goal is to maintain a similar level of public use and access on the existing system of roads and trails, where compatible with the overarching goal of reducing existing and potential sedimentation to a significant degree. To correct existing erosion problems and to significantly reduce the potential for future sedimentation from problem sites, there are three main actions the District can take:

1. **ROAD/TRAIL TREATMENTS**
   Treat all High and Moderate priority sites as shown on Figures 4A, 4B and 4C. Detailed treatment prescriptions for each of these sites are outlined in Appendix 2. Treatment prescriptions may change based on changes in future road use.

2. **MODIFICATION OF ROAD/TRAIL USE**
   To the extent possible, limit vehicle access to avoid driving patrol and maintenance vehicles on seasonal roads during winter months. ATV access is acceptable.

3. **EVALUATE FUTURE USE**
   The District should evaluate future use within the preserve. Data and conclusions presented in Appendix 1: Road Summary Log and Appendix 2: Road Inventory can be applied to assess future land use. In general the following should be considered when evaluating future use of the road and trail network:

   - Roads in open grassland areas (prairie soil) are inherently prone to erosion. These roads may need to be rocked for Patrol and Multi use.
   - Fall line roads are inherently difficult to drain. These roads should be realigned or abandoned.
   - Roads with gradients greater than 15% are prone to erosion problems with heavy use. To the extent feasible these roads should be realigned or use limited. In some cases specific erosion control measured can be implemented to improve their use, such as rocking roads and installing frequent ditch relief culverts.
   - Many secondary spur roads and ranch roads are probably not necessary for current use and

should be formally abandoned

- Cattle grazing can potentially impact` road and trails in the wet grassland areas by breaking down drainage structures. Roads susceptible to this may need to be rocked.

6.0 REFERENCES

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Keaton, J.R. and DeGraff, J.V., 1996. Surface Observations and Geologic Mapping. In: A.K. Turner and R. Schuster (Editors), Landslides: Investigation and Mitigation: Transportation Research Board, Special Report 247. National Academy Press, Washington D.C., pp. 178-230.

Wentworth, C.M. et al., 1997. Summary distribution of slides and earth flows in San Mateo County, California. USGS Open File Report 97-745 C2.

TABLE 3: SUMMARY OF INVENTORY SITES
DRISCOLL RANCH

ROAD	MAP POINT	DISTANCE	FEATURE	DESCRIPTION	TREATMENT	TREATMENT PRIORITY	FUTURE EROSION (CY)	1600[1]	GP[2]	ESTIMATED COST[3]
10	1	2347	Inboard ditch gully :	Gullying of inboard ditch due to steep (15% gradient) road grade. Ditch drains to 12 inch metal ditch relief culvert located about 150 feet further down the road (STN 2080).	Rock 75 feet of the inboard ditch	LM	5	N	N	$681
10	2	2680	Ditch relief culvert: Inboard ditch gully	12 inch diameter metal ditch relief culvert draining a roughly 800 foot long segment of road. The lower 100 to 200 feet of the inboard ditch has eroded.	Install an 18 inch by 20 foot ditch relief culvert with rock energy dissipater about 400 feet up the road (Stn 3080)	M	10	N	Y	$1,175
10	3	3446	Ditch relief culvert: Undersized	Debris backed up behind an undersized12 inch ditch relief culvert draining 800 feet of road.	Install an 18 inch by 20 foot ditch relief culvert with rock energy dissipater about 350 feet up the road (Stn 3850)	M	10	N	Y	$1,625
10	4	5425	Ditch relief culvert: Infilled inboard ditch	Partially plugged and grassed over 12 inch metal ditch relief culvert	Clean inlet to culvert, clean 150 feet of the inboard ditch, regrade road to crowned pitch, rerock 200 feet of road	M	10	N	N	$1,327
10	5	5680	Ditch relief culvert: Infilled inboard ditch	12 inch ditch relief culvert. The inboard ditch has been infilled and most of the road runoff now bypasses the culvert inlet.	Clean 700 feet of the inboard ditch, regrade road to crowned pitch, rerock 700 feet of road, consider adding an additional ditch relief culvert about 300 feet down the road to prevent sediment from discharging into the stream at MP 6 (STN 6173)	M	10	N	Y	$5,311
10	6	6173	Stream crossing: Culvert	36 inch by 20 foot culvert. The outlet of the pipe is shotgunned causing active erosion. Two 5 foot high wood retaining walls found at the inlet and outlet of the culvert are beginning to fail.	Remove of the wood retaining walls and lay the embankments back to a 1:1 slope, install rock energy dissipater at the culvert outlet, rock armor the inlet	MH	50	Y	Y	$6,445
10	7	6791	Ditch relief culvert:	Outlet erosion at 12 inch ditch relief culvert.	At rock energy dissipater at the culvert outlet. Install ditch relief culvert about 300 feet up the road (Stn 6300).	LM	10	N	Y	$1,175
10	8	7099	Stream crossing: Culvert	12 inch by 20 foot undersized culvert. The outlet is shotgunned several feet and a diversion potential exists to the right.	Alternative 1 - Replace pipe with 24 inch by 30 foot long culvert, at a rock energy dissipater, add critical dip, re rock road. Alternative 2 – add critical dip.	LM	22	Y	Y	$2,753
10	9	8091	Stream crossing: Culvert	36 inch by 20 foot culvert. The outlet of the pipe is shotgunned over 12 feet above the channel with some active erosion apparent. Inlet to the pipe is 20% plugged. A diversion potential exists to the left.	Clean culvert inlet and trash rack of debris, some benefit may be achieved by installing a rock energy dissipater at the pipe outlet, add critical dip, clean and enlarge 150 feet of the inboard ditch above the crossing, rock armor the lower 50 feet of the ditch.	M	50	Y	Y	$3,144
10	11	8550	Inboard ditch gully:	850 feet of eroding inboard ditch	Add two 18 inch by 20 foot relief culverts at 300 foot maximum spacings (install at Stn 8400 and 8700)	M	50	N	Y	$1,520
10	12	9021	Stream crossing: Bridge	Double 40 foot long rail road flat car bridge over Harrington Creek founded on either old logs or earth. The bridge is located well within the 100-year flood plain of the creek and reportedly was over topped during the 1996 storms. Presently no significant erosion problems observed.	District should evaluate if the current risk of the bridge washing out is acceptable and act according	MH	0	Y	Y	$5,000
10	13	9292	Ditch relief culvert : Inboard ditch gully	24 inch ditch relief culvert draining 750 feet of the inboard ditch. The inlet and outlet of the pipe are partially crushed.	· Unbend the inlet and outlet of the pipe, rock 150 feet of the inboard ditch.	LM	10	N	N	$1,613
10	14	9911	Ditch relief culvert/ inboard ditch:	Partially plugged inlet to an 18 inch new plastic ditch relief culvert draining about 375 feet of road.	Remove wood headwall and clean debris, armor inlet, clean 400 feet of inboard ditch, regrade 500 feet of road to give the road an insloped pitch, rerock 500 feet of road.	M	10	N	N	$4,232
10	15	10288	Ditch relief culvert/ inboard ditch:	18 inch ditch relief culvert draining a long segment of road. Much of the inboard ditch has broken down. The wood headwall at the inlet to the pipe is failing and inlet is about 25% plugged with debris.	Remove wood headwall and clean inlet to pipe, armor inlet, clean 300 feet of the inboard ditch, regrade 400 feet of road to give the road and insloped pitch, rerock 400 feet of road.	LM	5	N	N	$3,283
10	15.1	10982	Road drainage: Culvert	800 feet of moderately drained rocked road. Road surface is starting to break down allowing water to concentrate and locally pond in places.	Add 4 new rolling dips at STN 10765, 10982, 11242, and 11422, regrade ~ 700 feet of road to crowned or outsloped pitch, spot rock ~ 300 feet of road.	M	10	N	N	$4,245
10	16	11797	Stream crossing: Culvert	24 inch by 80 foot culvert. The pipe reportedly plugged with debris and failed during the heavy El Nino storms of 1998 and was subsequently replaced. The current pipe is undersized, the outlet is shotgunned and a diversion potential exists.	Replace existing pipe with 48 inch by 80 foot. Placement of culvert will require moving buried phone lines that extend down the middle of the road.	H	400	Y	Y	$17,994
10	17	12517	Road Drainage: Steep	350 feet of poorly drained steep gravel road	Add two rolling dips at STN 12517 and 12720, rock 200 feet of road	M	5	N	N	$2,126

1 1600: Department of Fish and Game 1600 stream alternation permit required

2 GP: San Mateo County grading permit may be required

3 COST: Estimated cost for construction only. Costs exclude administration, construction control, mobilization and permitting.

TABLE 3: SUMMARY OF INVENTORY SITES
DRISCOLL RANCH

ROAD	MAP POINT	DISTANCE	FEATURE	DESCRIPTION	TREATMENT	TREATMENT PRIORITY	FUTURE EROSION (CY)	1600[1]	GP[2]	ESTIMATED COST[3]
11	18	1428	Stream crossing: Culvert	Undersized 24 inch by 15 foot culvert on seldom used tractor trail. Large plunge pool found at outlet and gravels backing up behind the inlet. The road leading to this crossing from the west drops at 30% grade much of it down the fall line of the hillside. Because the road receives little use much of it is grassed over and shows little signs of recent erosion.	Accessing this site to upgrade the crossing would require a fair amount of ground disturbance and the net benefit of removing the culvert or upsizing it to a larger pipe is probably not warranted. District should evaluate whether removal of the crossing is necessary from a management perspective.	M	15	Y	Y	$0
11	19	2657	Stream crossing: Ford	Natural ford crossing over Harrington Creek without erosion.	None required at present. Upgrades required if use to increase.	L	0	N	N	$0
11	20	3592	Road drainage: Steep fall line	1500 foot long steep fall line road/tractor trail. Because the road receives little use much of it is grassed over and shows little signs of recent erosion.	Abandon through non use.	M	0	N	N	$0
30	21	127	Ditch relief culvert:	Large gully formed at outlet of a12 inch by 20 foot metal ditch relief culvert draining 900 feet of the inboard ditch along Road 30 and 500 feet of Road 31.	Install 5 new rolling dips on Road 30, install 4 new dips on Road 31.	M	100	N	N	$4,241
30	22	1287	Stream crossing: Culvert	Shotgunned 12 inch by 20 foot plugged culvert.	Replace existing pipe with new 24 inch diameter by 20 foot long plastic pipe, add rock energy dissipater.	M	50	Y	Y	$2,220
32	23	1075	Stream crossing: Culvert	12 inch by 20 foot culvert. The outlet of the pipe is shotgunned causing a small gully. About 350 feet of the road leading into the crossing is insloped with some concentrated runoff.	Install 3 additional dips	LM	10	N	N	$4,414
30	24	3435	Ditch relief culvert:	Large gully formed at outlet of 12 inch by 30 foot ditch relief culvert draining over 500+ feet of inside road ditch to the east and 500 feet of inside road ditch to the west.	#REF!	H	500	N	N	$2,828
30	25	4125	Ditch relief culvert:	Large gully formed at outlet of 12 inch diameter metal ditch relief culvert draining 450± feet of road.	Replace existing ditch relief culvert with new 18 inch by 20 foot pipe. Install rock energy dissipater at culvert outlet, add new 18 inch by 20 foot ditch relief culvert 125 feet to the south (STN 3310), installing 2 new rolling dips located roughly 200 feet and 300 feet further up the road (STN 3230 and 3130), install 2 new rolling dips north and downslope of the existing ditch relief culvert at roughly 150 foot spacings (STN 3610 and 3660)	H	100	N	Y	$3,405
30	26	4125	Ditch relief culvert:	12 inch diameter ditch relief culvert draining a long segment of road without problems.. About 75 feet up the road (south) is a 3 foot diameter 18 inch deep hole formed in the middle of the road probably due to subsurface sapping.	Add new 18 inch by 20 foot ditch relief culvert at STN 3925, excavate out sinkhole and back fill with ~ 5 cy of compacted earth, Install a minimum of two additional rolling dips at STN 4350 and 4850	H	10	N	Y	$2,981
32	27	2279	Gully at pond:	Gully formed at the outlet of a 200 foot long overflow spillway to an agriculture pond. Similar problems may exist at the other ponds.	From a sediment standpoint it may be prudent to armor the gully. Additional work will be necessary to determine specifics of mitigation measures at this site.	?	100	N	N	$3,313
12	28	67	Stream crossing: Culvert	48 inch by 20 foot culvert placed at a shallow grade with little covering fill. Road receives little use and road surface is pot holed from cattle. Overall crossing is in adequate shape for infrequent use. Road leading to the crossing on the south side drops at a steep grade and is poorly drained.	Upgrade road drainage to add one dip near the top of the grade to the south where road gradient is much lower (Stn 202)	LM	10	N	N	$471
12	28.1	2657	Stream crossing: Ford	Natural ford crossing on very infrequently used trail.	None required at present. Crossing would need to be relocated if use was to increase.	L	0	N	N	$0
13	29	500	Road drainage: Infrequently used	210 feet of flat infrequently used old ranch road located immediately adjacent to the west side of Harrington Creek. Portions of the road impacted by livestock.	No treatment required at present but if use were to increase the road should be outsloped and rocked	L	10	N	N	$0
20.1	30	486	Inboard ditch erosion:	550 foot long eroding inboard ditch. Much of the sediment filters out on flat area below the road without much sediment delivery to a watercourse.	Install three new 18 inch ditch relief culverts at roughly 250 foot spacings (STNs 486, 660 and 840). Portions of road may need to be regarded so water drains into inboard ditch	M	10	N	Y	$2,902
20.1	31	1033	Ditch relief culvert:	Plugged outlet on12 inch by 30 foot ditch relief culvert draining 350 feet of inboard ditch.	Cut 10 feet off of the end of the existing ditch relief culvert, add a new 18 inch by 20 foot ditch relief culvert about 200 feet up the road (Stn 1230), clean 250 feet of the inboard ditch	M	20	N	Y	$1,129
20.1	32	1386	Ditch relief culvert:	Large gully at outlet of 12 inch by 40 foot ditch relief culvert draining 350 feet of the inboard ditch. Gully discharges onto a flat bench without sediment delivery. About 175 feet up the road the inboard ditch is infilled and trampled by cattle.	Add a new 18 inch by 20 foot ditch relief culvert about 185 feet up the road (STN 1571), clean 150 feet of the inboard ditch	LM	10	N	Y	$831
20.1	33	1737	Ditch relief culvert:	Gully at outlet of 12 inch by 35 foot ditch relief culvert draining 600 feet of road. Gully discharges onto a flat bench without sediment delivery.	Add two new 12 inch by 20 foot ditch relief culverts about 185 feet up the road (Stn 1900 and 2150), clean 150 feet of the inboard road ditch, regrade 400 feet of the road to give it a stronger insloped pitch, enlarge the existing dip at STN 2508.	M	20	N	Y	$1,793

TABLE 3: SUMMARY OF INVENTORY SITES
DRISCOLL RANCH

ROAD	MAP POINT	DISTANCE	FEATURE	DESCRIPTION	TREATMENT	TREATMENT PRIORITY	FUTURE EROSION (CY)	1600[1]	GP[2]	ESTIMATED COST[3]
20.2	34	2947	Steep road:	650 feet of steep and poorly drained fall line road but with little signs of active erosion observed.	Reroute upper 200 feet of road onto gentler grade and to avoid descending down the fall line of the hillside, add new 18 inch by 20 foot ditch relief culvert at Stn 3122, consider adding additional ditch relief culverts and rocking road surface below this point if use is to increase or if winter use is required.	LM	30	N	Y	$3,168
40.1	36	231	Stream crossing: Culvert	36 inch by 50 foot rusted out and plugged CMP with broken wood and concrete headwall.	Replace existing culvert with new 48 inch by 60 foot pipe. USA should be called prior to excavation to ensure that there are no power or phone lines within the crossing, armor inlet and outlet, add energy dissipater at outlet, add critical dip, fence off top of the fill embankment to keep cattle from trampling embankment face, rock/pave the road surface as directed by District	H	300	Y	Y	$10,065
40.1	37	654	Ditch relief culvert:	Two 12 inch diameter ditch relief culverts. The upper culvert is a plugged 12 inch by 40 foot plastic ditch relief culvert located on the paved residential road. Runoff from outlet of the upper culvert combined with runoff from a poorly defined inside ditch along the back edge of the graded bench is collected into a second lower 12 inch by 80 foot plastic culvert and conveyed to a small pond at the bottom of the hill. Minor erosion was observed at the outlet of the lower culvert.	Clean inlet to the upper ditch relief culvert, clean 300 feet of the inside ditch along above the inlet of the second culvert.	M	10	N	N	$193
46	38	250	Stream crossing: Culvert	18 inch by 200 foot± plastic culvert with the inlet located 60 feet upstream of the road and outlet discharging onto a grassy graded bench. The old channel has been completely infilled and runoff from the pipe is conveyed along a deep ditch into a small pond. The pond is in turn drained by an 18 inch by 40 foot pipe that is directed to a 2 feet by 2 feet concrete drain adjacent to the highway. The long pipe at this crossing as well as the series of pipes at MP 37 were probably installed so that the channel could be infilled and used for ranch operations. No significant erosion observed.	No treatment is necessary	N	0	N	N	$0
40.1	39	1651	Ditch relief culvert:	Shotgunned and undersized 12 inch ditch relief culvert on a paved residential road. Failure of crossing would result in runoff being diverted down the inboard road ditch for 580 feet where it could erode the ditch and damage the road.	Install two 18 inch by 20 foot ditch relief culverts with 20 foot downspouts at Stn 1380 and 1286, USA should be called prior to excavation to ensure that there are no power or phone lines within the crossing, rock/pave road surface as directed by District	M	50	N	Y	$6,825
40.1	40	2113	Stream crossing: Culvert	Paved road crosses an intermittent stream. This crossing was not evaluated.		?	?	?	?	$0
40.2	41	2662	Eroding inboard ditch:	1400 foot long eroding inboard ditch of permanent rocked road climbing at a 10% to 15% grade.	Regrade 1700 feet of road to have a crowned pitch, install a rolling dip at STN 3950, at STN 3800 drain the ditch to the southwest and plug the inboard ditch below the this point, clean and rock armor 700 feet of the inside ditch between the sharp turn at STN 2660 and STN 3360, spot rock segments of road where the old pavement or rock has washed off.	MH	50	N	N	$11,035
50	42	738	Ditch relief culvert:	12 inch ditch relief culvert draining 200+ feet of inboard ditch. About 30 feet up the road from the culvert the inboard ditch is infilled with road runoff flowing over the road but without problems.	Some short term benefit would be achieved by cleaning the 200 feet of the ditch and giving the road a stronger outslope. Benefit may also be achieved by adding a second 18 inch by 20 foot ditch relief culvert about halfway up the grade (STN 600)	LM	10	N	N	$855
50	43	832	Ditch relief culvert:	12 inch rusted and plugged ditch relief culvert draining small spring	Replace pipe with new 18 inch by 20 foot culvert, build 200 feet of road bed up 2 feet and rock surface.	M	5	N	Y	$4,327
50	44	1349	Ditch relief culvert:	12 inch ditch relief culvert draining a spring.	No treatment required	N	0	N	N	$0
50	45	1622	Stream crossing: Culvert	12 inch rusted out metal culvert	Replace pipe with 24 inch by 30 foot culvert, armor inlet and outlet, add rock energy dissipater.	L	10	Y	Y	$4,149
50	46	2116	Stream crossing: Culvert	12 inch rusted and shotgunned metal culvert at a stream crossing. The pipe was placed on top of a second pipe used to crib the fill. Immediately to the south of the crossing the inboard ditch has plugged due to livestock traveling up and down the grassy cutbank causing a gully to eroded into the road prism narrowing the road to less than 8 feet. A new 18 inch by 30 foot long ditch relief culvert was subsequently installed at the gully but this pipe was placed at shallow gradient and the outlet is shotgunned and actively eroding.	Replace existing 12 inch metal culvert with new 24 inch by 30 foot pipe, armor to top of culvert with rock and add rock energy dissipater. Remove the 18 inch ditch relief culvert. Rebuild the road prism to maximum 16 foot width on compacted fill. Install 50 foot long 6 foot deep subdrain along the back edge of the road immediately south to the stream crossing. Add 18 inch by 30 foot culvert 100 feet south of the stream crossing (STN 2010). Additional work may be required to finalize prescriptions at this site	H	75	Y	Y	$16,646

TABLE 3: SUMMARY OF INVENTORY SITES
DRISCOLL RANCH

ROAD	MAP POINT	DISTANCE	FEATURE	DESCRIPTION	TREATMENT	TREATMENT PRIORITY	FUTURE EROSION (CY)	1600[1]	GP[2]	ESTIMATED COST[3]
50	47	3235	Ditch relief culvert/Stream crossing: Diverted	A 12 inch by 20 foot metal ditch relief culvert is offset 20 feet north of unculverted stream crossing.	Add 24 inch by 20 foot culvert at the stream crossing, discharge culvert onto rock energy dissipater, rock inlet and outlet to top of culvert. Plug inboard ditch above and below the new culvert to prevent flow from being diverted along the ditch. Add 18 inch by 20 foot ditch relief culvert 250 feet north (STN 3508).	M	20	Y	Y	$4,279
50	48	3869	Stream crossing: Culvert	12 inch by 30 foot culvert with long inboard ditch at a draining a seasonal spring.	Replace existing culvert with 30 inch by 30 foot new culvert, discharge culvert onto rock energy dissipater, rock inlet and outlet to top of culvert. Add 18 inch by 20 foot ditch relief culvert 125 feet up the road (STN 3700).	M	20	Y	Y	$3,527
50	49	4181	Stream crossing: Culvert	12 inch rusted culvert. Adjacent to the crossing is a water trough for livestock. A large gully has formed below the road but I suspect this is a relic feature.	Replace existing pipe with 24 inch by 30 foot culvert. Discharge culvert onto rock energy dissipater. Rock inlet and outlet to top of culvert.	M	20	Y	Y	$3,299
50	50	4869	Ditch relief culvert:	12 inch by 20 foot long new plastic ditch relief culvert. A 10 foot wide and 4 foot deep gully has eroded into the inboard ditch draining to the culvert. An 80 foot long gully 2 foot to 4 foot deep gully is found at the outlet of the recently installed ditch relief culvert.	Add 18 inch by 20 foot ditch relief culvert with 20 feet downspout at STN 4789 (located 80 feet south of the existing culvert). Add rock energy dissipater at the culvert. Plug the ditch below the proposed culvert to prevent flow from bypassing the inlet. Add rock energy dissipater at the existing ditch relief culvert	MH	50	N	Y	$2,565
50	51	5123	Ditch relief culvert:	Gully at the outlet of a shotgunned 12 inch ditch relief culvert has narrowed the road to 9 feet. Fill prism at this site is slightly oversteepened. Presently the crossing does not pose a significant erosion problem but the road may be too narrow for truck use.	Replace existing culvert with new 18 inch by 30 foot ditch relief culvert. Place culvert at base of fill. Add rock energy dissipater at culvert outlet. Widen the road inboard 6 feet by cutting into the bank.	LM	0	N	Y	$3,242
50	52	6002	Stream crossing: Culvert	Partially plugged and undersized 18 inch pipe.	District should evaluate the long term need for this road. If the road is not needed then this pipe can be removed and the crossing abandoned. If the road is needed then the pipe should be replaced with 30 inch by 40 foot culvert.	M	15	N	N	$1,958
51	53.1	320	Steep Road: Fall line	790 foot long segment of grassed over road/tractor trail climbing up the fall line of the hillside.	Abandon through non use or limit to seasonal ATV use	M	0	N	N	$0
51	53.2	1324	Ditch relief culvert: Plugged	12 inch by 20 foot plugged ditch relief culvert on old seldom used ranch road. Pipe is no longer functioning.	Remove pipe and add 5 rolling dips/ waterbars at 150 foot spacings	L	5	N	Y	$3,176
23.1	54	306	Steep road:	500 foot long segment of steep poorly seasonal ranch road. The steep nature of the road will make it difficult to drain and still allow vehicle passage.	Add two large dips or ditch relief culverts at STN 306 and 416 to break up drainage. Because of the steep grade installation of dips may limit vehicular access. Rock 500 feet of road as necessary.	MH	10	N	N	$943
23.2	54.1	2820	Road drainage: Infrequently used	About 9000 feet of infrequently used grassed over ridgetop ranch road.	No treatment require for infrequent seasonal ranch use.	L	0	N	N	$0
23.3	54.2	10800	Road drainage: Fall line road	Infrequently used grassed over fall line road.	Abandon road through non use	M	0	N	N	$0
23.3	55	11673	Stream crossing: Culvert	Plugged 18 inch by 40 foot plastic pipe. Stream has been diverted to the south west where it has eroded a 280 foot long gully. Additional erosion may have occurred below the point where runoff is diverted back over the road and down the stream.	Alternative 1- Abandon crossing by removing all fill, Alternative 2- Replace existing culvert with 36 inch by 30 foot new culvert, rock armor inlet and outlet, add critical dip, backfill eroded gully with compacted earth, add waterbreaks to upgrade road drainage.	H	100	Y	Y	$2,541
23.3	56	13473	Stream crossing: Culvert	Partially washed out and plugged 12 inch by 20 foot flex pipe. A gully has formed at the outlet of the crossing narrowing the road to about 8 feet. Most of the erosion is attributed to subsurface sapping. Water ponds at the inlet causing the ground to become wet and boggy. Livestock contributed to the problem by breaking down the soils around the pipe.	Alternative 1- Abandon crossing by excavating crossing fill. Alternative 2 – replace pipe with new 18 inch by 20 foot culvert, rock armor inlet and outlet, add a critical dip.	M	10	Y	Y	$820
23.4	57	13696	Stream crossing: Culvert	48 inch by 20 foot new culvert on infrequently used ranch road. The outlet of the pipe is shotgunned 5 feet above the stream channel.	District must evaluate the long term use of this road. If the road is not required then the culvert can be pulled and the crossing abandoned. If the road is needed then the culvert should be replaced and the drainage structures installed on the steep road segment leading to the crossing from the east. Bare in mind that the steep road segment (MP 58) drops at up to a 22% grade down the fall line of the hillside and may prove difficult to drain.	M	50	Y	Y	$820

TABLE 3: SUMMARY OF INVENTORY SITES
DRISCOLL RANCH

ROAD	MAP POINT	DISTANCE	FEATURE	DESCRIPTION	TREATMENT	TREATMENT PRIORITY	FUTURE EROSION (CY)	1600[1]	GP[2]	ESTIMATED COST[3]
23.4	58	14350	Poorly drained road: Fall line	2300 feet of steep poorly drained ranch road descending to stream crossing at MP 57. Portions of the road are orientated along the fall line of the hillside. Road is vegetated over and receives little use which is why little erosion is apparent.	Evaluate long term use of the road (See MP 57), drain by installing rolling dips (~ 15) at 150 foot maximum spacings (if seasonal truck access is necessary) or drain into inboard ditch with frequent ditch relief culverts (if frequent truck and/or winter use is required), long term maintenance of this road will be required	M	50	N	N	$7,069

7.0 APPENDIX 1: ROAD SUMMARY

ROAD #	TYPE [4]	SURFACE	LENGTH (ft)	ROAD GRADE	DESCRIPTION	CONDITION	EROSION RISK	CONSTRAINTS
10	Permanent	Gravel	13243	5%-10%	Gravel road leading to residences. Road drained by inboard ditch and several ditch relief culverts. Four stream crossings. Portions of the road reportedly get muddy in winter, especially the segment of road after the dog kennels. In this area the road is locally poorly drained and the road rock has broken down causing portions of the road to rut. For long-term use portions of the road should be regraded, rerocked and additional ditch relief culverts installed. There are four stream crossings (1 bridge and 3 culverts). One of the culvert crossings (MP 6) is failing and another (MP 16) is undersized. Both of these crossings will need to be replaced.	**GOOD - MOD**	**LOW - MOD**	*Suitable for year round use* **Recommendations:** • Regrade poorly drained segments of road and spot rock • Add several new ditch relief culverts • Repair failing or undersized culverts at MP 16 and 6
11	Tractor	Dirt	6572	5%-35%	Dirt tractor road dropping in and out of Harrington Creek mainly through open grasslands. Western ¾ of the road drops in and out of Harrington Creek at a 30% grade, much of it down the fall line of the hillside. The origin of the road is unknown; it may have been constructed or upgraded to access the far residence when the crossing at Point 16 failed during the El Nino storms. The eastern ¼ of the road contours across the hillside at a much gentler gradient. This road is older and was probably constructed to access the pond in this area. Most of it is grassed over and receives very little use. Portions of this segment of road are seasonally wet and have been trampled by livestock. No signs of significant erosion were observed, however.	**GOOD**	**MOD**	*The problem with the western reach is its steep grade (18% to 35%) down fall line of hillside. Although little erosion was observed roads of this grade and configuration are prone to significant erosion problems. Frequent use not recommended on the western ¾ of the road due to steep nature of road up fall line of hillside.* **Recommendations** • Abandon or limit use on the western ¾ of the road to seasonal ATV use • Eastern ¼ of road is suitable for seasonal ranch use without upgrades
12	Ranch	Dirt	1000	5%-22%	Old ranch road on east side of Harrington Creek used to access an old pasture. Road is traveled very infrequently and most of the road is grassed over with little signs of erosion. Portions of the road may be seasonally wet and trampled by cattle. Steep section of road descending down the east side to a culverted stream crossing would need to be upgraded if use were to increase.	**GOOD - MOD**	**LOW**	*Road is generally suitable for ATV and infrequent ranch truck access* **Recommendations** • Abandon or limit to seasonal ATV and infrequent ranch truck use.

4 **ROAD CLASSIFICATION**

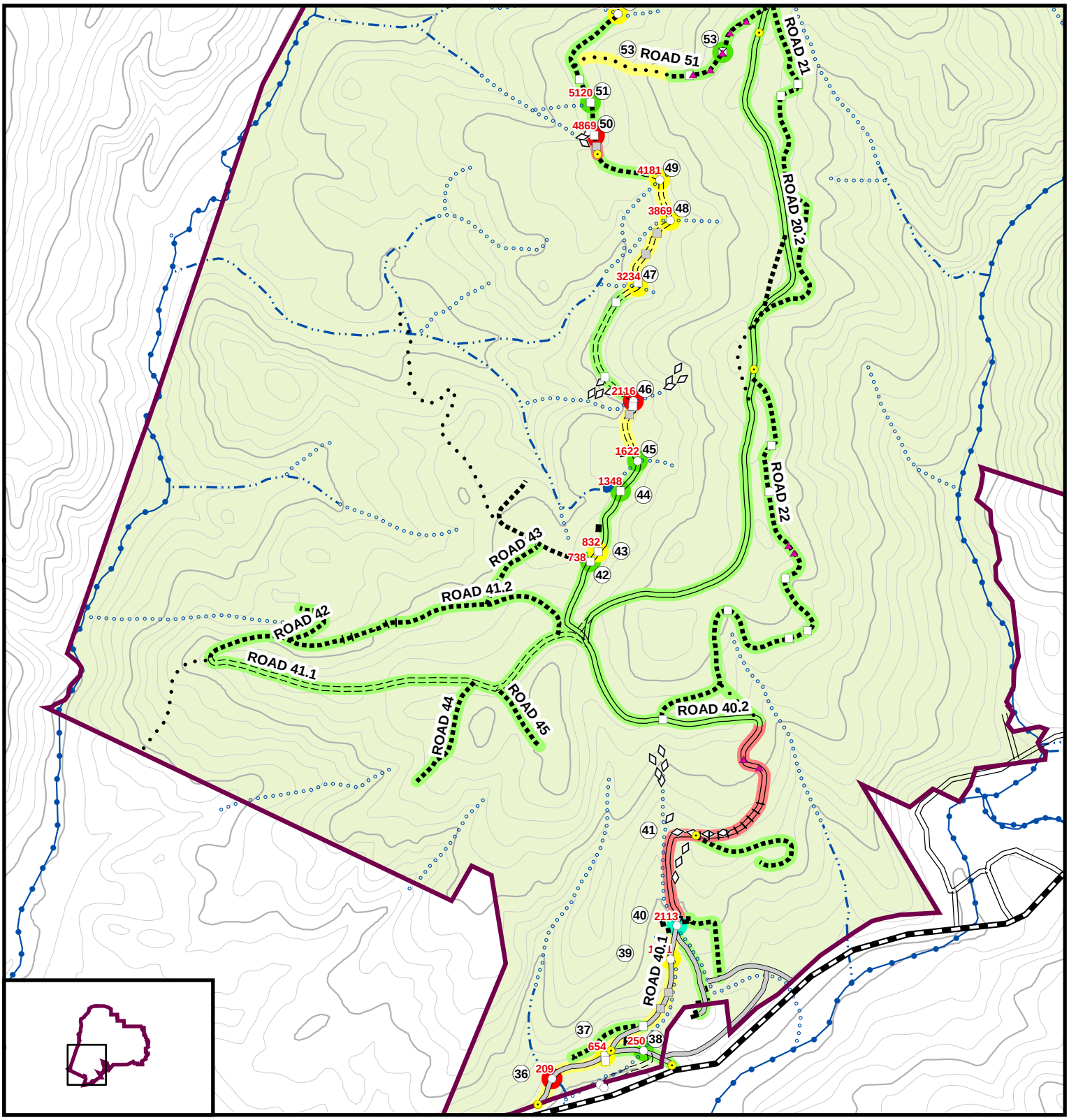
Permanent Year round residential access

Principal Mainline roads accessing key portions of the property and receiving limited year-round use

Secondary Infrequently used seasonal roads accessing the more remote areas of the property

Ranch Small and very infrequently used roads accessing the remote areas of the property. Many of these roads are grassed over and some are no longer passable by large vehicles

Tractor Temporary access roads often constructed in a manner incompatible with large vehicles. Many of these roads are constructed at a very steep grade



N

1:12,105

0 500 1,000 Feet

SYMBOL

- Stream crossing: Bridge
- Stream crossing: Culvert
- Stream crossing: Ford
- Dip - new - clean
- Dip - existing
- Ditch Relief - existing
- Ditch Relief (damaged)
- Ditch Relief (proposed)
- Gate
- Cattle Guard
- Road/ditch erosion
- Gully

ROADS

- Highway
- Permanent
- Principal
- Secondary
- Ranch
- Tractor
- Abandoned

STREAMS

- Perennial
- Intermittent
- Ephmerial

PRIORITY

- High
- Medium
- Low
- Unknown

1500 Station

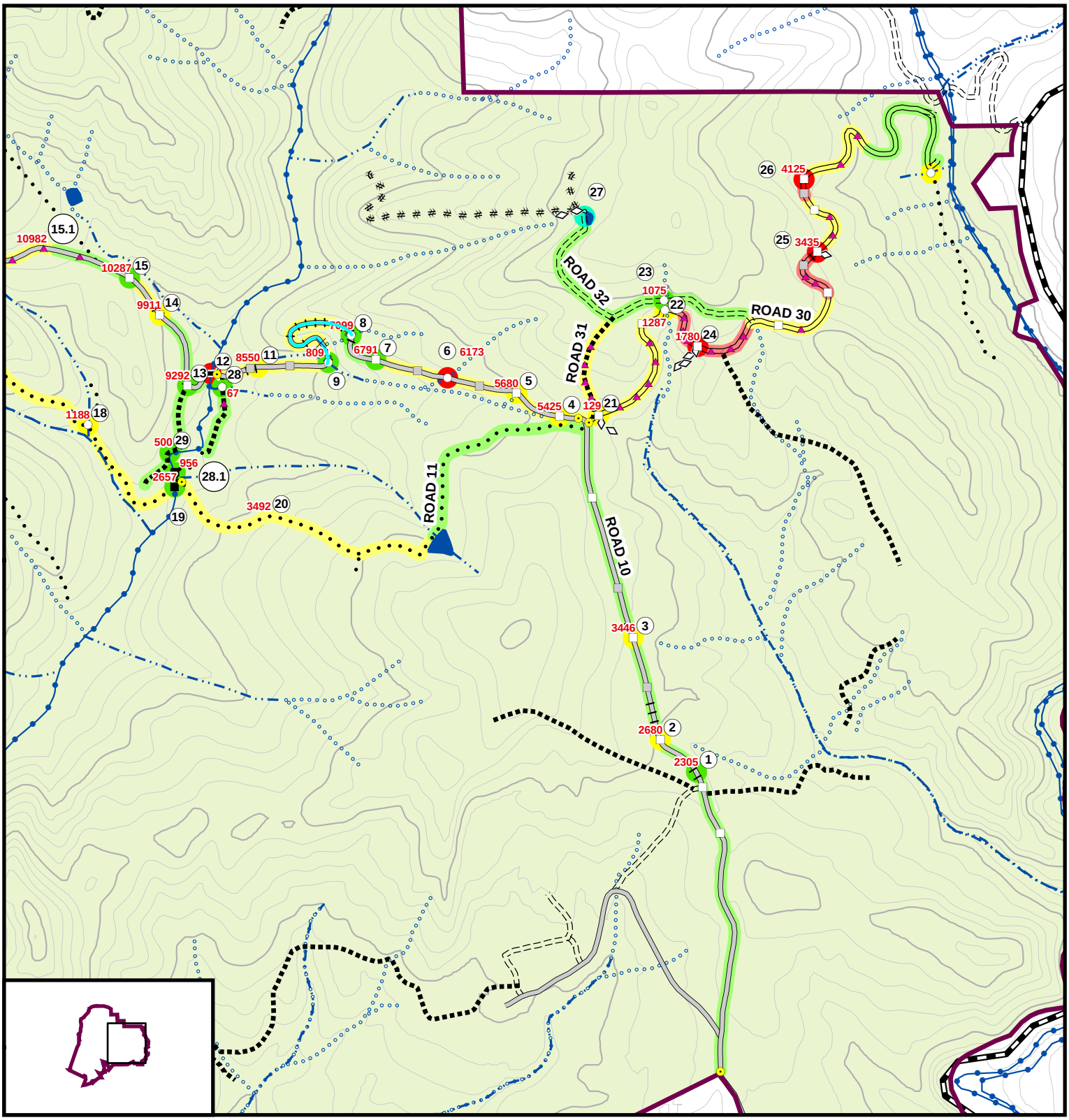
1 Map Point

TIMOTHY C. BEST, CEG
ENGINEERING GEOLOGY AND HYDROLOGY
1002 Columbia Street, Santa Cruz, CA 95060
(831) 425 5832 (831) 425 5830 (fax)

ROAD INVENTORY MAP
DRISCOLL RANCH
Midpeninsula Regional Open Space District

FIGURE 3A

Job: MPEN-DRISCOLL-374
Date: 9/22/2007



N

1:12,000

0 500 1,000 Feet

SYMBOL

- Stream crossing: Bridge
- Stream crossing: Culvert
- Stream crossing: Ford
- Dip - new - clean
- Dip - existing
- Ditch Relief - existing
- Ditch Relief (damaged)
- Ditch Relief (proposed)
- Gate
- Cattle Guard
- Road/ditch erosion
- Gully

ROADS

- Highway
- Permanent
- Principal
- Secondary
- Ranch
- Tractor
- Abandoned

STREAMS

- Perennial
- Intermittent
- Ephmerial

PRIORITY

- High
- Medium
- Low
- Unknown

1500 Station

1 Map Point

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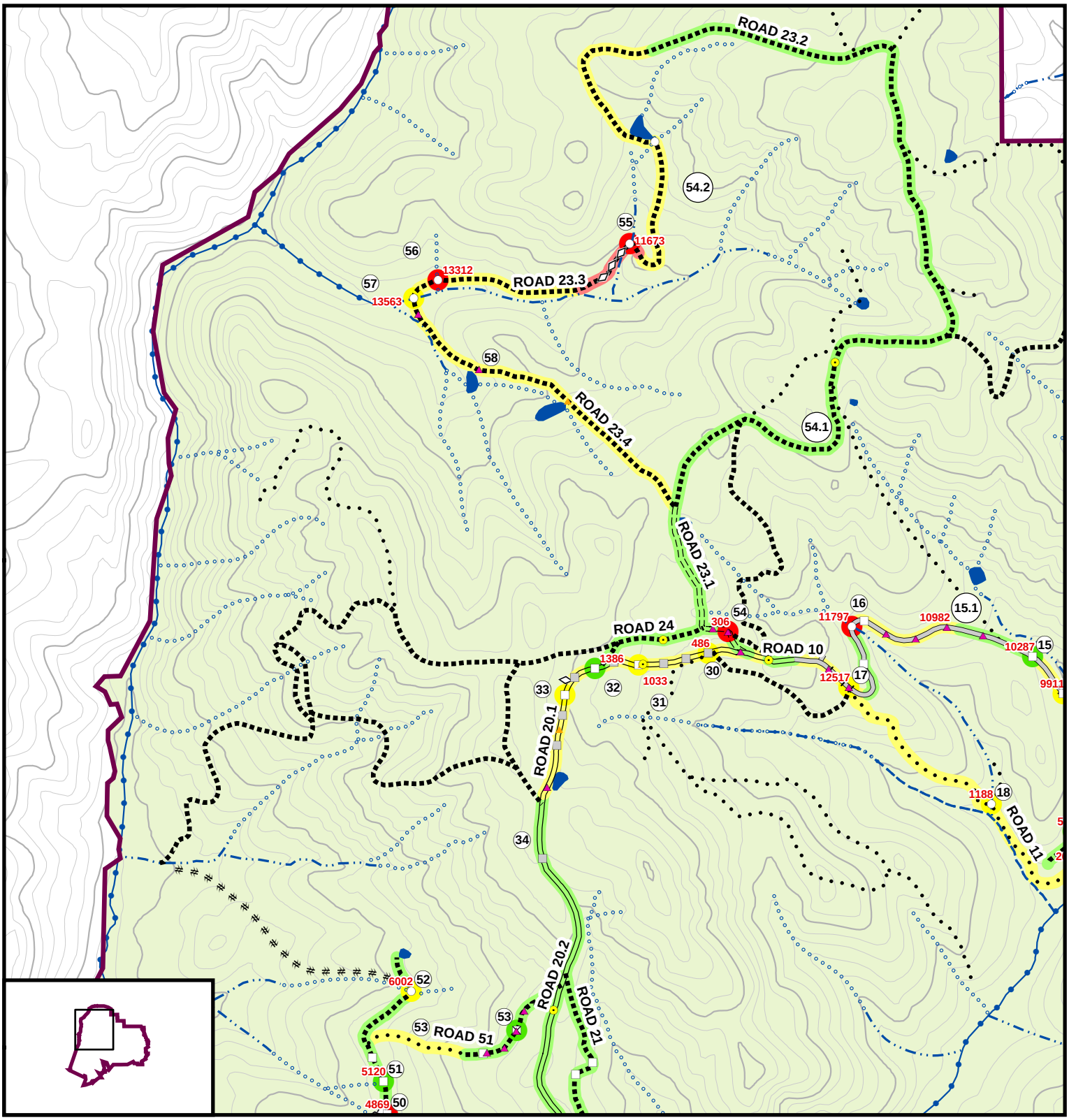
ROAD INVENTORY MAP
DRISCOLL RANCH
Midpeninsula Regional Open Space District

FIGURE 3B

Job: MPEN-DRISCOLL-374
Date: 9/22/2007



SYMBOL

- Stream crossing: Bridge
- Stream crossing: Culvert
- Stream crossing: Ford
- Dip - new - clean
- Dip - existing
- Ditch Relief - existing
- Ditch Relief (damaged)
- Ditch Relief (proposed)
- Gate
- Cattle Guard
- Road/ditch erosion
- Gully

ROADS

- Highway
- Permanent
- Principal
- Secondary
- Ranch
- Tractor
- Abandoned

STREAMS

- Perennial
- Intermittent
- Ephmerial

PRIORITY

- High
- Medium
- Low
- Unknown

1500 Station

1 Map Point

N

1:12,000

0 500 1,000 Feet

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ROAD INVENTORY MAP
DRISCOLL RANCH
Midpeninsula Regional Open Space District

FIGURE 3C

Job: MPEN-DRISCOLL-374

Date: 9/22/2007

ROAD #	TYPE [4]	SURFACE	LENGTH (ft)	ROAD GRADE	DESCRIPTION	CONDITION	EROSION RISK	CONSTRAINTS
13	Ranch	Dirt	911	10%	Old ranch road contouring across west side of Harrington Creek and accessing old pasture. Road is traveled very infrequently but heavily used by cattle which locally potholes the road surface. Road is generally well drained.	**GOOD - MOD**	**LOW**	*Road is generally suitable for ATV and infrequent ranch truck access* **Recommendations** • Abandon or limit to seasonal ATV and infrequent ranch truck use • Heavier or more frequent use would require the road to be better drained and portions of the road next to the stream rocked
20.1	Principal	Dirt	2575	5%	Principal year-round ranch road climbing to ridge top. Road is drained by inboard ditch and ditch relief culverts. There are no stream crossings. Road is in reasonable condition but probably gets muddy in winter. Road would benefit from additional cross drains.	**GOOD - MOD**	**MOD**	*Road is generally suitable for seasonal all purpose use* **Recommendations** • Upgrade road drainage • Install 7 new ditch relief culverts • Clean ~ 400 feet of inboard ditch • Outslope road prism where possible
20.2	Secondary	Dirt	7254	5%-10%	Secondary ridgetop road. Road is in reasonable shape for ranch use.	**GOOD**	**LOW**	*Road suitable for seasonal ranch use* **Recommendations** • None
21	Abandoned	Dirt	2992	5%-20%	Abandoned ranch road following fence line near ridgetop. Road parallels Road 20 and receives little if any use. Road locally drained by natural dips and by a few ditch relief culverts. Road surface is partially vegetated and locally rutted which is why the road may have been moved upslope onto more stable ground.	**GOOD**	**LOW**	*Abandon road* **Recommendations** • Abandon through none use. • Ditch relief culverts could be pulled
22	Ranch	Dirt	4170	5%-24%	Infrequently used and maintained ranch road with grades up to 24%. Portions of the road follow the fence line and may have been constructed for that purpose. Road surface is mostly grassed over and shows little signs of recent erosion. Portions of the road are drained by inboard ditch and ditch relief culverts.	**MOD**	**MOD**	*Abandon road* **Recommendations** • Abandon through none use. Ditch relief culverts could be pulled
23.1	Seasonal	Dirt	1345	10%	Ranch road accessing ridgetop and agriculture pond. Road is infrequently used and partly vegetated over. Livestock have trampled portions of the road. First 500 feet of the road climbs at 18% grade. This segment of road is poorly drained and water has been diverted down the alignment resulting in a 2' wide, 1' deep gully. The steep nature of the road will make it difficult to drain and still allow vehicle passage. Remaining segment of road is along ridgetop and is in adequate shape for ranch use.	**POOR**	**MOD**	*Most of road is suitable for all use. First 500 feet of road is steep and inherently prone to erosion*. **Recommendations** • Reroute or upgrade drainage on first 500 feet of road (MP 54)
23.2	Ranch	Dirt	9100	5% - 15%	Infrequently used ridgetop ranch road. Road is grassed over with little signs of erosion.	**GOOD**	**LOW**	*None*

ROAD #	TYPE [4]	SURFACE	LENGTH (ft)	ROAD GRADE	DESCRIPTION	CONDITION	EROSION RISK	CONSTRAINTS
23.3	Ranch	Dirt	3115	5%-20%	Infrequently used ranch ATV road descending down north side of an intermittent/perennial stream (tributary to Bogess Creek). A portion of this road descends at a 20% grade down the fall line of the hillside. The road surface is seasonally wet and has been trampled by livestock in places but overall no significant erosion problems observed. A culverted stream crossing at MP 55 has failed causing an intermittent stream to divert down the road resulting in a deep gully that is actively eroding. This site will need to be repaired as soon as possible. The remainder of the road crosses moderate gradient slopes without significant problems. This road segment appears to be used to access the northwest portion of the property. There are two ways to access this area – one is the use of this road via Roads 23.1 and 23.2, the other is to drop down Road 23.4 and cross the steep gradient stream at that location. If roaded access to the northwest portion of the property is required then it would be feasible to abandoned one of these two road alignments.	**POOR**	**HIGH**	*District should evaluate need for long-term access to the northwest portion of the property and upgrades roads accordingly. This road should be abandoned or limited to seasonal ATV unless substantial upgrades are made.* **Recommendations** • Abandon or limit to seasonal ATV use unless substantial upgrades are made • Repair stream diversion at MP 55 • Abandon or upgrade the eroding stream crossing at MP 56
23.4	Ranch	Dirt	2760	5%-20%	Infrequently used ranch road climbing at up to 20% grade oriented up the fall line of the hillside. Road receives little use and most of the road surface is grassed over, resulting in little erosion. At the base of the hillside the road crosses an intermittent stream. The crossing consists of a 48" culvert. Aerial photographs show that this site had washed out, probably in association with the 1990's El Niño storms. This crossing should be removed or upgraded. This road segment appears to be used to access the northwest portion of the property. There are two ways to access this area – one is the use of roads 23.1, 23.2 and 23.3, the other is to drop down the road 23.4 and cross the steep gradient stream at that location. If roaded access to the northwest portion of the property is required then it would be feasible to abandoned one of these two road alignments.	**GOOD**	**MOD-HIGH**	*The problem with the lower portion of this reach is its steep grade (18% to 23%) down fall line of hillside. Although little erosion was observed, roads of this grade and configuration are prone to significant erosion problems. Frequent use not recommended but infrequent seasonal ATV use is OK.* *District should evaluate need for long-term access to the northwest portion of the property and upgrades roads accordingly* **Recommendation** • Abandon or limit to seasonal ATV use. • Abandon or upgrade the 48" culverted crossing at MP 57 • Install dips at 100 to 150 foot spacings up the steep segment of road.
30	Principal	Dirt	6438	5%-20%	Principal dirt road accessing water tank in the northeastern portion of the property. The first 2250 feet of the road extends up a ridge at moderate gradient. This segment of road drained by inboard ditch with infrequent ditch relief culverts. Concentrated road runoff has resulted in one large gully along this segment of road. Additional cross drains (rolling dips and/or ditch relief culverts) are required. The latter 4000 feet of road descends down to water tank on Purisima Creek at a locally steep gradient. These road segments would be prone to erosion if use were to increase. There is one stream crossing along the alignment.	**MOD**	**MOD**	*The problem with this reach is lack of adequate drainage structures and locally steep grade (15% to 20%). Access to water tank may dictate relatively frequent use necessitating upgrading drainage structures. Steep segments of road are inherently prone to erosion and these areas will be difficult to drain. May be possible to reroute these segments. Winter access may require portions of road to be rocked.* **Recommendations** • Upgrade road drained by installing additional rolling dips and ditch relief culverts • Replace crossing at MP 22 • Evaluate future road use and upgrade to level consistent with that use
31	Tractor	Dirt	910	20%	Infrequently used ranch road climbing at a 20% grade. Road is no longer needed for truck use and should be abandoned by installing 4 larger water breaks.	**MOD**	**MOD**	*The problem with this reach is its steep grade (18% to 35%) down fall line of hillside. Although little erosion exists roads of this grade and configuration are prone to significant erosion problems. Frequent use is not recommended due to steep nature of road down the fall line of hillside.* **Recommendations** • Abandon or limit to seasonal ATV use

ROAD #	TYPE [4]	SURFACE	LENGTH (ft)	ROAD GRADE	DESCRIPTION	CONDITION	EROSION RISK	CONSTRAINTS
32	Secondary	Dirt	2280	5%-15%	**Description:** Dirt ranch road accessing old pond. Road receives little use and is vegetated with grass. Road is rough but no significant problems observed**.**	**GOOD**	**LOW**	*Road is generally suitable for all use. Upgrades required for increased use, however* **Recommendations** • None required for infrequent ranch use
40.1	Permanent	Paved	2113	0%-15%	**Description:** Permanent paved road accessing residences. Road is drained by inboard ditch and ditch relief culverts. Long inboard ditch at MP 39 is prone to erosion and additional ditch relief culverts should be installed. Stream crossing at MP 36 is beginning to fail and that pipe will need to be replaced in the near future. Pavement appears to be holding up adequately.	**MOD**	**HIGH**	*No restrictions* **Recommendations** • Install two additional ditch relief culverts at MP 36 • Clean inboard ditch at MP 37 • Replace failing stream culvert at MP 39
40.2	Permanent	Gravel	3841	8%-15%	Permanent rocked road extending from residence to ridgetop at 10% to 15% grade. The lower 1400 feet of the road is drained by a long inboard ditch which has deeply gullied. Attempts to stop the erosion by armoring the gully with wood, wire and concrete have met with limited success. Gullying is attributed to weak earth material in concert with concentrated runoff along the inboard ditch. In addition the road has received little maintenance and the road surface is starting to break down resulting in shallow rilling. Continued slow erosion of the inboard ditch is expected. The erosion can be mitigated by installing very frequent ditch relief culverts (min 150 foot spacings) or rocking the inboard ditch. Because erosion can occur at the outlet of closely spaced culverts the best alternative will likely be to maintain the current established drainage pattern and simply rock amour the inboard ditch. Road surface will also need to be regraded	**MOD**	**MOD-HIGH**	*No constraints on use. Mitigation measures should be installed to corrected erosion in the long inboard ditch by either installing frequent ditch relief culverts or rocking the ditch.* **Recommendations** • Regrade road to crowned pitch • Re rock portions of the road • Armor the eroding inboard ditch
41.1	Secondary	Dirt	2900	5%-20%	Ridge top road in good condition. Few signs of active erosion.	**GOOD**	**LOW**	*None*
41.2	Ranch	Dirt	2671	5%-20%	Old ranch road/tractor trail. Much of this road is overgrown and passable only by ATVs. Road surface is locally wet and pot holed by livestock. Local wet areas and minor rutting of the road surface is evident but significant erosion requiring mitigation was not apparent. Road is suitable for livestock and seasonal ATV use but work would be required if this road were to be upgraded for more frequent or heavier use.	**MOD**	**LOW-MOD**	*No treatment required for infrequent ATV access. Truck access would require the road to be brushed and regraded. Wet areas would need to be drained with inboard ditch and ditch relief culverts.*
42	Ranch	Dirt	345	10%	Short ridge top spur road accessing pasture. No signs of significant erosion observed.	**GOOD**	**LOW**	*None*
43	Ranch	Dirt	685	10%	Short grassed over ridge top road accessing pasture. Small fill failure observed at outside edge of road but does not impact use	**GOOD**	**LOW**	*None*
44	Ranch	Dirt	700	10%	Old ranch road/tractor trail accessing pasture. Much of this road is overgrown and passable only by ATVs. The pasture is very wet and pot holed by livestock. Road probably receives very little use. Road is suitable for livestock and ATV but work would be required if this road were to be upgraded for more frequent or heavier use.	**MOD**	**LOW**	*No constrains for seasonal ATV use* **Recommendations** • No treatment required for infrequent seasonal ATV access. Truck access would require the road to be regraded. May be difficult to adequately drain the wet areas.
45	Ranch	Dirt	850	10%	Old infrequently used ranch road/tractor trail accessing pasture. Much of this road is overgrown and passable only by ATVs. The pasture is very wet and pot holed by livestock. Road is suitable for livestock and seasonal ATV use but work would be required if this road were to be upgraded for more frequent or heavier use.	**MOD**	**LOW**	*No constrains for seasonal ATV use.* **Recommendations** • No treatment required for infrequent seasonal ATV access. Truck access would require the road to be regraded. May be difficult to adequately drain the wet areas.
46	Permanent	Paved	479	5%	Short paved road at bottom of hill. Road is in good condition. A 200' long culvert has been installed at MP 38 and although undersized for 50 year flow, few significant problems are expected.	**GOOD**	**LOW**	*No constraints*

ROAD #	TYPE [4]	SURFACE	LENGTH (ft)	ROAD GRADE	DESCRIPTION	CONDITION	EROSION RISK	CONSTRAINTS
50	Principal/ Secondary	Dirt	6061	5%-10%	Ranch road accessing several barns and pastures in the Bogess drainage. The first 2000 feet of road provides principal access to the barn, the latter 4000 feet is classified as a secondary ranch road. The road contours across moderate gradient grassland slopes. Road is drained locally by inboard ditch and ditch relief culverts. Road is probably muddy in winter. There are six culverted stream crossings. The road is in moderate shape given the lack of maintenance. Road tread is locally broken down by livestock. A few of the ditch relief culverts need to be replaced and additional culverts installed. Four of the stream crossings need repairs (MP 46, 48, 50, and 52).	**MOD**	**MOD**	*No restrictions* **Recommendations** • Upgrade road drainage and rock portions of the road if year round use is required • Install additional ditch relief culverts • Upgrade stream crossings at MP 46, 48, 50 and 52
51	Tractor/Ranch	Dirt	1843	5%-23%	Steep gradient road extending from Road 50 to the ridge top. The first 840 feet of the road climbs at a 23% grade up the crest of a spur ridge. This segment of road is grassed over with little erosion observed. The upper 1000 feet of the road contours across the hillside at a moderate gradient. This road segment is drained by inboard ditch and ditch relief culverts. This road receives little use and has not been maintained. However, little erosion observed. I suspect the road is currently used by ATVs as a shortcut from the pastures below to the ridge top.	**LOW**	**LOW – MOD**	*The problem with the lower portion of this reach is its steep grade (18% to 23%) down fall line of hillside. Although little erosion was observed roads of this grade and configuration are prone to significant erosion problems. Frequent use not recommended due to steep nature of road up fall line of hillside. Infrequent ATV use OK.* **Recommendation** • Abandon or limit to seasonal ATV use

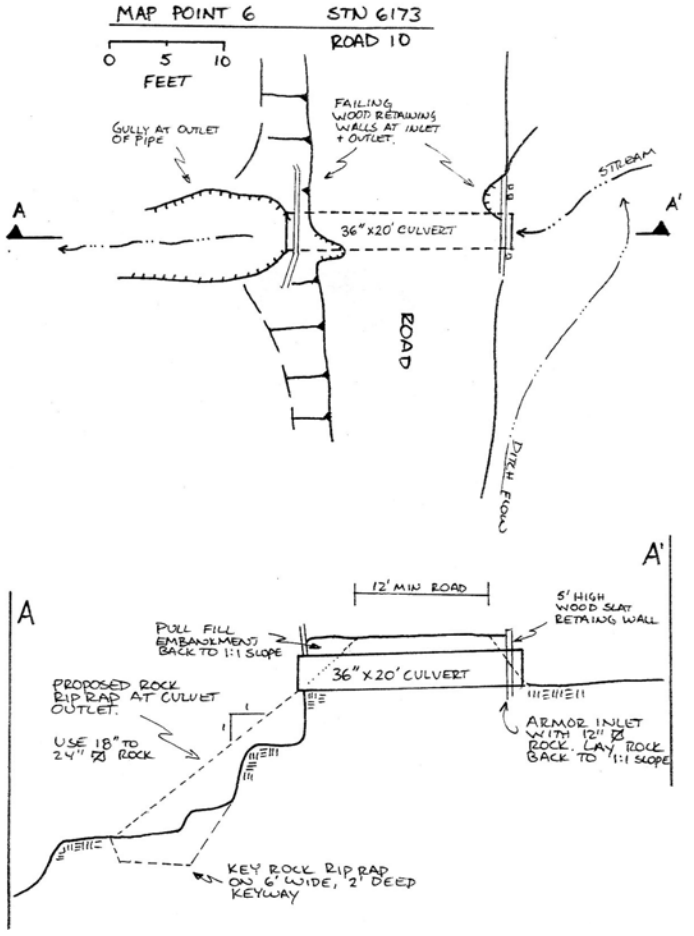
8.0 APPENDIX 2: ROAD INVENTORY

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
10	1	2347	Inboard ditch gully	L	M	LM	5		**DESCRIPTION** Gullying of inboard ditch due to steep (15% gradient) road grade. Inboard ditch gully is about 2' deep and eroded down to soft bedrock. Continued gullying is expected. Ditch drains to 12" metal ditch relief culvert located about 150 feet further down the road (STN 2080). **RECOMMENDATIONS** • Rock line 75' of the inboard ditch
10	2	2680	Inboard ditch gully	L	M	M	10	Grading	**DESCRIPTION** 12" x 20' metal ditch relief culvert draining a roughly 800 foot long segment of road. The lower 100 to 200 feet of the inboard ditch has eroded resulting in a 1' to 2' deep gully. **RECOMMENDATIONS** • Install an 18" x 20' ditch relief culvert about 400 feet up the road (Stn 3080) • Install rock energy dissipater at culvert outlet
10	3	3446	Undersized ditch relief culvert	L	M	M	10	Grading	**DESCRIPTION** 12" x 20' metal ditch relief culvert draining 800 feet of road. Pipe appears undersized with debris backed up behind the inlet to about the top of the pipe. About 75' uproad of the culvert is a moderate size (60' long 20' wide) gully that has eroded into the cutbank. This gully is a result of the road cut intercepting shallow ground water. Treatment of this gully is outside the scope of this study. **RECOMMENDATIONS** • Install an 18" x 20' ditch relief culvert about 350 feet up the road (Stn 3850). • Placement of the culvert may be difficult due to small thru-cut • Install rock energy dissipater at culvert outlet
10	4	5425	Infilled inboard ditch	LM	LM	M	10		**DESCRIPTION** 12" x 20' metal ditch relief culvert at swale/small ephemeral stream. The inlet to the culvert is grassed over and needs to be cleaned. The inboard ditch has been infilled and most of the road runoff bypasses the culvert inlet causing some rilling of the rocked road. **RECOMMENDATIONS** • Clean inlet to culvert • Clean 150' of the inboard ditch • Regrade road to crowned pitch • Rerock 200' of road
10	5	5680	Infilled inboard ditch	LM	LM	M	10	Grading	**DESCRIPTION** 12" x 20' metal ditch relief culvert at swale. The inboard ditch has been infilled and most of the road runoff now bypasses the culvert inlet causing some rilling of the rocked road. The inboard ditch continues for another 500 feet below the culvert and ultimately discharges into the culverted stream crossing at STN 6173. **RECOMMENDATIONS** • Clean 700 feet of the inboard ditch (200 feet above culvert and 500 feet below culvert) • Regrade road to crowned pitch • Rerock 700' of road • Consider adding an additional 18" x 20' ditch relief culvert about 300 feet down the road to prevent sediment from discharging into the stream at MP 6 (STN 6173)

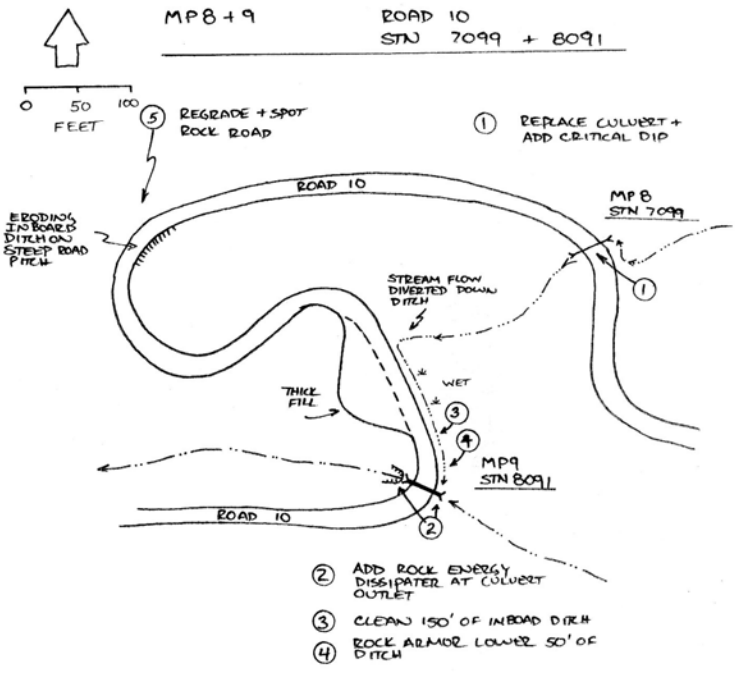
1 ROAD DAMAGE: Qualitative measure of the degree of road damage or past erosion. N: NONE; L: LOW -No impact to road (e.g. rilling and small gullies at outlets of crossings); M: MODERATE – Minor impact to roads but road is passable (e.g. deep rilling of road, gullies at outside of crossing narrowing road but not impaling passage, erosion of inboard ditch). H: HIGH – Road not passable.

2 EROSION POTENTIAL: Qualitative measure of the potential for future erosion under CURRENT use. L: LOW – Not expected to erode except under very large and infrequent storms. M: MODERATE: Erosion expected during large storms; H: HIGH: erosion expected on annual basis.

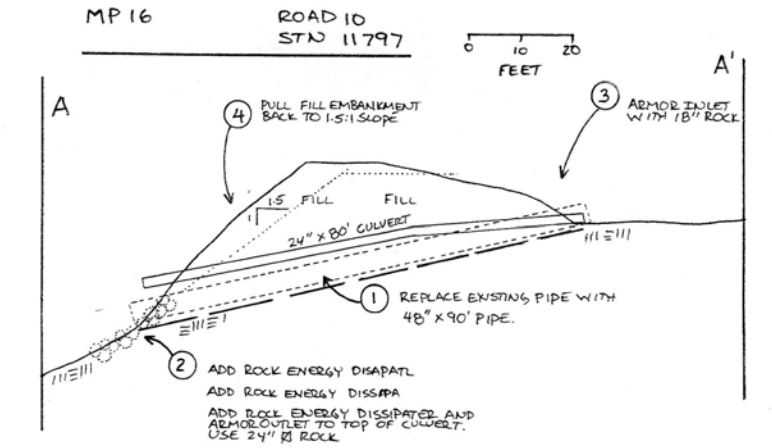
3 TREATMENT PRIORITY: Qualitative ranking for treatment based on CURRENT use. L: LOW – Sites unlikely to erode or will erode only during larger infrequent events; M: MODERATE – Sites are expected to erode damaging the road over time and/or delivering greater than 10 cy of sediment to the stream. H: HIGH – Sites are actively eroding and require immediate repairs.

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
10	**6**	6173	Stream crossing: culvert	**L**	**MH**	**MH**	**50**	1600 Grading	**DESCRIPTION** 36" x 20' metal culvert at ephemeral stream draining a 12.5 acre area. The outlet of the pipe is shotgunned 5 feet above the stream causing active erosion. Two 5' high wood retaining walls are found at the inlet and outlet of the culvert. These walls are beginning to fail which will compromise the integrity of the road. Crossing volume is estimated at 35 cy with fill being a maximum of 5 feet deep. **RECOMMENDATIONS** • Removal of the wood retaining walls and laying the embankments back to a 1:1 slope will narrow the road to about 12 feet. If a wider road is required then a 5' long 36" diameter extension should be added to the inlet of the culvert • Install rock energy dissipater at the outlet of the culvert using about 25 cy of 18" to 24" diameter rock rip rap. Rock should be keyed onto a minimum 6' wide keyway and brought up to grade at a 1:1 slope • Rock armor the inlet using about 7 cy of 12" diameter rock. Rock shall be brought up to grade at a 1:1 slope 
10	**7**	6791	Ditch relief culvert	**L**	**M**	**LM**	**10**	Grading	**DESCRIPTION** 12" x 20' metal ditch relief culvert draining a 600' long inboard ditch. A 2' deep, 3' wide gully has formed at the outlet. **RECOMMENDATIONS** • Install an 18" x 20' ditch relief culvert about 300 feet up the road (Stn 6300) • Install rock energy dissipater at culvert outlet

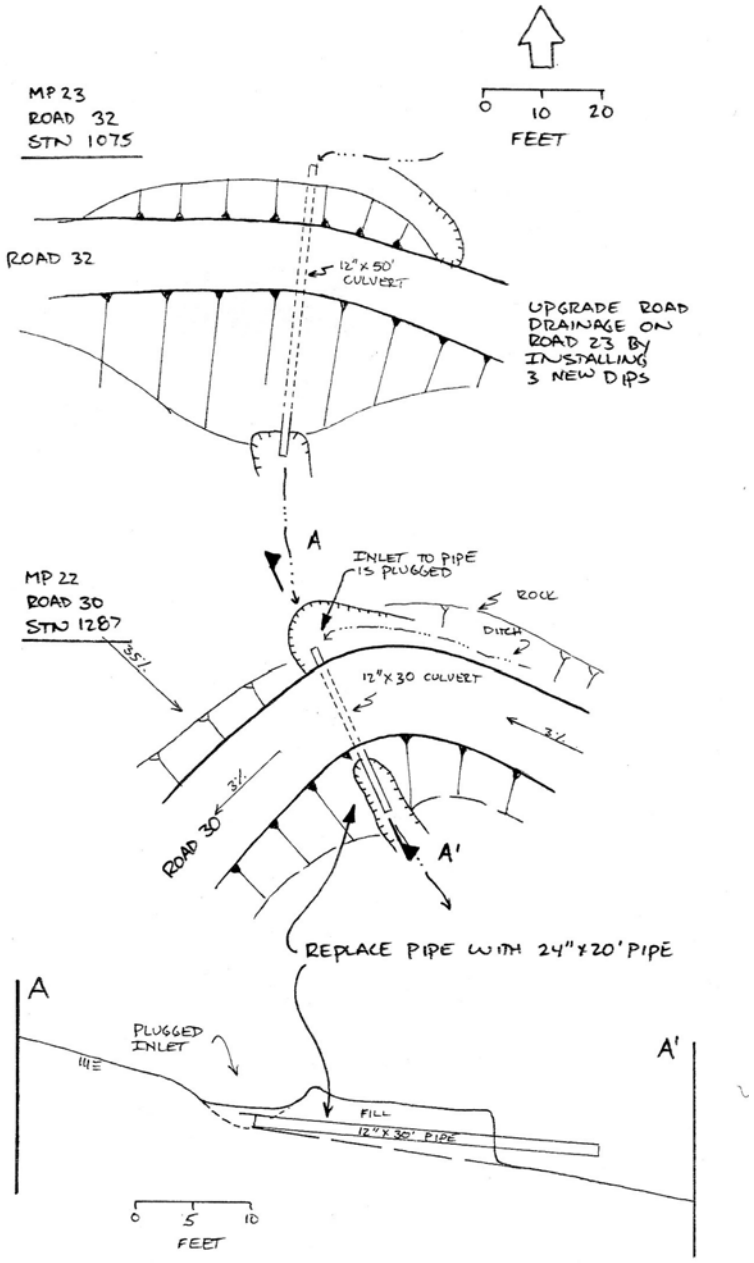
ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
10	**8**	7099	Stream crossing: culvert	**L**	**LM**	**LM**	**22**	1600 Grading	**DESCRIPTION** 12" x 20' metal culvert at an intermittent stream draining a 9 acre basin. Culvert is well undersized for a 50 year design flow. Although undersized, no signs of significant problems were observed or reported. The outlet is shotgunned several feet and a diversion potential exists to the right. Crossing volume is estimated to be less than 25 cy. After this site road makes a switchback. The stream hits the inboard ditch of the lower road where it is then conveyed along the inboard road ditch 150 feet to the culverted crossing at MP 9 (STN 8091). Little erosion observed along the inboard ditch. **RECOMMENDATIONS** **Option 1 (long term solution)** • Replace pipe with 24" x 30' long new culvert. The culvert shall be placed at stream grade in excess of 3% so embedding is not proposed. Crossing replacement will result in less than 15 cy of excavation with 150 square feet of ground disturbance with minimal vegetation removal. • Discharge culvert onto rock energy dissipater. Rock inlet and outlet to top of culvert. Use 12" diameter sound rock. • Install critical dip • Rerock road surface • Conform to Fish and Game 1600 permit **Option 2 (Short term solution)** • At a minimum a critical dip should be installed to prevent stream diversion if the culvert were to plug.

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
10	**9**	8091	Stream crossing: culvert	**L**	**M**	**M**	**50**	1600 Grading	**DESCRIPTION** 36" x 20' aluminum culvert at an intermittent stream draining a 37 acre basin. The outlet of the pipe is shotgunned over 12 feet above the channel with some active erosion apparent. Inlet to the pipe is 20% plugged and should be cleaned. A diversion potential exists to the left. A metal fence post trash rack is found at the inlet. The crossing also drains ephemeral stream flow from MP 8 (STN 7099) located at the top of the switchback. Stream flow from this crossing hits in the inboard ditch of the lower road and is conveyed about 150 feet along the inboard road ditch to inlet of the 36" pipe. The upper portion of the inboard ditch is wet, the lower portion has eroded several feet where it enters the crossing. Due to thick fill placed along the outside edge of the road it will not be possible to correct the diversion of the ephemeral stream. **RECOMMENDATIONS** • Clean culvert inlet and trash rack of debris. • Some benefit may be achieved by installing a rock energy dissipater at the outlet of the pipe. This would require at least 40 cy of 24" to 36" diameter rock. A large excavator would be required to place the rock. The cost of placing the rock may not be cost effective. Alternatively a 15" downspout could be installed which discharges onto 10 cy of 36" diameter rock, however, due to the steep dropoff at the culvert outlet it may prove difficult to adequately anchor the downspout. • Add critical dip • Clean and enlarge 150' of the inboard ditch above the crossing • Rock armor the lower 50' of the ditch to prevent the ditch from downcutting • Conform to Fish and Game 1600 permit 
10	**11**	8550	Inboard ditch gully	**L**	**M**	**M**	**50**	Grading	**DESCRIPTION** 850 foot long inboard ditch is actively eroding resulting in a 3' wide by 2' to 3' deep gully. **RECOMMENDATIONS** • Install 2 18" x 20' ditch relief culverts at 300' maximum spacings (install at Stn 8400 and 8700)

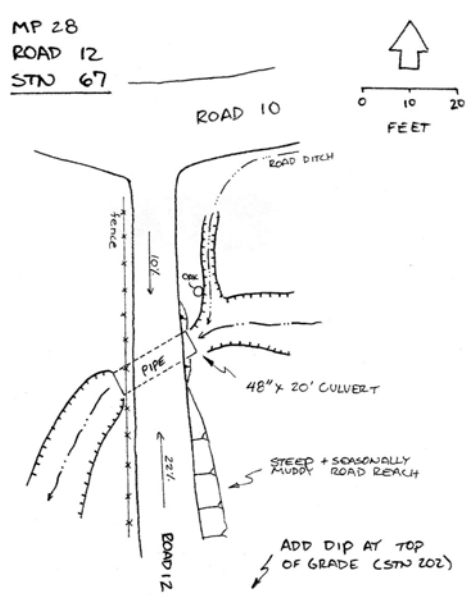
ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
10	**12**	9021	Stream crossing: bridge	**L**	**M**	**MH**		1600 Grading	**DESCRIPTION** Double 40' long rail road flat car bridge over Harrington Creek founded on either old logs or earth. The bottom of the bridge is located 7.5' above the creek. A couple of large rocks are found upstream of the bridge and may have been placed to protect the channel banks at the bridge from erosion. The bridge is located well within the 100-year flood plain of the creek and reportedly was over topped during the 1996 storms. Presently no significant erosion problems observed. During future high flows the bridge could wash out. **RECOMMENDATIONS** • District should evaluate if the current risk of the bridge washing out is acceptable and act according • Additional analysis required if the bridge is to be raised or replaced
10	**13**	9292	Ditch relief culvert / inboard ditch gully	**L**	**LM**	**LM**	**10**		**DESCRIPTION** 24" x 20' aluminum ditch relief culvert draining 750' of the inboard ditch across a side road (Road 13). The inlet and outlet of the pipe are partially crushed. The pipe receives very little flow so no significant problems are apparent, but above the site the inboard ditch is slowly downcutting. **RECOMMENDATIONS** • Unbend the inlet and outlet of the pipe • Rock armor 150 feet of the inboard ditch along the steep grading segment of road above the pipe
10	**14**	9911	Ditch relief culvert/ inboard ditch	**L**	**L**	**M**	**10**		**DESCRIPTION** 18" x 20' new plastic ditch relief culvert draining about 375' of road. Wood headwall found at the culvert inlet. Inlet to the pipe is about 30% plugged with debris. Minor rutting and erosion of the road bed. **RECOMMENDATIONS** • Remove wood headwall and clean debris • Armor inlet with 3 cy of 8" diameter rock • Clean 400 feet of the inboard road ditch • Regrade 500' of road to give the road an insloped pitch • Rerock 500' of road
10	**15**	10288	Failing ditch relief culvert/ inboard ditch	**L**	**LM**	**LM**	**5**		**DESCRIPTION** 18" x 20' plastic ditch relief culvert with wood headwall draining a long segment of road. Much of the inboard ditch has broken down allowing water to flow down the middle of the road where it has eroded the road surface slightly. The wood headwall at the inlet to the pipe is failing and inlet is about 25% plugged with debris. **RECOMMENDATIONS** • Remove wood headwall and clean inlet to pipe • Armor inlet with 3 cy of 8" diameter rock • Clean 300 feet of the inboard road ditch • Regrade 400' of road to give the road an insloped pitch • Rerock 400' of road
10	**15.1**	10982	Road drainage	**LM**	**M**	**M**	**10**		**DESCRIPTION** 800 feet of moderately drained rocked road. Road surface is starting to break down allowing water to concentrate and locally pond in places. Portions fo the road may be muddy during wet periods. **RECOMMENDATIONS** • Add 4 new rolling dips at STN 10765, 10982, 11242, and 11422 • Regrade ~ 700' of road to crowned or outsloped pitch • Spot rock ~ 300' of road where necessary

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
10	**16**	11797	Stream crossing: culvert	**L**	**H**	**H**	**400**	1600 Grading	**DESCRIPTION** 24" x 80' culvert with concrete sack headwall at narrow and entrenched intermittent stream draining a 60 acre basin. The crossing volume is calculated at 750 cy with maximum depth of fill being 24 feet. The pipe reportedly plugged with debris and failed during the heavy El Nino storms of 1998 and was subsequently replaced. The current pipe is undersized carrying about 30% to 40% of the calculated 50 year storm flow (~ 5 year recurrence interval). The outlet is shotgunned 6' above the channel and a diversion potential exist if the culvert were to plug again. In my opinion there is a high risk for failure given the small size of the pipe. A future failure could result in substantial damage to the road. For this reason the pipe should be replaced. Buried phone lines extend through the middle of the road. **RECOMMENDATIONS** • Replace existing pipe with new 80' long x 48" diameter pipe. Placement of culvert will require moving buried phone lines that extend down the middle of the road. The culvert shall be placed at stream grade in excess of 3% so embedding is not proposed. Crossing replacement will result in about 300± cy of excavation with 1500 square feet of ground disturbance. Vegetation removal should be minimal and restricted to the fill embankment. • Fill embankment shall be keyed into firm native soils and brought up to grade at a maximum 1.5:1 slope. Fill shall be adequately compacted. • Discharge culvert onto rock energy dissipater using 24" diameter sound rock. • Rock inlet and outlet to top of culvert using 18" diameter sound rock. • Install critical dip at the crossing. • Mulch exposed soils • Conform to 1600 permit 
10	**17**	12517	Road Drainage	**LM**	**M**	**M**	**5**		**DESCRIPTION** 350' of poorly drained gravel road extending up the fall line of the hillside at a ~15% grade. Road surface is locally rilled due to lack of drainage structures but little sediment delivery due to long distance from a stream. **RECOMMENDATIONS** • Add two rolling dips at STN 12517 and 12720. Installation of dips will be difficult due to relatively steep road pitch. • Rock 200 feet of road

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
11	18	1428	Stream crossing: culvert	LM	H	M	15	1600 Grading	**DESCRIPTION** 24" x 15' plastic culvert located on an intermittent stream draining a roughly 99 acre watershed. Crossing volume is less than 20 cy with maximum fill at about 5 feet. Large plunge pool found at outlet and gravels backing up behind the inlet. Pipe is grossly undersized for 50 year flow but no recent problems observed. This pipe was probably installed after the 1996 El Nino storms, possibly for temporary access top the residences that were inaccessible when the culvert at MP 16 failed. There is a high potential for the crossing to fail but because of the small volume of fill at the crossing unlikely to deliver much sediment to the stream. The road leading to this crossing from the west drops at 30% grade much of it down the fall line of the hillside. Because the road receives little use much of it is grassed over and shows little signs of recent erosion. However, roads of this grade and orientation often result in erosion with use and should be avoided. Accessing this site to upgrade the crossing would require a fair amount of ground disturbance and the net benefit of removing the culvert or upsizing it to a larger pipe is probably not warranted. **RECOMMENDATIONS** • District should evaluate whether removal of the crossing is necessary from a management perspective. Removal of the crossing or upsizing it will probably have little impact on sediment production.
11	19	2657	Stream Crossing: ford	L	L	L	0		**DESCRIPTION** Natural ford crossing over Harrington Creek. No erosion observed. Crossing would need to be upgraded if use on this trail were to increase. **RECOMMENDATIONS** • None required at present
11	20	3592	Road drainage	L	M	M	0		**DESCRIPTION** 1500 foot long segment of road/tractor trail climbing up the fall line of the hillside at a 20% grade. Because the road receives little use much of it is grassed over and shows little signs of recent erosion. However, roads of this grade and orientation often result in erosion with use and should be avoided. **RECOMMENDATIONS** • Abandon through non use.
30	21	127	Ditch relief culvert	L	M	M	100		**DESCRIPTION** 12" x 20' metal ditch relief culvert draining 900 feet of the inboard ditch along Road 30 and 500 feet of Road 31. A large gully has formed at the outlet of the culvert, measuring 15' wide, 6' to 8' deep and over 100' long. Abundant wood from an old structure) placed in the gully has partially checked erosion. Presently the road is well vegetated so rate of erosion and runoff is lower than in years past. **RECOMMENDATIONS** • Install 5 new rolling dips on Road 30. Dips located on 10% grade • Install 4 new dips on Road 31. Dips located on 10% to 16% grade
30	22	1287	Stream Crossing: culvert	L	M	M	50	1600 Grading	**DESCRIPTION** 12" x 20' metal pipe at a small (5-acre) ephemeral stream. The inlet is completely plugged with debris and a small alluvial fan has formed in the catch basin. Catch basin has not been overtopped. The outlet of the pipe is shotgunned several feet above the active channel. **RECOMMENDATIONS** • Replace existing pipe with new 24" diameter x 20' long plastic pipe. Outlet of pipe should be installed at stream grade. • Discharge culvert onto rock energy dissipater. Rock inlet and outlet to top of culvert. Use 12" diameter sound rock. • Install rock energy dissipater at culvert outlet

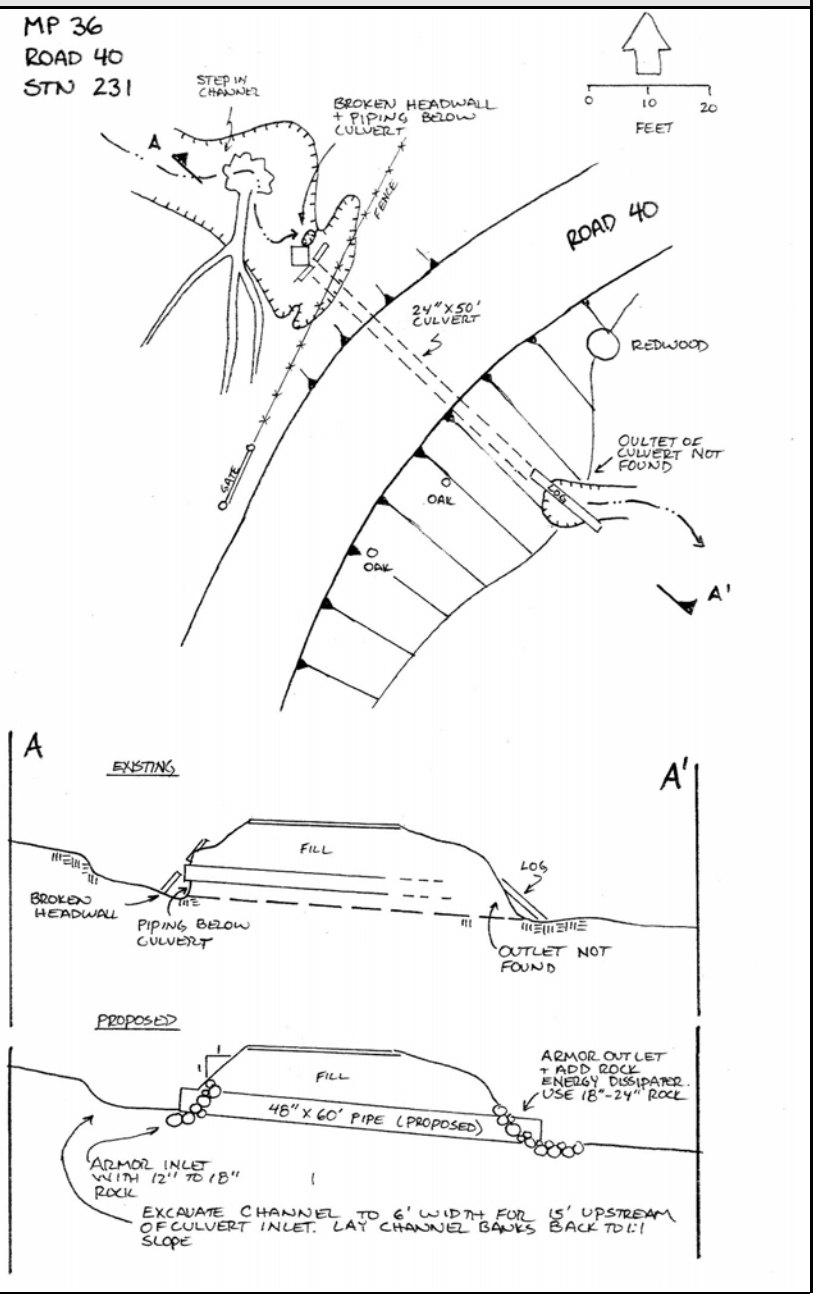
ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
32	**23**	1075	Stream crossing: Culvert	**L**	**LM**	**LM**	**10**		**DESCRIPTION** 12" x 20' metal pipe at a small (5-acre) ephemeral stream. The outlet of the pipe is shotgunned several feet above the active channel where a small gully has formed. Outside of this there is no evidence of past problems although pipe is undersized for 50 year flow. About 350' of the road leading into the crossing is insloped with some concentrated runoff. **RECOMMENDATIONS** • Upgrade road drainage by installing 3 additional dips 

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
30	**24**	3435	Ditch relief culvert	**M**	**H**	**H**	**500**		**DESCRIPTION** 12" x 30' ditch relief culvert draining over 500+ feet of inside road ditch to the east and 500' of inside road ditch to the west. Concentrated road runoff discharged at this point has formed a large gully measuring over 20' wide, 12' deep and 200+ feet long. Slopes in this area are inherently prone to erosion, however, concentration of road runoff has accelerated this significantly. **RECOMMENDATIONS** • Install 6 new rolling dips at 100 to 125 foot spacings. Three dips shall be located east of the gully and three to the west of the gully.
30	**25**	4125	Ditch relief culvert	**L**	**H**	**H**	**100**	Grading	**DESCRIPTION** 12" diameter metal ditch relief culvert draining 450± feet of road. A large gully measuring 13' wide, 6' deep and over 100' long has formed were water is discharged onto the grassy slopes below. Slopes in this area are inherently prone to erosion, however, concentration of road runoff has accelerated this significantly. **RECOMMENDATIONS** • Replace existing ditch relief culvert with new 18" x 20' pipe. Install rock energy dissipater at culvert outlet • Add new 18" x 20' ditch relief culvert 125 feet to the south (STN 3310) • Upgrade road drainage by installing 2 new rolling dips located roughly 200 feet and 300 feet further up the road (STN 3230 and 3130) • Install 2 new rolling dips north and downslope of the existing ditch relief culvert at roughly 150' spacings (STN 3610 and 3660)
30	**26**	4125	Ditch relief culvert	**MH**	**H**	**H**	**10**	Grading	**DESCRIPTION** 12" diameter metal ditch relief culvert draining a long segment of road. Few problems observed at the culvert. About 75' up the road (south) is a 3' diameter 18" deep hole formed in the middle of the road probably due to subsurface sapping. The road below the culvert is locally quite steep and would benefit from a couple of additional rolling dips. **RECOMMENDATIONS** • Add new 18" x 20' ditch relief culvert at STN 3925 • Excavate out sinkhole and back fill with ~ 5 cy of compacted earth • Install a minimum of two additional rolling dips at STN 4350 and 4850
32	**27**	2279	Gully at pond	**L**	**M**	**?**	**100**		**DESCRIPTION** The outlet of an agriculture pond has a 200' long overflow spillway. At the bottom of the spillway a deep gully is actively eroding. The gully is about 2' deep at the head deepening to about 8' to 10' at the bottom. The lower and deeper portion of the gully is vegetated but the upper head is still actively eroding back. Continued erosion is expected, especially at high flows. Similar problems may exist at the other ponds. **RECOMMENDATIONS** • From a sediment standpoint it may be prudent to armor the gully. Additional work will be necessary to determine specifics of mitigation measures at this site.

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
12	**28**	67	Stream crossing: culvert	**M**	**M**	**LM**	**10**		**DESCRIPTION** 48" x 20' CMP at an intermittent stream draining a 19 acre area. Pipe is placed at a shallow gradient with little fill covering the pipe. Road receives little use and road surface is pot holed from cattle. Overall crossing is in adequate shape for infrequent use, but thin fill covering the culvert makes the crossing unsuitable for heavy equipment. Road leading to the crossing on the south side drops at a 22% grade and is rutted and poorly drained. Installing dips along this section would be difficult due to steep grade and life expectancy may be short since cattle would tend to break down any dip.  **RECOMMENDATIONS** • Add one dip near the top of the grade to the south where road gradient is much lower (Stn 202) • If use were to increase then drain south side of the approach to the crossing into a 100' long rocked lined inboard ditch and rock the road surface for 175 feet
12	**28.1**	2657	Stream Crossing: ford	**M**	**L**	**L**	**0**		**DESCRIPTION** Natural ford crossing over an intermittent tributary stream to Harrington Creek. Crossing is probably within the active channel of Harrington Creek. Trail gets used very infrequently and little active erosion observed. Crossing would need to be relocated if use was to increase. **RECOMMENDATIONS** • None required at present
13	**29**	500	Road drainage	**L**	**L**	**L**	**10**		**DESCRIPTION** 211 feet of flat old ranch road located immediately adjacent to the west side of Harrington Creek. Road is used very infrequently. Portions of the road impacted by livestock. **RECOMMENDATIONS** • No treatment required at present but if use were to increase the road should be outsloped and rocked
20.1	**30**	486	Inboard ditch erosion	**LM**	**LM**	**M**	**10**	Grading	**DESCRIPTION** 550' long inboard ditch with intermittent active erosion flows across the road. The eroding inboard ditch is about 12" to 18" deep. Much of the sediment filters out on flat area below the road without much sediment delivery to a watercourse. **RECOMMENDATIONS** • Install three new 18" x 20' ditch relief culverts at roughly 250' spacings (STNs 486., 660 and 840) • Portions of road may need to be regraded so water drains into inboard ditch

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
20.1	**31**	1033	Ditch relief culvert	**L**	**M**	**M**	**20**	Grading	**DESCRIPTION** 12" x 30' metal ditch relief culvert draining 350' feet of inboard ditch. The lower portion of the ditch is eroded 2' to 3' deep. A small cutbank failure, located 50' up the road has infilled a portion of the ditch but water is able to flow around it. The culvert is too long and the outlet is 70% plugged with sediment. **RECOMMENDATIONS** • Cut 10' off of the end of the existing ditch relief culvert. This will mitigate the problem of the end of the pipe being plugged. • Add a new 18" x 20' ditch relief culvert about 200' up the road (Stn 1230) • Clean 250' of the inboard ditch
20.1	**32**	1386	Ditch relief culvert	**LM**	**M**	**LM**	**10**	Grading	**DESCRIPTION** 12" x 40' ditch relief culvert draining 350' of the inboard ditch. A large gully, measuring 50' long, 12' wide and 8' deep has formed at the outlet of the pipe. Gully discharges onto a flat bench which may have been an old agriculture pond. Little if any sediment reaches a watercourse. About 175 feet up the road the inboard ditch is infilled and trampled by cattle allowing water to be diverted down the road, eroding the road slightly. **RECOMMENDATIONS** • Add a new 18" x 20' ditch relief culvert about 185' up the road (STN 1571) • Clean 150' of the inboard ditch
20.1	**33**	1737	Ditch relief culvert	**L**	**M**	**M**	**20**	Grading	**DESCRIPTION** 12" x 35' ditch relief culvert draining 600' of road. A moderate size gully, measuring 30' long, 6' wide and 6' deep has formed at the outlet of the pipe. Gully discharges onto a flat bench which may have been an old agriculture pond. Gully is attributed to shotgunned nature of pipe in concert with ditch draining a long segment of road. Little sediment delivered to a watercourse. Continue erosion is likely which could impact the road. **RECOMMENDATIONS** • Add two new 12" x 20' ditch relief culverts about 185 feet up the road (Stn 1900 and 2150) • Clean 150 feet of the inboard road ditch • Regrade 400 feet of the road to give it a stronger insloped pitch. • Enlarge the existing dip at STN 2508
20.2	**34**	2947	Steep road	**L**	**M**	**LM**	**30**	Grading	**DESCRIPTION** 650 feet of steep and poorly drained road, although little signs of active erosion observed. Upper portion of the road descends down fall line and would be prone to erosion if use were to increase. **RECOMMENDATIONS** • Reroute upper 200 feet of road onto gentler grade and to avoid descending down the fall line of the hillside • Add new 18" x 20' ditch relief culvert at Stn 3122 • Establish 100+ feet of inboard ditch to drain into new ditch relief culvert • Consider adding additional ditch relief culverts below this point if use is to increase or if winter use is required. Road may need to be rocked for winter use

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
40.1	**36**	231	Stream crossing: culvert	**L**	**H**	**H**	**300**	1600 Grading	**DESCRIPTION** This site is where a paved residential road crosses an intermittent steam draining a 50 acre basin. There is an undersized 36" X 50' CMP with broken wood and concrete headwall at the crossing. The pipe inlet is torn and plugged about 60% with debris; the culvert outlet was not found and assumed to be completely plugged. The culvert is rusted with most of the low summer flows piping through the fill. Crossing volume is about 350 cy with fill being a maximum of 12' deep. Overall the crossing is in poor condition with high potential for failure. **RECOMMENDATIONS** Replace existing culvert with new 48" x 60' pipe. The culvert shall be placed at natural stream grade in excess of 3% so embedding is not proposed. Crossing replacement will result in less than 250 cy of excavation with 1200 square feet of ground disturbance. Vegetation removal should be minimal and restricted to the fill embankment. • Pipe shall be placed as close as possible to native channel grade. This may require removing some woody debris from the crossing. USA should be called prior to excavation to ensure that there are no power or phone lines within the crossing • Excavate channel for 15 feet upstream of the culvert inlet to achieve a 6' wide channel bottom with banks laid back to about 1:1. Excavation of channel shall be undertaken under the direction of District personnel • Armor inlet and outlet of pipe to top of culvert using 12" to 18" diameter rock. • Install rock energy dissipater at culvert outlet using 18" to 24" diameter rock • Add critical dip • Rock/pave the road surface as directed by District • Fence off top of the fill embankment at the culvert inlet to keep cattle from trampling embankment face • Mulch exposed soils • Conform to DFG 1600 permit

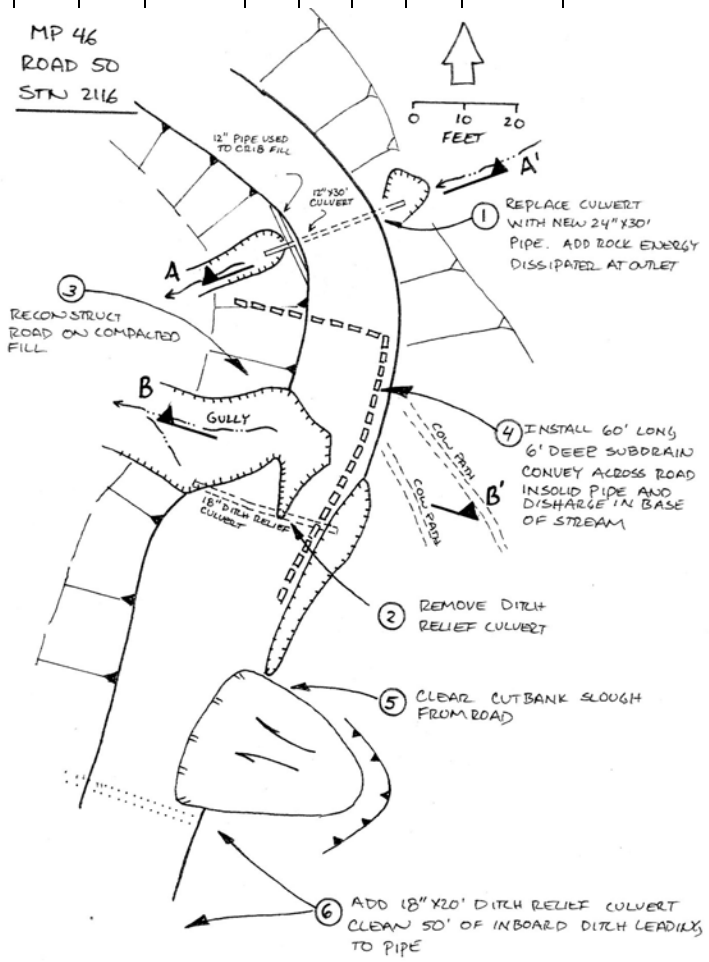
ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
40.1	**36**	231	Stream crossing: culvert	**L**	**H**	**H**	**300**	1600 Grading	

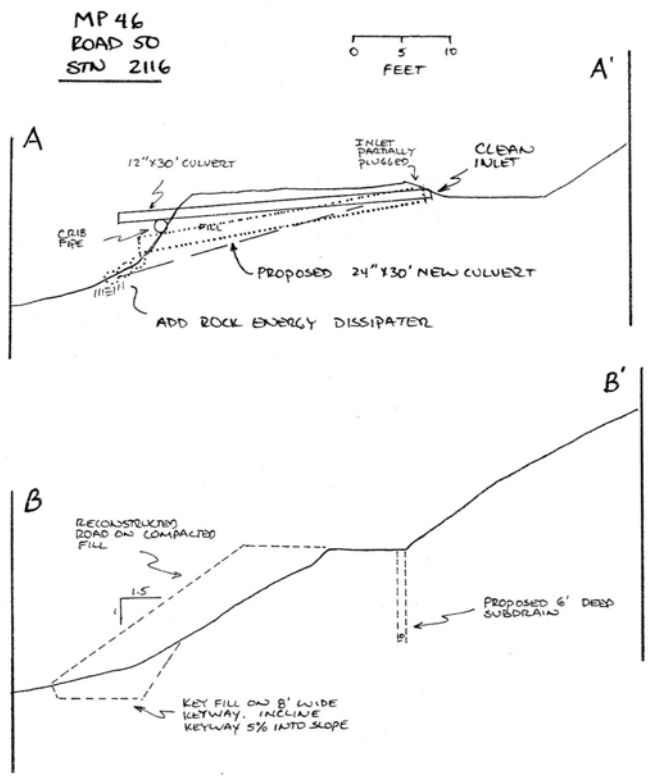
ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
40.1	**37**	654	Ditch relief culvert	**L**	**LM**	**M**	**10**		**DESCRIPTION** At this site there are two 12" diameter ditch relief culverts. The upper culvert is a 12" x 40' plastic ditch relief culvert located on the paved residential road. The inlet to the culvert is about 80% plugged with sediment. The outlet of the culvert discharges onto a graded, grassy bench below the road. Runoff from outlet of the upper culvert combined with runoff from a poorly defined inside ditch along the back edge of the graded bench is collected into a second 12" x 80' plastic culvert and conveyed to a small pond at the bottom of the hill. Minor erosion was observed at the outlet of the lower culvert. The inside ditch above the lower culvert is poorly defined and locally ponds water. **RECOMMENDATIONS** • Clean inlet to the upper ditch relief culvert. This can be done with a shovel. • Clean 300 feet of the inside ditch along above the inlet of the second culvert. • Mulch exposed soils.
46	**38**	250	Stream crossing: culvert	**L**	**LM**	**N**	**0**		**DESCRIPTION** At this site the paved road crosses an intermittent stream draining an 11 acre basin. The crossing consists of an 18" x 200'± plastic culvert. The inlet is located 60' upstream of the road and outlet discharges onto a grassy graded bench. The old channel has been completely infilled. Runoff from the pipe outlet is conveyed along a deep ditch about 150 feet before discharging into a small pond at the base of the hill. The pond is in turn drained by an 18" x 40' pipe that is directed to a 2' x 2' concrete drain adjacent to the highway. The long pipe at this crossing as well as the series of pipes at MP 37 were probably installed so that the channel could be infilled and used for ranch operations. The 18" culvert is slightly undersized for a 50 year flood flow. If the pipe were to plug most of the water would simply flow over the road and down the grassy bench to the concrete drain. Low gradient slopes in this area would limit the amount of erosion. **RECOMMENDATIONS** • No treatment is necessary
40.1	**39**	1651	Ditch relief culvert	**L**	**M**	**M**	**50**	Grading	**DESCRIPTION** 12" X 30' metal pipe on a paved residential road draining a spring and a questionable 5-acre ephemeral stream. Pipe is oriented at a 45 degree angle to the road and shot gunned about 4 feet above the native channel. Water lines extend through the pipe. Most of the erosion at the pipe outlet appears old. Pipe is undersized by 80% for design 50 year storm but there are no reported past problems at this site. Failure of crossing would result in runoff being diverted down the inboard road ditch for 580 feet where it could erode the ditch and damage the road. **RECOMMENDATIONS** • Install two 18" x 20' ditch relief culverts at Stn 1380 and 1286 • Add 20' half round downspout and rock energy dissipater at both culverts • USA should be called prior to excavation to ensure that there are no power or phone lines within the crossing • Rock/pave road surface as directed by District
40.1	**40**	2113	Stream crossing: culvert	**L**	**?**	**?**	**?**		**DESCRIPTION** Paved road crosses an intermittent stream draining a 34 acre basin. This crossing was not evaluated.

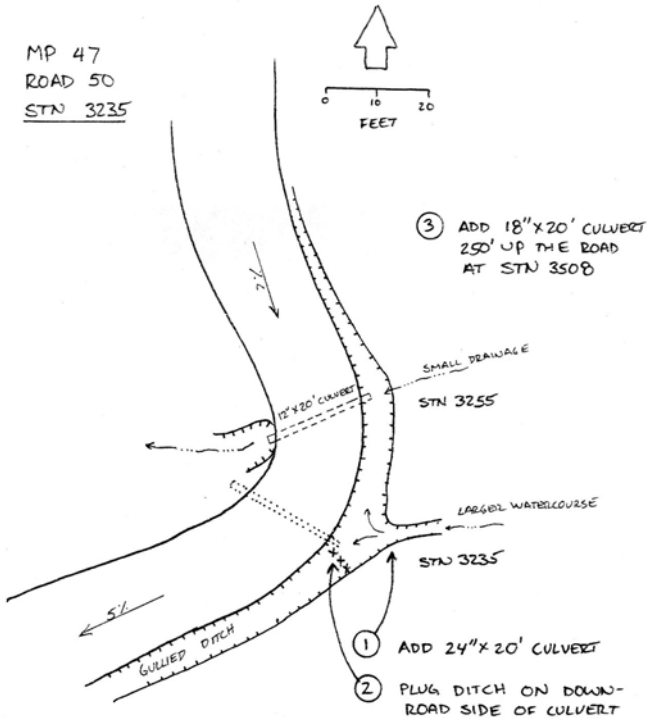
ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
40.2	**41**	2662	Eroding inboard ditch	**M**	**MH**	**MH**	**50**		**DESCRIPTION** This is a 1400 foot long segment of permanent rocked road climbing at a 10% to 15% grade. The road is drained by a long inboard ditch which has deeply gullied. This gully is up to 5 feet wide and 3 feet deep. Attempts have been made to stop the erosion by placing debris (wood, wire, etc) and in one location poured concrete within the gully but with limited success. Gullying is attributed to weak earth material in concert with concentrated runoff along the inboard ditch. In addition to gullying of the inboard ditch the road surface has broken down and is rutting. Continued slow erosion of the inboard ditch is expected. The erosion can be mitigated by installing very frequent ditch relief culverts (min 150 foot spacings) and rocking the inboard ditch. Because erosion can occur at the outlet of the culverts the best alternative may be to maintain the current drainage pattern and simply rock amour the inboard ditch. **RECOMMENDATIONS** • Regrade 1700 feet of road to have a crowned pitch • Spot rock segments of road where the old pavement or rock has washed off • Install a rolling dip at STN 3950, located at the upper end of the problem reach • At STN 3800 drain the ditch to the southwest ("ditch knockout"). Plug inboard ditch below the knockout. • Clean and rock armor 700' of the inside ditch between the sharp turn at STN 2660 and STN 3360. Ditch shall have a 1' wide flat bottom with banks laid back to a 1:1 slope. Use 6"+ rock and place the rock a minimum of 12" up the channel walls. An estimated 100 cy of rock will be required.
50	**42**	738	Ditch relief culvert	**L**	**LM**	**LM**	**10**		**DESCRIPTION** 12" x 20' ditch relief culvert draining 200+ feet of inboard ditch. About 30' up the road from the culvert the inboard ditch is infilled with sediment and the ditch is largely infective. Most of the road runoff flows over the road but without much problems. Ground in this area is soft and has been trampled by livestock, which probably contributed to the failure of the ditch. Further up the road (south) the road grade steepens and the inside ditch is more deeply incised. **RECOMMENDATIONS** • Some short term benefit would be achieved by cleaning the 200 feet of the ditch and giving the road a stronger outslope. However, since the drainage problems have not resulted in significant problems nor sediment delivery to a watercourse the treatment priority for this is relatively low. • Benefit may also be achieved by adding a second 18" x 20' ditch relief culvert about halfway up the grade (STN 600)
50	**43**	832	Ditch relief culvert	**LM**	**M**	**M**	**5**	Grading	**DESCRIPTION** 12" x 20' ditch relief culvert draining small spring. Portions of the road have been spot rocked to harden the surface. Pipe is rusted and inlet plugged with sediment. Ground in this are is wet and prone to rutting. **RECOMMENDATIONS** • Replace pipe with new 18" x 20' culvert • Build 200 feet of the road bed up 2' and rock 8" deep. Separate rock from native soils with woven geotextile fabric
50	**44**	1349	Ditch relief culvert	**L**	**L**	**N**	**0**		**DESCRIPTION** 12" x 30' metal ditch relief culvert draining a spring. Culvert is functioning adequately. Heavy use by livestock. **RECOMMENDATIONS** • No treatment required

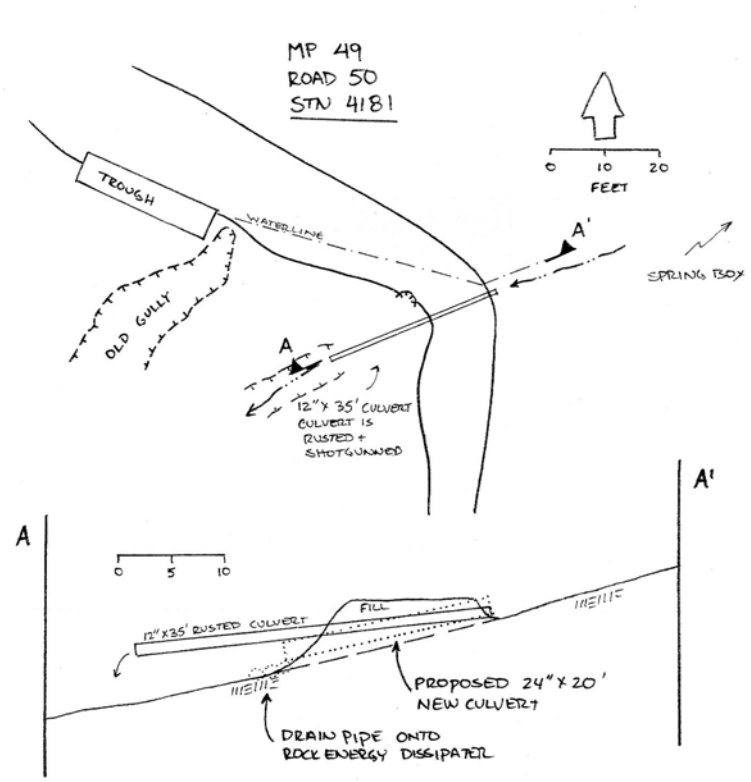
ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
50	**45**	1622	Stream crossing: culvert	**L**	**L**	**L**	**10**	1600 Grading	**DESCRIPTION** 12" x 30' metal culvert at small ephemeral stream draining an 11 acre basin. The top of the pipe is rusted but bottom appears OK. The crossing is located on flat bench with minimal fill at the crossing. Crossing volume is about 20 cy with fill maximum of 6 feet deep. **RECOMMENDATIONS** • Replace pipe with 24" x 30' culvert • Build the road up about 12" to suitably cover the culvert • Install rock energy dissipater at the culvert outlet • Discharge culvert onto rock energy dissipater. Rock inlet and outlet to top of culvert. Use 12" diameter sound rock.
50	**46**	2116	Stream crossing: culvert	**H**	**H**	**H**	**75**	Grading	**DESCRIPTION** At this site a principal ranch road crosses a 6-acre ephemeral stream in open prairie grasslands. The crossing consists of a 12" x 30' metal culvert. The inlet to the culvert is plugged about 50% and will need to be cleaned. The outlet shotgunned about 5' above the stream channel causing some erosion. The pipe was placed on top of a second pipe laid parallel to the road. This second pipe acts as a small crib to support the steep fill prism. The crossing volume is 30 cy with fill being a maximum of 6 feet thick. To the south of the crossing the inboard ditch has plugged due to livestock traveling up and down the grassy cutbank. The plugging of the ditch has caused water in the inboard ditch to pond and saturates the fill prism. This in turn resulted in a 40' long, 10' wide and 8' deep gully that eroded into the road prism narrowing the road to less than 8'. A new 18" x 30' long plastic ditch relief culvert was subsequently installed at the gully but this pipe was placed at shallow gradient and the outlet is shotgunned and actively eroding. Pipe does not appear to receive much flow. About 60' south of the crossing a 40 foot long segment of the road cut has slumped onto the road narrowing the road a few feet. **RECOMMENDATIONS** • Replace existing 12" metal culvert with new 24" x 30' pipe o Remove crib pipe o Place new culvert at stream grade o Armor pipe to top of culvert and add rock energy dissipater • Remove the 18" ditch relief culvert • Rebuild the road prism to maximum 16' width o Fill shall be keyed a minimum of 4' below native grade on a 8' wide keyway bench o Fill shall be brought up to grade in thin lifts and adequately compacted o Fill embankment shall not exceed 1.5:1 slope • Install 50' long 6' deep subdrain along the back edge of the road immediately south to the stream crossing o Pipe should discharge into bottom of the gully • Add 18" x 30' culvert 100' south of the stream crossing (STN 2010) • Additional work may be required to finalize prescriptions at this site

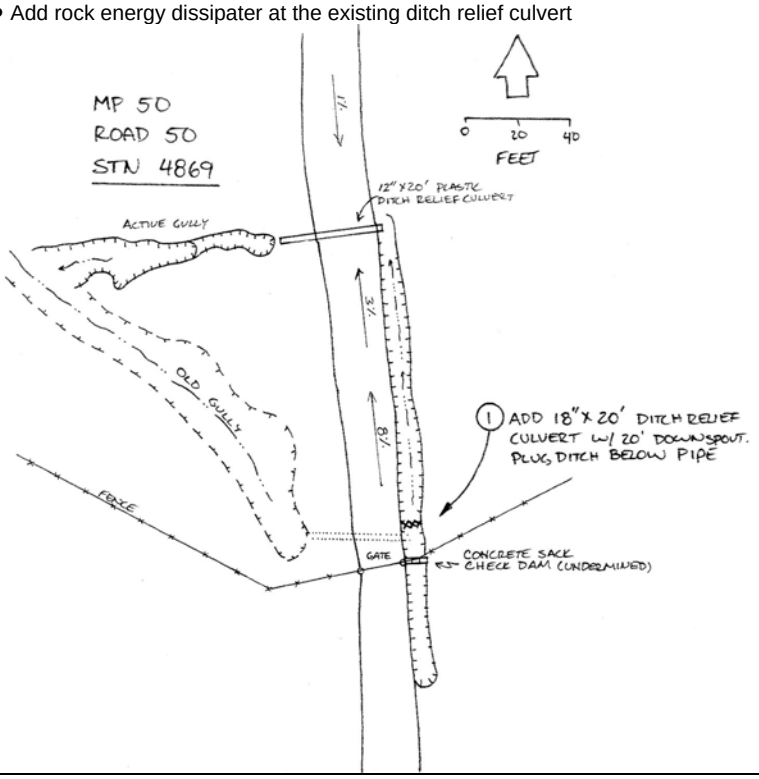
ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS

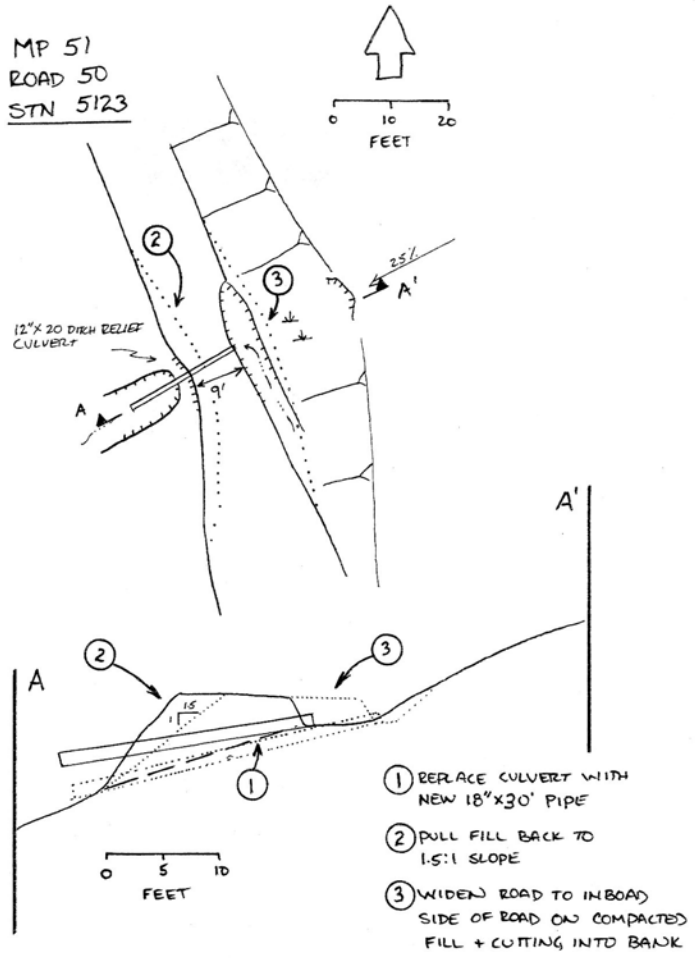




ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
50	**47**	3235	Ditch relief culvert/ Stream crossing: diverted	**L**	**M**	**M**	**20**	1600 Grading	**DESCRIPTION** At this site the road crosses an ephemeral stream draining a roughly 14 acre basin. About 20' north of the crossing is a 12" x 20' metal ditch relief culvert. Runoff from the stream is collected in the inboard ditch and presently most of the flow is directed 20' north to the ditch relief culvert (STN 3255). However, the inboard ditch does not have a strong positive gradient to the culvert and it would not take much to have flow diverted south 200 feet down the inboard ditch to a 12" ditch relief culvert. This diversion has likely occurred in the past given that the inboard ditch is deeply eroded. **RECOMMENDATIONS** • Add 24" x 20' culvert at the stream crossing. Place pipe at natural stream grade. • Discharge culvert onto rock energy dissipater. Rock inlet and outlet to top of culvert. Use 12" diameter sound rock. • Plug inboard ditch above and below the new culvert to prevent flow from being diverted along the ditch • Add 18" x 20' ditch relief culvert 250 feet north (STN 3508) 
50	**48**	3869	Stream crossing: culvert	**L**	**LM**	**M**	**20**	Grading	**DESCRIPTION** 12" x 30' culvert at a draining a seasonal spring and 13 acre ephemeral stream. Pipe is undersized for calculated 50 year flow. Plugging of culvert would divert the stream down the inboard ditch to site 47. Equivocal evidence of past diversions. There is a long inboard ditch draining to the culvert. **RECOMMENDATIONS** • Replace existing culvert with 30" x 30' new culvert • Discharge culvert onto rock energy dissipater. Rock inlet and outlet to top of culvert. Use 12" diameter sound rock. • Add 18" x 20' ditch relief culvert 125 feet up the road (STN 3700).

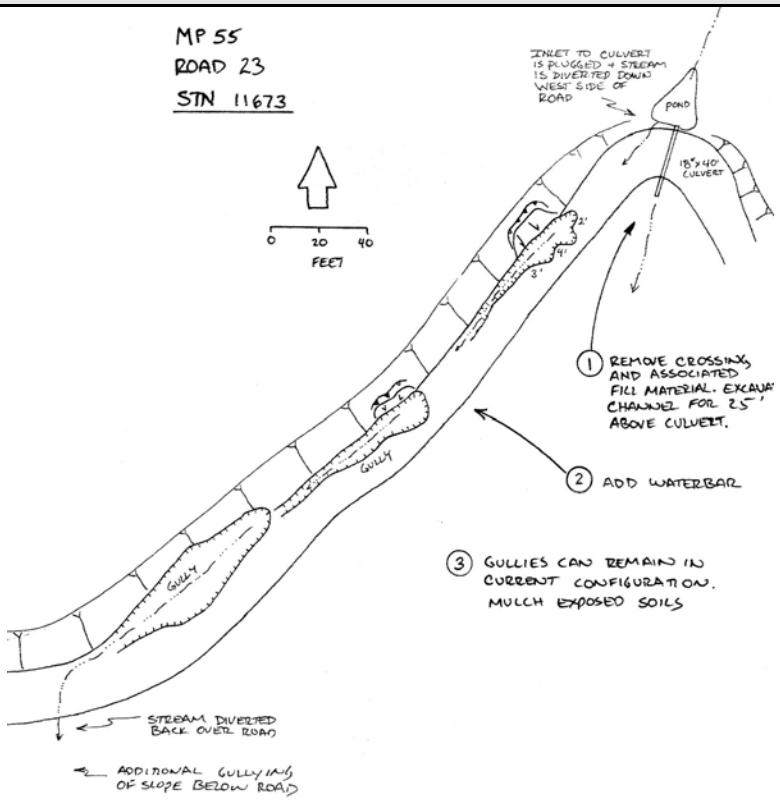
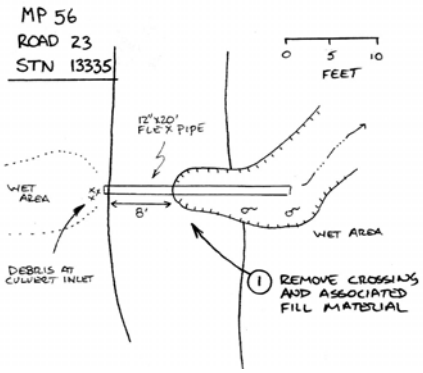
ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
50	**49**	4181	Stream crossing: culvert	**L**	**L**	**M**	**20**	1600 Grading	**DESCRIPTION** 12" x 35' metal culvert at an ephemeral stream draining a 9 acre basin. The culvert is shotgunned about 4' over the channel. Pipe is rusted and should be replaced. Adjacent to the crossing is a water trough for livestock. A large gully has formed below the road but I suspect this is a relic feature. **RECOMMENDATIONS** • Replace existing pipe with 24" x 30' culvert. Place culvert at natural stream grade. • Discharge culvert onto rock energy dissipater. Rock inlet and outlet to top of culvert. Use 8" to 12" diameter sound rock 

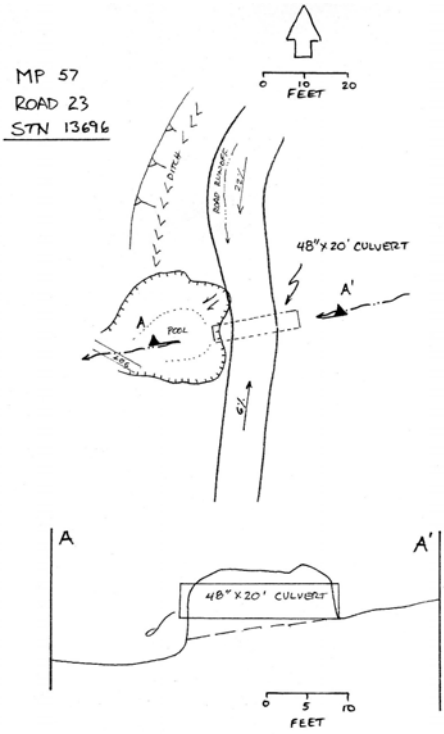
ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
50	**50**	4869	Ditch relief culvert	**LM**	**M**	**MH**	**50**	1600 Grading	**DESCRIPTION** This is a 12" x 20' long new plastic ditch relief culvert. The culvert drains about 160 feet of inboard ditch which has eroded resulting in a 10' wide and 4' deep gully. A concrete sack check dam was installed at the gate (located 145 feet south of the culvert) but is undermined and largely ineffective. An 80' long gully 2' to 4' deep gully is found at the outlet of the recently installed ditch relief culvert. Continued erosion is expected. **RECOMMENDATIONS** • Add 18" x 20' ditch relief culvert with 20' downspout at STN 4789 (located 80 feet south of the existing culvert) o Add rock energy dissipater at the culvert o Plug the ditch below the proposed culvert to prevent flow from bypassing the inlet • Add rock energy dissipater at the existing ditch relief culvert 

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
50	**51**	5123	Ditch relief culvert	**LM**	**LM**	**LM**	**0**	Grading	**DESCRIPTION** 12" x 20' ditch relief culvert. Outlet to the culvert is shotgunned several feet resulting in gully at the outlet that has narrowed the road to 9'. Fill prism at this site is slightly oversteepened. Presently the crossing does not pose a significant erosion problem but the road may be too narrow for truck use. If the road is too narrow the road can be widened to a 14' width by cutting into the bank and moving the road inboard. This will require replacing the existing pipe with new 18" diameter culvert. **RECOMMENDATIONS** • Replace existing culvert with new 18" x 30' ditch relief culvert. Place culvert at base of fill • Add rock energy dissipater at culvert outlet • Widen the road inboard 6 feet by cutting into the bank. Lay cuts back to a 1.5:1 to 2:1 slope 

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
50	**52**	6002	Stream crossing: culvert	**L**	**M**	**M**	**15**		**DESCRIPTION** 18" x 40' plastic pipe at an ephemeral stream draining a 21 acre basin. Inlet to the culvert is partially plugged and should be cleaned, otherwise the pipe appears OK. Calculations show the pipe is well undersized for the design 50 year flood. This section of road does not appear to be used very often and possibly this crossing could be abandoned. **RECOMMENDATIONS** District should evaluate the long term need for this road. If the road is not needed then this pipe can be removed and the crossing abandoned. If the road is needed then the pipe should be replaced. **Option 1** • Replace pipe with 30" x 40' culvert. Place pipe at natural stream grade. • Discharge culvert onto rock energy dissipater. Rock inlet and outlet to top of culvert. Use 12" diameter sound rock. **Option 2** • Abandon crossing by removing pipe and associated fill. About 15 cy of fill material will need to be removed.
51	**53.1**	320	Steep Road	**L**	**M**	**M**	**0**		**DESCRIPTION** 790 foot long segment of road/tractor trail climbing up the fall line of the hillside at a 23% grade. Because the road receives little use much of it is grassed over and shows little signs of recent erosion. However, roads of this grade and orientation often result in erosion with use and should be avoided. **RECOMMENDATIONS** Abandon through non use or limit to seasonal ATV use.
51	**53.2**	1324	Plugged ditch relief culvert	**L**	**L**	**L**	**5**	Grading	**DESCRIPTION** 12" x 20' plugged aluminum ditch relief culvert on old ranch road. Pipe is no longer functioning. Road receives little use and cross drain in not necessary. **RECOMMENDATIONS** • Remove pipe and add 5 rolling dips/ waterbars at 150' spacings
23.1	**54**	306	Steep road	**MH**	**MH**	**MH**	**10**		**DESCRIPTION** 500 foot long segment of seasonal ranch road climbing up to pond at an 18% grade. The road is poorly drained and water has been diverted down the alignment resulting in a 2' wide, 1' deep gully. The steep nature of the road will make it difficult to drain and still allow vehicle passage. A secondary upgraded bypass road climbs up the hillside to the north. This road does not show signs of erosion since it is mostly grassed over. **RECOMMENDATIONS** • Add two large dips at STN 306 and 416 to break up drainage. Because of the steep grade installation of these dips may limit vehicular access. If a smooth road bed is required at this location then road can be regraded with inboard ditch and two 18" ditch relief culverts installed. • For year round or more intensive use the road should be drained by ditch relief culverts and about 500 feet of the road rocked.
23.2	**54.1**	2820	Road drainage	**LM**	**LM**	**L**	**0**		**DESCRIPTION** About 9000 feet of infrequently used ridgetop ranch road. Road is in rough shape from low use and lack of maintenance but suitable for seasonal ranch use. Because the road receives little use much of it is grassed over and in combination with low gradient shows little signs of recent erosion. **RECOMMENDATIONS** No treatment require for infrequent seasonal ranch use. Increased use would necessitate installation of additional dips to better drain the road surface.

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
23.3	**54.2**	10800	Road drainage	**L**	**M**	**M**	**0**		**DESCRIPTION** Steep road segment descending at a 30% grade following the fall line of the hillside. Because the road receives little use much of it is grassed over and shows little signs of recent erosion. However, roads of this grade and orientation often result in erosion with use and should be avoided. **RECOMMENDATIONS** • Abandon road through non use
23.3	**55**	11673	Stream crossing: culvert	**H**	**H**	**H**	**100**	1600 Grading	**DESCRIPTION** This is an 18" x 40' plastic pipe where an infrequently used ranch road crosses a 34 acre intermittent stream. The culvert has completely plugged with sediment and the stream has been diverted to the south west where it has eroded a 280' long, 14' wide and 6' deep discontinuous gully. Additional erosion may have occurred below the point where runoff is diverted back over the road and down the stream. Crossing volume is about 30 cy with maximum fill depth of 5' **RECOMMENDATIONS** **Option 1: Abandon crossing** • Remove crossing by excavating all fill from the channel to create a 5' wide channel bottom with banks laid back to a 1.5:1 slope. About 30 cy of material will need to be excavated. Excavated material can be placed in the gully. • Excavate channel above culvert for 25' to remove material backed up behind inlet • Seed and mulch exposed soils • Add 1 large dip 150' below the crossing to drain the gully. It is not necessary to back fill the gully if road is to be abandoned • Mulch exposed soils • Conform to Fish and Game 1600 permit • Additional work will be required to finalize design requirements **Option 2: Upgrade Crossing** • Replace existing culvert with 36" x 30' new culvert o Armor inlet and outlet to top of culvert o Add rock energy dissipater at outlet o Regrade road at crossing to create critical dip. This will require creating a "hump" on the west side of the crossing. • Clean and backfill gully with compacted earth. About 145 cy of fill material will be needed. Most of this material can be obtained onsite by breaking down the outside edge of the road to back fill gully. Fill shall be adequately compacted. • Install new rolling dips on flatter segment of road • Seed and mulch exposed soils • Conform to Fish and Game 1600 permit • Additional work will be required to finalize design requirements

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
23.3	**55**	11673	Stream crossing: culvert	**H**	**H**	**H**	**100**	1600 Grading	
23.3	**56**	13473	Stream crossing: culvert	**H**	**H**	**M**	**10**	1600 Grading	**DESCRIPTION** This is a partially washed out 12" X 20' flex pipe installed at small ephemeral stream draining a 7-acre basin. A small 12' wide, 15' long and 5' deep gully has formed at the outlet of the crossing narrowing the road to about 8'. Most of the erosion is attributed to subsurface sapping. Inlet to the pipe is about 60% plugged. Water appears to pond at the inlet causing the ground to become wet and boggy. Livestock contributed to the problem by breaking down the soils around the pipe. **RECOMMENDATIONS** **Option 1: Abandon crossing** • Remove crossing by excavating all fill from the channel to create a 3' wide channel bottom with banks laid back to a 1.5:1 slope. About 15 cy of material will need to be removed from the crossing. • Seed and mulch exposed soils **Option 2: Upgrade Crossing** • Replace existing culvert with new 18" x 20' culvert • Armor inlet and outlet to top of culvert • Add rock energy dissipater at the culvert outlet • Add critical dip 

ROAD	MAP POINT	DISTANCE	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (CY)	PERMIT	DESCRIPTION and RECOMMENDATIONS
23.4	**57**	13696	Stream crossing: culvert	**L**	**M**	**M**	**50**	1600 Grading	**DESCRIPTION** This is a 48" x 20' plastic culvert where an infrequently used ranch road crosses a large intermittent stream. The stream drains a 268 acre basin and the pipe is well undersized for the design 50 year flow. Aerial photographs show that this site had washed out, probably in association with the 1990's El Niño storms. Remnants of the original 36" diameter CMP are found up the road. The outlet of the pipe is shotgunned 5' above the stream channel. About 50 cy of fill material reside at the crossing with maximum depth of fill of 9 feet. **RECOMMENDATIONS** District must evaluate the long term use of this road. If the road is not required then the culvert can be pulled and the crossing abandoned. If the road is needed then the culvert should be replaced and the drainage structures installed on the steep road segment leading to the crossing from the east. Bare in mind that the steep road segment (MP 58) drops at up to a 22% grade down the fall line of the hillside and may prove difficult to drain. **Option 1: Abandon crossing** • Remove crossing by excavating all fill from the channel to create a 10 wide channel bottom with banks laid back to a 1:1 slope. About 60 cy of material will need to be excavated. • Seed and mulch exposed soils • Conform to Fish and Game 1600 permit • Additional work will be required to finalize design requirements **Option 2: Upgrade Crossing** • Replace existing culvert with 72" x 30' new culvert • Armor inlet and outlet to top of culvert • Maintain critical dip • Seed and mulch exposed soils • Conform to Fish and Game 1600 permit • Additional work will be required to finalize design requirements 
23.4	**58**	14350	Poorly drained road	**L**	**M**	**M**	**50**		**DESCRIPTION** 2300 feet of steep (12% to 20%) gradient ranch road descending to stream crossing at MP 57. The road is poorly drained with few drainage structures present. Portions of the road are orientated along the fall line of the hillside and this in combination with the steep grade will make draining the road difficult. Road is vegetated over and receives little use which is why little erosion is apparent. Increased use or winter use will cause additional erosion. **RECOMMENDATIONS** • Evaluate long term use of the road (See MP 57) • Drain by installing rolling dips (~ 15) at 150 foot maximum spacings (if seasonal truck access is necessary) or drain into inboard ditch with frequent ditch relief culverts (if frequent truck and/or winter use is required. • Long term maintenance of this road will be required

9.0 APPENDIX 3: SITE PHOTOGRAPHS

APPENDIX 3: SITE PHOTOGRAPHS
Driscoll Ranch Road Inventory

MP 6: Failing wood retaing wall at cuvlert outelt.

MP 8: Gully at culvert outlet

MP 9: Concentrated road runoff

MP 9: Outlet erosion

MP 11: Long eroding inbaord ditch

MP 12: Rail car bridge over Harrington Creek.

MP 12: Looking at right bank abutment of railcar bridge

MP 13: Looking up road.

MP 14: Long inboard ditch

MP 15: Long inboard ditch

MP 16: General site photograph

MP 16: 24" culvert inlet. Culvert is undersized and

MP 16: Looking upstream

MP 17: Poorly drained rocked road extending up falline

MP 18: 24" culvert on infrequently used tractor trail

MP 19: Ford crossing over Harrington Creek.

MP 21: General site photograph

MP 21: Gully armored with wood.

MP 22: Shotgunned culvert outlet

MP 24: Deep gully below ditch releif cuvlert

MP 26: Hole in road needing to be backfilled

MP 28: Inlet to cuvlert

MP 28: Steep road reach leading to cuvlert

MP 29: Segement of infrequently used ranch road


MP 31: Plugged culvert outlet.


MP 32: Gully at outlet of ditch relief cuvlert


MP 34: Photograph of cuvlert inlet. Pipe is rusted out


MP 34: Inlet to crossing - note failing concrete headwall


MP 38: Inlet to culvert


MP 40: Eroding road surface due to conctrated road


MP 41: Mid portion of long inbaord ditch


MP 41: Eroding long inboard ditch.


MP 41: Outlet of eroding long inboard ditch


MP 42: Culvert outlet


MP 43: Wet area


MP 43: Rusted culvert at wet area


MP 44: Wet area


MP 45: Culvert inlet


MP 46: General site photo


MP46: Gully narrowing road.


MP 46: General site photograph


MP 46: Cutbank failure slumped onto road.

MP 47: General site photograph

MP 47: Road drianage leading into site 47

MP 48: Looking up eroding road

MP 48: 12" ditch relief cuvlert intercepting ditch flow and

MP 49: Shotgunned culvert outlet

MP 49: Rusted pipe

MP 50: Concete sack headwall used to curb ditch

MP 50: Gully at outlet of cuvlert

MP 55: Looking up at upper gully.

MP 55: Looking down lower gully

MP 57: Culvert outlet

MP 57: General site photograph

MP 58: Looking up steep gradeint road.

MP 58: Looking up the upper portion of a steep gradinet

ROAD AND TRAIL EROSION INVENTORY: LA HONDA OPEN SPACE PRESERVE

AUGUST 2007




Prepared for:

Midpeninsula Regional Open Space District
330 Distel Circle
Los Altos, CA 94022

Job No: MPEN-LAHONDA-360

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TABLE OF CONTENTS

1.0 INTRODUCTION

This report summarizes the preliminary findings of a road and trail erosion inventory of the La Honda Creek Open Space Preserve (LHCOSP). This investigation was undertaken at the request of the District to evaluate the condition of roads and trails with respect to erosion and to identify maintenance and management needs.

The LHCOSP is a 2078 acre preserve located within the La Honda Creek and Harrington Creek drainages, tributaries to San Gregorio Creek (Figure 1). The San Gregorio Creek is listed as impaired by sediment under the Clean Water Act, Section 303(d) and provides habitat for steelhead trout and coho salmon. Steelhead trout are listed as threatened and coho salmon as endangered under the U.S. Endangered Species Act (ESA).

The La Honda Creek watershed is underlain by erodible and potentially unstable geologic substrate and field observations reveal that roads have been and continue to be a significant source of anthropogenic sediment in the watershed. Although erosion in this area is a natural process acting within any watershed, problems may arise when more sediment is contributed to the watercourse than the stream can mobilize. This can result in modifications to the stream geometry and local degradation of water quality. An important component of watershed protection is to minimize the degree of sediment delivery from roads.

Presently the La Honda Creek Open Space Preserve is closed to the public except under special permit. The District is in the process of evaluating the resources in LHCOSP in order to prepare a long term master plan for the Preserve. Part of that process is to evaluate the existing condition of the road and trail network with respect to erosion and sedimentation and to assess the suitability of those roads for future use. This will aid managers in determining possible efforts to improve road and trail conditions and in setting goals for future landuse. The District's objectives are to develop a suitable road and trail network, reduce sediment delivery to the aquatic system, and to reduce maintenance costs by upgrading or decommissioning roads and trails to District standards.

1.1 OBJECTIVES

The stated objectives of the road and trail inventory are:

- Systematically inventory the condition and erosion potential along approximately 14 miles of roads and trails in the Preserve. The inventory focuses on those sties where 1) there is an existing or potential risk for future sediment delivery to streams that could significantly impact water quality and/or 2) where significant road damage has or could occur and where upgrading the road or trail will be required.
- Assess long-term stability and maintenance requirements associated with the existing road and trail network.
- Develop appropriate and feasible repairs to minimize future erosion and/or repair damaged segments of the road and trail system.
- Prioritize implementation treatments to assure economic, biological, management and physical effectiveness.

- Analyze the erosional effects of past and current land management practices and recommend possible changes in management and maintenance techniques to improve the Preserve's roads and trails and reduce sediment delivery to the aquatic system.

2.0 PHYSICAL ENVIRONMENT

2.1 GEOGRAPHIC SETTING

The La Honda Creek Open Space Preserve occupies 2078 acres in the upper headwaters of La Honda and Harrington Creek watersheds (Figure 1). The area is characterized by moderate to steep mountainous terrain dissected by narrow and steep gradient ephemeral to perennial streams. Slopes range from 20% near the ridge top to 75+% locally along the valley bottoms of the larger tributaries. The hillslopes are slightly convex, rounded toward the ridge tops with local steep streamside slopes found at the base of the hillsides. The ground is locally benchy consistent with deep-seated landsliding. Elevations range from 640 feet along the valley bottom of La Honda Creek and 2200 feet along the upper most ridge top.

The majority of the preserve is characterized by open prairie grasslands that have been historically used for cattle grazing. The northeast facing slopes in the northern portion of the preserve and the bottom of the larger drainages are characterized by advanced second growth redwood and Douglas-fir.

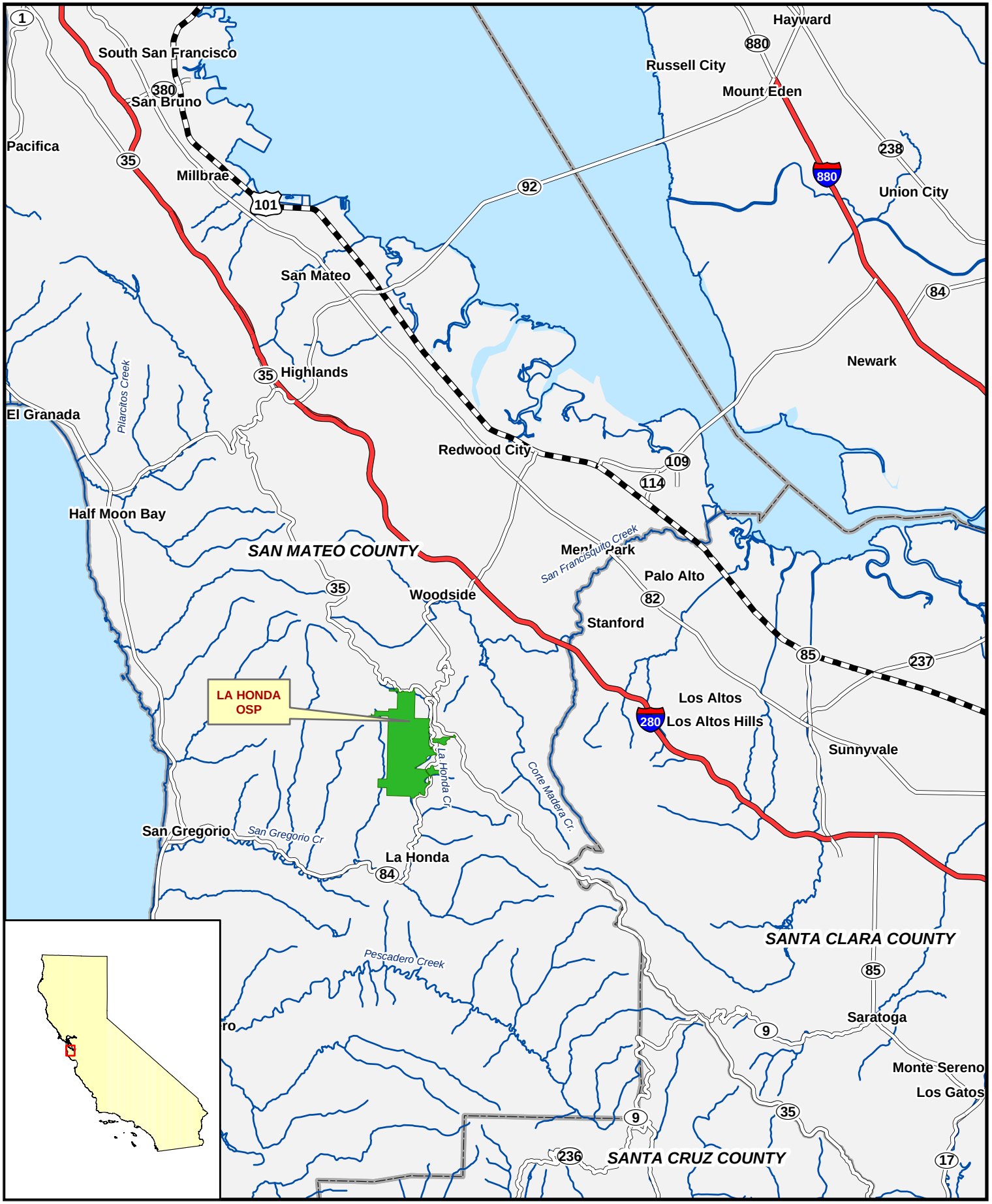
The preserve is divided into two areas, north and south, accessed by separate road and trail systems. The southern portion of the preserve, presently closed, has been historically used for grazing in the large grassland areas. In the northern portion of the preserve, accessible by Allen Road and Skyline Blvd., historic uses include upland grazing in the grassland areas, timber production and residential use.

2.2 GEOLOGIC SETTING

The preserve is underlain by a sequence of Tertiary-age marine sediments that are tightly folded and faulted (Brabb, 1970). The preserve is centrally dissected by the east-west trending inactive Woodhaven fault that separates the northern and southern portions of the preserve. This fault juxtaposes Butano Sandstone to the north against shale and mudstone of the undifferentiated Lambert Shale and San Lorenzo Formation (Figure 2).

The Butano Sandstone consists of massive medium to coarse-grained sandstone with local siltstone and shale interbeds (Brabb, 1970). This rock is prone to erosion in areas where it is exposed and broken down by vehicular traffic. The resulting soils are near cohesionless and as a result erode easily off of the roadbed during storms. The southern portion of the preserve is underlain by undifferentiated Lambert Shale and San Lorenzo Formation. These rocks consist primarily of mudstone and shale that is prone to soil creep and deep-seated landsliding.

The relative stability of slopes is often influenced by the abundance of shale, which is more susceptible to surficial weathering processes, and the frequency and orientation of joints and shears. Steeper slopes tend to be underlain by more competent bedrock and the gentler slopes underlain by less resistant and weaker shale.



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SITE MAP
LA HONDA OSP
ROAD AND TRAIL INVENTORY

FIGURE 1
Job: MPEN-LAHONDA-360
Date: 6/9/2007

Regional landslide mapping reveals portions of the preserve are underlain by several large deep-seated landslide complexes (Wentworth et al., 1997). These slides are characterized by a somewhat cohesive slide mass with a relatively deep failure plane compared to shallow debris slides and debris flows. Many deep-seated landslides exceed 10-acres with a failure plane extending 50 feet or more into bedrock.

Much of the preserve is underlain by relatively soft prairie soils derived from shale. These soils are typically found in the open grassland areas that dominate the southern portion of the Preserve. Soils in these areas are often wet in the winter and inherently prone to erosion especially where water is concentrated. Roads crossing thee soils tend to rut easily with use. A brief inspection of nearby ranch areas showed that many year round roads routed through the open grassland areas were graveled.

3.0 METHODOLOGY

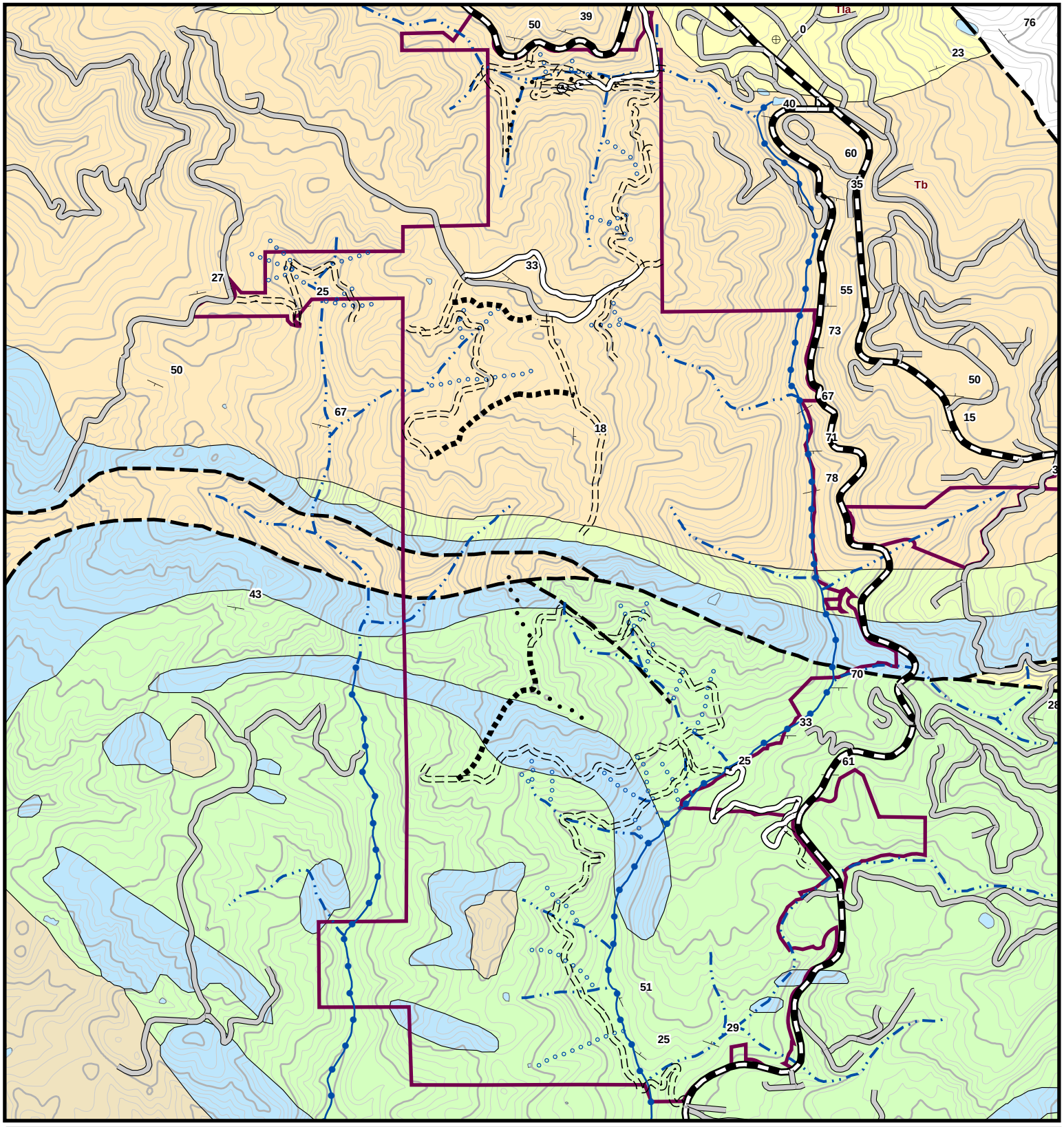
The inventory of sediment sources along roads follows a modified and simplified version of the Redwood National Park road inventory procedure, which has been used successfully by many researchers in the Pacific Northwest.

Existing and potential erosion problems were systematically inventoried along the subject roads and trails. At each problem site and at each stream crossing a variety of information was collected, including:

- Dominant erosional process
- Nature and magnitude of existing and potential erosion problems
- Measurements of key geomorphic features (to aid in assessing the potential risk of erosion)
- Treatment prescriptions
- Site photo and sketch at the larger sites

3.1 TREATMENT PRESCRIPTIONS

Preliminary appropriate and cost-effective prescriptions were developed for each site or road/trail reach to minimize or prevent future erosion and to upgrade the road/trail to acceptable standards generally specified by International Mountain Biking Association (IMBA, 2001), California Forest Practice Rules, Handbook for Forest and Ranch Roads (PWA, 1994) and San Mateo County 2001 Trails Plan. Where feasible, emphasis was placed on developing prescriptions that minimize future maintenance. Treatment prescriptions outlined in this document are preliminary and additional work may be required to conform to regulatory permitting requirements.



1:24,000

Feet
0 500 1,000

Geologic Contact
- Contact: certain
- Contact: approx. located
- Fault - certain
- Fault - approximate
- Fault - concealed

Bedding
- Bedding
- Approx bedding
- Horizontal bedding
- Overturned bedding
- Vertical bedding

Geologic Units
- Tpt
- Tmb
- Tla: Lambert Shale
- Tls
- Tst: Two Bar Shale
- Tb: Butano Sandstone

Roads/Trails
- Highway
- Paved
- Gravel
- Dirt
- Trail
- Ranch
- Tractor

Streams
- Ephemeral
- Intermittent
- Perennial

Geologic map from Brabb and others, 1999
Deep-seated landslides not mapped

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GEOLOGIC MAP
LA HONDA OSP
Midpeninsula Regional Open Space Preserve

FIGURE 2

Job: MPEN-LAHONDA-340
Date: 6/9/2007

3.2 TRAIL CONDITIONS AND TREATMENT PRIORITY

Treatment priorities were qualitatively assigned to each inventory site based upon a number of independent factors, including expected potential and magnitude for future erosion, degree of existing or potential road /trail damage and cost effectiveness of treating the site.

TREATMENT PRIORITY	
HIGH	Sites where significant road/trail damage has or could occur that impedes usage or result in high maintenance costs, and/or have the potential for greater than 10 cubic yards of future sediment delivery, and/or have the potential for chronic fine-grained sediment input. Expected to erode during average winter storms and/or have the potential to result in significant erosion/trail damage during infrequent large magnitude storms.
MODERATE	Expected to erode during less frequent storm events damaging the road/trail and impeding access and/or delivering greater than 10 cy of sediment to the aquatic system. Includes all stream crossings where culverts are rusted or significantly undersized but have not yet failed.
LOW	Unlikely to erode more than 10 cy of sediment during large infrequent events, or have low potential of sediment delivery to the aquatic environment.

It is important to keep in mind that the La Honda Creek Open Space Preserve currently receives little traffic and most of that occurs in the dry summer months. The condition and treatment needs are based on this current condition. However, if use changes for example for seasonal to year round or from infrequent patrol to multi use then the potential for future erosion and need for treatment may change as well. To the extent feasible, these issues have been described in the road log.

4.0 RESULTS AND DISCUSSION

This report provides basic information to facilitate road and trail upgrades to improve water quality, while maintaining opportunities for ranger patrol and public recreation to the extent feasible. Road/trail inventory information contained herein includes inventory site locations, site descriptions, site rankings, site photos and sketches on larger sites. It provides approximate estimated repair costs that will assist the District in implementing corrective actions to damaged roads/trails while improving watershed quality and maintaining recreational opportunities. Results of the road/trail inventory are summarized as follows:

TABLE 2: Summary of Inventory Sites

The table provides a summary of inventoried site descriptions, treatment prescription, treatment priority and approximate cost estimate for all inventoried sites.

APPENDIX 1: Road/Trail Erosion Inventory Log

The appendix provides a detailed site description and recommended treatment prescription of each inventoried site. The site description includes; road/trail number, map point number, road/trail distance in feet, feature type, road/trail damage, treatment priority, future erosion potential in cubic yards, and permitting requirements (e.g. Department Fish and Game 1600 permit and/or San Mateo County grading permit).

4.1 EROSION INVENTORY

A total of 96 sites were inventoried along the 14.9 miles of road. Inventoried sites included all stream crossings, areas of poor road drainage, and landslides. For the purpose of this study all stream crossings and ditch relief culverts were inventoried regardless of condition. Road drainage and landslide sites were only inventoried if they had the potential to result in significant future erosion or road damage.

Of the 96 sites 45 have a Moderate to High treatment priority and therefore are recommended for some corrective measures to reduce the potential for sediment delivery or to repair damaged segments of the road (Table 1).

In general, the road and trail erosion is not currently resulting in substantial volume of sediment delivered to watercourses. However, in some areas, poor trail drainage (e.g. lack of adequate waterbreaks) is resulting in chronic fine grained erosion that could result in deposition to the aquatic environment and elevated turbidity in streams during storm events. These problems can be mitigated through trail maintenance and the installation of additional waterbreaks. The most significant problems are damage to the road/trail network (e.g. eroded road/trails) but which may not have a significant impact to the aquatic system due to the long distance between the two.

Treatment prescriptions as described herein provide the preliminary information and data for the District to understand the processes at work, the magnitude of the problem at each site, a proposed solution, and an approximate estimate of cost. The treatment prescriptions proposed in this report provide a starting point from which to initiate a project that will restore or correct existing and potential problem areas. The principal prescriptions are designed to minimize and repair damage to the trail network and minimize future erosion road/trail related erosion.

TABLE 1:
NUMBER OF SITES BY EROSION PROCESS AND TREATMENT

	TREATMENT PRIORITY			
	High	*Moderate*	*Low*	***TOTAL***
Stream Crossings	8	8	30	**46**
Road Drainage	6	22	22	**50**
Landslides	1	0	0	**1**
TOTAL	**15**	**30**	**52**	**96**

a: Inventory incomplete at present for Pending sites.

As mentioned earlier, treatment priority is a function of use and desired level of stability. Therefore treatment priority may change based on the level of use the roads are to experience in the future. The recommendations outlined in Appendix 1 and summarized in Table 2 are based on the current level of use and for a relatively high level of long term road stability.

4.1.1 Stream Crossings

All stream crossings in the Preserve were inventoried regardless of their condition. The inventory identified 46 stream crossings: 33 culverts, 9 unculverted fords, and 4 bridges. Of these sites, 16 were rated Moderate or High treatment priority and are recommended for upgrades. A few others may need to be upgraded if use in the preserve changes or increases.

The southern portion of the preserve generally had newly installed culverts that were adequately sized and showed few signs of problems. With few exceptions these crossing are expected to perform well into the future. In the northern portion of the preserve stream crossing conditions were more problematic. Many of these crossings are old and have not received much maintenance. As a result several are failing.

All of the ford crossings showed little signs of significant erosion but can be a chronic source of fine grained sediment. Moreover such crossings can easily rut and become muddy with increased use. For these reasons two are recommended to be upgraded to a culverted crossing.

There are three bridge crossings in the Preserve. The southern most bridge crossing is supported by an old log crib wall that is rotting and beginning to fail. The long term stability of this bridge is in question.

Stream crossings account for slightly more than half of expected future sediment yield along the inventoried road network. Most of the erosion is attributed to two crossings that are actively failing and two others where the stream is diverted.

4.1.2 Road Surface Erosion

Erosion of the road or trail surface accounts for slightly less than half of all expected future sediment yield and the bulk of fine grain sediment. However, roads near watercourses can be a chronic source of fine-grained sediment leading to increased turbidity levels in streams.

Road conditions within the preserve are mixed. Portions of the road network are well drained with few signs of significant erosion. Other segments are poorly drained and although significant erosion is not presently apparent, there is the potential for future erosion to occur. The current lack of problems in these poorly drained areas is partially attributed to the low use the Preserve receives in concert with the fact that many of the roads in the open grassland areas are vegetated over with grass. The grass tends to stabilize the road bed and minimize the amount of erosion. With changes in road use the vegetative cover could become disturbed increasing the potential for erosion and road damage.

The inventory identified 27 road segments with a Moderate to High potential for future erosion and/or road damage, especially under increased use. These sites are not eroding rapidly but may be a chronic source of fine-grained sediment to the stream network raising turbidity levels. The majority of these sites were associated with either inadequate or undersized drainage structures (i.e. waterbars, rolling dips, ditch relief culverts) or areas where the road/trail gradient exceeds 15%. Additional problems can occur in the open grassland areas where soft soils underlie the road surface. Because of the weak soils, vehicles, mountain bikes and cattle can easily break down waterbars. On inclined roads in grassland areas, even with a mild gradient, this can result in chronic fine-grained sediment to be delivered to watercourses. As mentioned earlier, most of these roads are not actively eroding primarily because the road segments are mostly grassed over which protects them from erosion.

4.1.3 Landslides

The road inventory did not identify any areas where landsliding has significantly impacted the roads. This is probably because most of the roads do not cross very steep slopes. It should be

recognized, however, that much of the preserve is underlain by large-scale deep-seated landslides and several of these in the southern portion of the preserve are probably periodically active. Future movement on these slides could impact the road/trail network. The most likely scenario would be small scale cracks offsetting the road prism that would require short segments of road to be reconstructed. There is little evidence of large-scale catastrophic failures.

The only stability problem noted was a 200 foot long segment of the main road accessing the cabin on La Honda Creek in the northern portion of the Preserve. At this site about 8 to 10 feet of the road fill supported by an old log crib wall that is starting to rot out and is beginning to fail. Failure could undermine the road and deliver as much as 150 cy of sediment to the stream system.

4.2 TREATMENT COSTS

The total cost to upgrade the 45 sites with a moderate to high sediment treatment priority is estimated at $128,000. An estimated cost per each site is summarized in Table 2. Estimated costs exclude administration, construction control, and work required obtaining necessary permits. These costs could be as much as 75% of the estimate cost outlined above. All costs should be viewed as approximate and are presented in this report for general planning purposes only.

5.0 RECOMMENDATIONS

The recommendations outlined in this report are based on the assumption that the District's goal is to maintain a similar level of public use and access on the existing system of roads and trails, where compatible with the overarching goal of reducing existing and potential sedimentation to a significant degree. To correct existing erosion problems and to significantly reduce the potential for future sedimentation from problem sites, there are three main actions the District can take:

1. **ROAD/TRAIL TREATMENTS**
   Treat all High and Moderate priority sites as shown on Figure 3. Detailed treatment prescriptions for each of these sites are outlined in Appendix 1. Treatment prescriptions may change based on changes in future road use.

2. **MODIFICATION OF ROAD/TRAIL USE**
   To the extent possible, limit vehicle access to avoid driving patrol and maintenance vehicles on seasonal roads during winter months. ATV access is acceptable. It is my understanding that the District already restricts winter use on these roads.

3. **EVALUATE FUTURE USE**
   The District should evaluate future use within the preserve. Data and conclusions presented in Appendix 1: Road Inventory Log can be applied to assess future land use. In general the following should be considered when evaluating future use of the road and trail network:

   - Roads in open grassland areas (prairie soil) are inherently prone to erosion. These roads may need to be rocked for Patrol and Multi use.
   - Fall line roads are inherently difficult to drain. These roads should be realigned.

- Roads and trails with gradients greater than 15% are prone to erosion problems with Patrol and multi use. To the extent feasible these roads should be realigned or use limited. In some cases specific erosion control measured can be implemented to improve their use.
- Many secondary spur roads and ranch roads are probably not necessary for current use and should be formally abandoned
- Cattle grazing can potentially impacting road and trails in the wet grassland areas by breaking down drainage structures. Roads susceptible to this may need to be rocked.

6.0 REFERENCES

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IMBA, 2001. Building Better Trails: Designing, Constructing and Maintaining Outstanding Trails. International Mountain Bicycling Association, Boulder.

PWA, 1994. Handbook for Forest and Ranch Roads. The Mendocino County Resource Conservation District in Cooperation with the California Department of Forestry and Fire Protection and USDA Soil Conservation Service. By Pacific Watershed Associates, Arcata, CA, 161 pp.

Wentworth, C.M. et al., 1997. Summary distribution of slides and earth flows in San Mateo County, California. USGS Open File Report 97-745 C2.

TABLE 2: SUMMARY OF INVENTORY SITES
LA HONDA OPEN SPACE PRESERVE

ROAD	MAP POINT	FEATURE	DESCRIPTION	TREATMENT	TREATMENT PRIORITY	FUTURE EROSION (CY)	1600[1]	GP[2]	ESTIMATED COST[3]
670	**1**	Ditch Relief Culvert:	24 inch ditch relief culvert: inboard ditch partially plugged	Clean 150 feet of inboard ditch	**L**	3	N	N	$71
670	**2**	Ditch Relief Culvert:	18 inch ditch relief culvert: inboard ditch partially plugged	Clean 150 feet of inboard ditch	**L**	3	N	N	$71
670	**3**	Stream Crossing: Culvert	18 inch by 20 foot culvert. Minor erosion at outlet. Partially plugged inboard ditch	Clean 150 feet of inboard ditch; Add rock energy dissipater	**LM**	5	Y	Y	$420
670	**4**	Stream Crossing: Culvert	18 inch by 20 foot culvert. Shotgunned outlet	Replace pipe with 24 inch by 20 foot culvert; rock 50 feet of road; clean 60 feet of the inboard ditch	**LM**	17	Y	Y	$2,117
670	**5**	Road Drainage: Local Rutting	Local rutting on 3,200 feet of road. Road lightly rocked with inboard ditch	Upgrade drainage on 3,200 feet of road, install 16 new waterbreaks; rock road if use increases	**M**	10	N	N	$7,540
670	**5.5**	Stream Crossing: Bridge	Flat car bridge over La Honda Creek	Civil engineer will be required to evaluate the integrity of the bridge	**U**	0	N	N	Unknown
671	**6**	Road Drainage: Steep grade	350 feet of road at 18% to 22% grade. Steep grade makes it difficult to drain	Alternative 1- Existing Use: no treatment required. Alternative 2 - Increased use: add 100 foot long inboard ditch; two ditch relief culverts and rock 300 feet of road	**LM**	5	N	Y	$0
671	**7**	Road Drainage: Steep fall-line	Steep fall line trail. Little erosion due to low use	Alternative 1 -Existing Use: install two 100-foot long inboard ditches to drain to two dip. Alternative 2 - Increased use: install two 100 foot long inboard ditches and drain to two ditch relief culverts. Rock 400 feet of road.	**M**	10	N	Y	$1,038
690	**8**	Road Drainage: Poorly drained wet road	300 feet of poorly drained, steep wet road	Alternative 1 - Existing condition: install 300 foot long inboard ditch, add two dips; Alternative 2 - Increased use: install 300 foot long inboard ditch, add one dip and one ditch relief culvert. Rock 300 feet of road.	**M**	5	N	N	$1,085
690	**9**	Stream Crossing: Culvert	18 inch by 30 foot culvert.	Clean inboard ditch leading to culvert inlet. Rock 100 feet of road if use increases.	**LM**	5	N	N	$48
690	**10**	Ditch Relief Culvert:	12 inch ditch relief culvert. Ditch does not drain well.	Clean inboard ditch per MP 9	**LM**	0	N	N	$0
690	**11**	Ditch Relief Culvert:	12 inch ditch relief culvert: eroding inboard ditch and gully at outlet	Enlarge and rock 40 feet of the inboard ditch; Rock 20 feet of the gully at the outlet; rock 200 feet of road	**MH**	10	N	Y	$2,440
690	**12**	Stream Crossing: Earth Ford	Earth ford: stream diverted 70 feet down inboard ditch to MP 13	Replace earth ford with 18 inch x 20 culvert	**M**	5	Y	Y	$1,421
690	**13**	Stream Crossing: Culvert	Undersized culvert with shallow gully at outlet	Replace pipe with 18 inch x 20 foot pipe and clean 50 feet of the inboard ditch. Rock 125 feet of the road is use is to increase.	**LM**	8	Y	Y	$1,445
690	**14**	Stream Crossing: Earth Ford	18 inch culvert without problems	None required	**L**	0	N	N	$0
690	**15**	Stream Crossing: Earth Ford	Earth ford with minor outlet erosion	Alternative 1 - Existing condition: enlarge dip and rock outlet using 6 inch rock; Alternative 2 - Increased use: install 18 inch culvert	**LM**	3	Y	Y	$704
690	**16**	Road Drainage: Steep Road	200 feet of steep road but with little erosion due to low use	Alternative 1 - Existing condition: none required. Alternative 2 - Increased use: rock 300 feet of road	**LM**	5	N	N	$0
690	**17**	Road Drainage: Steep grassland road	200 feet of steep road but with little erosion due to low use	Alternative 1 - Existing condition: none required. Alternative 2 - Increased use: add 100 feet of inboard ditch to drain to new 18 inch ditch relief culvert. Rock 250 feet of road. Add 2 new dips.	**LM**	5	N	N	$0
690	**18**	Stream Crossing: Culvert	36 inch by 40 foot undersized culvert. Minot erosion at the outlet	Install rock energy dissipater and add 1 new dip	**LM**	3	Y	Y	$1,370
690	**19**	Stream Crossing: Earth Ford	Earth ford: Ford protected by woven geotextile fabric	Alternative 1: Install 24 inch by 20 foot culvert. Alternative 2: Install rock ford and rock 100 feet of roadway	**M**	9	Y	Y	$1,821
691	**20**	Ditch Relief Culvert:	Existing ditch relief culvert drains long ditch	Add two additional dips	**LM**	0	N	N	$943
691	**21**	Ditch Relief Culvert:	Existing 12 inch ditch relief culvert without problems	None required	**N**	0	N	N	$0
691	**22**	Stream Crossing: Culvert	30 inch by 30 foot culvert without problems	None required	**N**	0	N	N	$0
691	**23**	Stream Crossing: Culvert	24 inch by 30 foot culvert with fabric outfall	Fabric outfall can be removed	**L**	0	N	N	$50
691	**24**	Stream Crossing: Earth Ford	Earth ford with few problems. Erosion and rutting expected with increased use.	Alternative 1 - Existing condition: no treatment required at crossing, add two dips to drain roadway leading up to the site. Alternative 2 - Increased use: install 24 inch by 20 foot culvert, clean 75 feet of inboard ditch, add two additional dips to drain roadway	**LM**	5	N	N	$943

1 1600: Department of Fish and Game 1600 stream alternation permit required

2 GP: San Mateo County grading permit may be required

3 COST: Estimated cost for construction only. Costs exclude administration, construction control, mobilization and permitting.

TABLE 2: SUMMARY OF INVENTORY SITES
LA HONDA OPEN SPACE PRESERVE

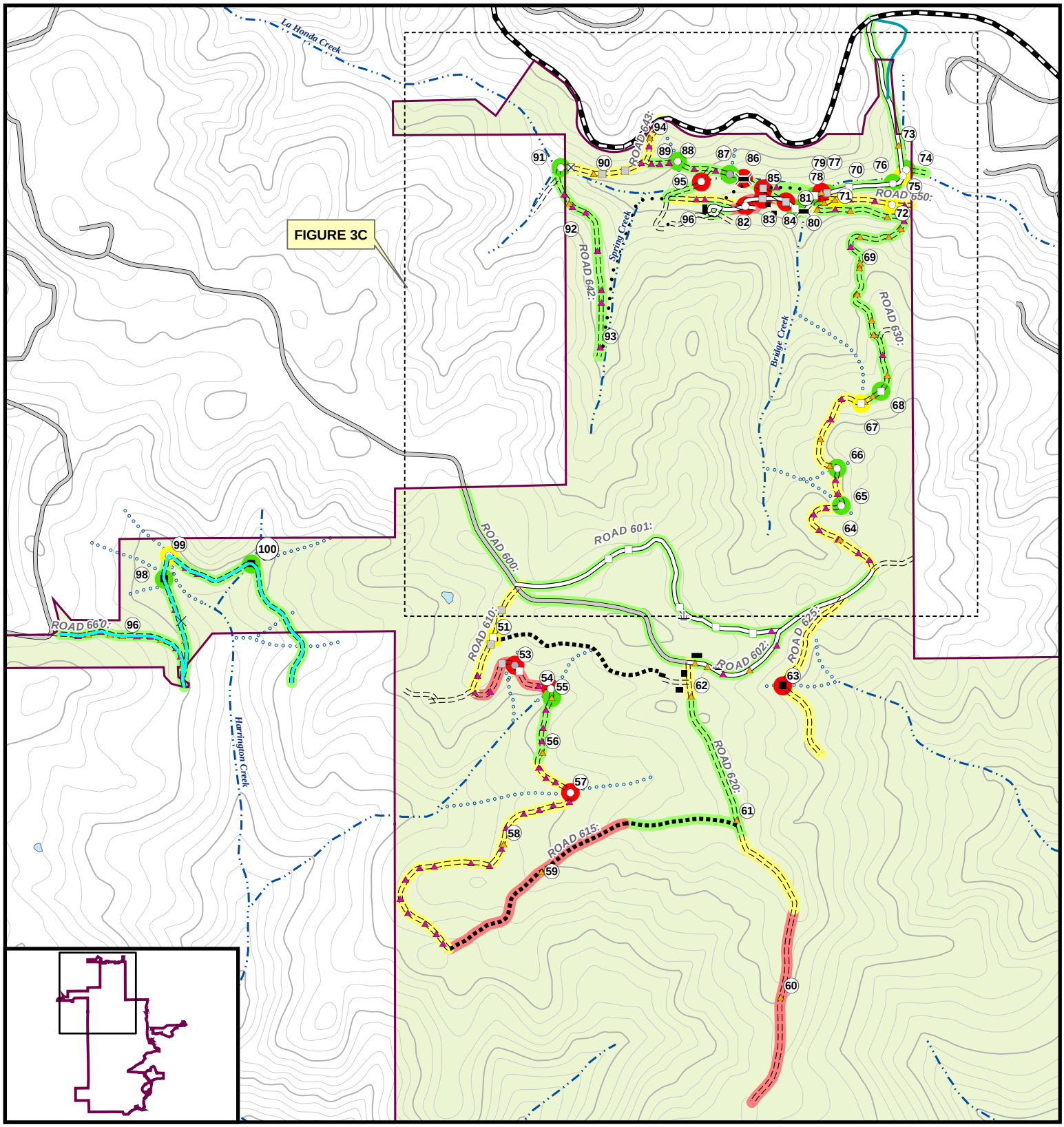
ROAD	MAP POINT	FEATURE	DESCRIPTION	TREATMENT	TREATMENT PRIORITY	FUTURE EROSION (CY)	1600[1]	GP[2]	ESTIMATED COST[3]
691	**25**	Road Drainage: Steep road	400 feet of steep road.	Alternative 1 - Existing condition: avoid winter use. Alternative 2 - Increased use: clean 270 feet of inboard ditch and rock 400 feet of road	**M**	5	N	N	$0
691	**27**	Stream Crossing: Culvert	36 inch by 30 foot culvert with minor outlet erosion	Add rock energy dissipater	**L**	2	Y	Y	$1,086
691	**28**	Road Drainage: Steep fall-line	300 feet of steep fall line road. Minor erosion due to low use	Alternative 1 - Existing condition: avoid winter use. Alternative 2 - Increased use: rock 300 feet of road	**M**	10	N	N	$0
692	**29**	Stream Crossing: Culvert	24 inch by 30 foot pope with geotextile fabric outlet. Minimal erosion	None required	**N**	0	N	N	$0
692	**30**	Ditch Relief Culvert:	6 inch ditch relief covert with plugged 50 foot ling inboard ditch	Alternative 1 - Clean 50 feet of the ditch and install new 18 inch ditch relief culvert; Rock 200 feet of road is use to increase	**M**	5	N	Y	$784
692	**31**	Road Drainage: Steep road	250 feet of steep poorly drained road. Road may be on neighboring property.	Alternative 1 - Clean 250 feet of the ditch and add a waterbreak; Rock 250 feet of road is use to increase	**M**	5	N	N	$590
692	**32**	Stream Crossing: Bridge	Bridge: Flat car bridge over La Honda Creek. Bridge is in marginal condition	Evaluate bridge stability. Most likely the bridge will need to be removed or replaced.	**MH**	100	Y	Y	$5,000 (evaluation only-removal/ replacement costs are unknown)
692	**33**	Road Drainage:	1,500 feet of poorly drained on infrequently used road	Upgrade drainage on 1,500 feet of road, install 4 new waterbreaks; clean 200 feet of inboard ditch	**LM**	5	N	N	$1,980
672	**34**	Stream Crossing: Culvert	15 inch by 20 foot culvert without problems	None required	**L**	0	N	N	$0
672	**35**	Ditch Relief Culvert: Plugged	Partially plugged 12 inch by 20 foot ditch relief culvert	Clean culvert inlet and 60 feet of the inboard ditch	**M**	5	N	N	$179
672	**36**	Road Drainage: Soft grassland	3,500 foot long road in wet, soft grassland area. Little erosion but road expected to rut with increased use.	Add 7 new dips; rock 3,000 feet of road if use were to increase.	**M**	15	N	N	$3,299
680	**39**	Trail Drainage: Fall line	Trail Drainage: Steep fall-line trail up ridge line. No erosion due to low use	Reroute trail if use were to increase	**MH**	10	N	N	$0
681	**40**	Stream Crossing: Culvert	24 inch by 40 foot culvert without problems	Clean culvert inlet, add two dips south of the crossing to break up drainage.	**L**	0	N	N	$0
681	**41**	Road Drainage: Steep	1,200 feet of steep road. Little erosion due to low use	Add 10 new dips; consider rerouting if use were to increase	**M**	10	N	N	$4,713
681	**42**	Stream Crossing: Culvert	18 inch by 20 foot culvert without problems	None required	**L**	0	N	N	$0
681	**43**	Stream Crossing: Culvert	18 inch by 30 foot culvert without problems	None required	**L**	0	N	N	$0
681	**44**	Stream Crossing: Culvert	Possible 18 inch by 20 foot culvert draining wet area. Steep 25% road in soft erodible soils.	Alternative 1 - Existing condition: check for pipe and clean inlet. Alternative 2 - Increased use:enlarge and rock 25 feet of the inboard ditch, rock 100 feet of the road. Add ditch relief culvert if pipe currently does not exist	**M**	0	N	N	$50
681	**45**	Stream Crossing: Earth Ford	Earth ford at small ephemeral stream	Upgrade to a 18 inch culvert or rock ford. Rock 200 feet of road if use is to increase	**LM**	5	Y	Y	$1,421
681	**46**	Stream Crossing: Culvert	18 inch by 30 foot culvert without problems	None required at present. Rock road is use to increase.	**LM**	0	N	N	$0
681	**47**	Stream Crossing: Culvert	24 inch by 20 foot culvert with geotextile fabric outfall. 75 feet of east approach is rutting	Rock 75 feet of east crossing approach, add rock energy dissipater at culvert outlet	**LM**	2	Y	Y	$1,188
681	**48**	Road Drainage: Steep fall-line	75 feet of steep 22% gradient fall line road. Minimal erosion due to low use	Alternative 1 - Existing condition: add 5 dips and avoid use. Alternative 2 - Increased use: reroute road to more stable configuration	**M**	10	N	Y	$2,356
681	**49**	Stream Crossing: Culvert	18 inch by 40 foot culvert: Culvert is undersized and rusted. Few problems observed at present	Replace with 30 inch by 30 foot pipe	**M**	40	Y	Y	$2,661
681	**50**	Stream Crossing: Culvert	26 inch by 40 foot pipe. Pipe is misaligned but not causing problems	None required at present.	**LM**	20	Y	Y	$0
610	**51**	Road Drainage: Poorly drained road	500 feet of poorly drained road. Concentrated runoff causing gully erosion. 12 inch ditch releif cuvlert at entrance of old ranch road not causing problems.	Install 2 ditch relief culverts	**M**	20	N	Y	$1,520
610	**53**	Stream Crossing: Culvert	18 inch undersized culvert offset from natural channel. Poor road drainage	Install 24 inch by 40 foot culvert at natural channel. Add critical dip at the crossing. Upgrade road drainage by installing 1 new ditch relief culvert at 3 rolling dips. Rock 250 feet of road if use increases	**MH**	30	Y	Y	$5,038
610	**54**	Stream Crossing: Culvert	12 inch by 30 foot rusted out pipe	Install new 30 inch by 40 foot pipe, rock 200 feet of road	**H**	30	Y	Y	$3,625
610	**55**	Road Drainage: Ponded water	Ponded water on road	No treatment required at present. If use to increase then install 18 inch ditch relief culvert and 70 foot long inboard ditch.	**LM**	2	N	N	$0
610	**56**	Road Drainage: Poorly drained road	650 foot long poorly drained segment of road	Upgrade drainage to add 6 new dips	**LM**	5	N	N	$2,828

TABLE 2: SUMMARY OF INVENTORY SITES
LA HONDA OPEN SPACE PRESERVE

ROAD	MAP POINT	FEATURE	DESCRIPTION	TREATMENT	TREATMENT PRIORITY	FUTURE EROSION (CY)	1600[1]	GP[2]	ESTIMATED COST[3]
610	**57**	Stream Crossing: Culvert	Rusted out 18 inch pipe. Concrete headwall at pipe outlet undermined	Replace with 30 inch by 40 foot pipe. Reconstruct crossing outlet on rock.	**H**	30	Y	Y	$5,855
610	**58**	Road Drainage: Steep grassland road	2,200 foot long steep grassland road with few drainage structures. Little erosion due to low use	Upgrade drainage on 2,200 feet of road by installing 16 new dip. Rock 1,100 feet of road if use is to increase.	M	10	N	N	$7,540
615	**59**	Road Drainage: Steep grassland road	1500 foot long steep fall line ranch road	Do not reopen	H	0	N	N	$0
620	**60**	Road Drainage: Poorly drained steep road	300 foot long poorly drained ridge top road	Realign 300 feet of road to gentler gradient	MH	0	N	Y	$3,880
620	**61**	Road Drainage: Steep fall-line	14% ridge top road in thru cut. Fall line makes it difficult to drain. Reroute if used.	Realign 300 feet of road to gentler gradient	M	5	N	Y	$3,880
620	**62**	Road Drainage: Fall line	15% road down fall line of hillside to residence.	Realign 250 feet of road to gentler gradient	M	5	N	Y	$0
625	**63**	Stream Crossing: Earth Ford	Earth ford, stream diverted 450 feet down road.	Abandon crossing by excavating all crossing fill	M	100	Y	Y	$2,820
630	**64**	Road Drainage: Poor road drainage	Poor road drainage along 1,500 feet of road	Upgrade drainage by installing 8 additional dips	M	10	N	N	$3,770
630	**65**	Stream Crossing: Culvert	18 inch culvert without problems	No treatment required	LM	10	N	N	$0
630	**66**	Stream Crossing: Culvert	18 inch by 50 foot culvert without problems	No treatment required	LM	0	Y	Y	$0
630	**67**	Ditch Relief Culvert:	18 inch ditch relief culvert. Inlet rusted and partially plugged	Clean culvert inlet, add two dips south of the crossing to break up drainage.	M	30	Y	Y	$943
630	**68**	Ditch Relief Culvert:	18 inch ditch relief culvert without problems	No treatment required	N	0	N	N	$0
630	**69**	Road Drainage:	2,400 foot long moderately steep road with 10 new dips. No recent erosion observed.	Restrict to seasonal use and monitor for erosion	M	20	N	N	$0
630	**70**	Road Drainage: Steep road	450 foot long steep gradient road	Add 170 feet of inboard ditch, enlarge existing dips, add ditch relief culvert, rock 350 feet of road	M	25	N	Y	$3,765
650	**71**	Road Drainage: Poor road drainage	Poor road drainage	Correct the diversion at MP 72, remove perched fill at the outlet of the first dip or install ditch relief culvert, add 2 rolling dips. Add a ditch relief culvert on the main road at MP 77.	M	20	Y	Y	$820
650	**72**	Stream Crossing: Culvert	Plugged 18" pipe. Water diverted to site 70. crossing built up on thick oversteepened fill.	Alternative 1 - Abandon crossing: Xxcavate all crossing fill (~ 200 cy) and rehabilitate the steam channel. Alternative 2 - Upgrade road: Additional work required	M	20	Y	Y	$5,350
640	**73**	Road Drainage: Inboard ditch erosion	300 feet of inboard ditch erosion on road adjacent to stream	Rock 300 feet of inboard ditch	LM	5	N	N	$2,726
648	**74**	Stream Crossing: Culvert	24 inch culvert on spur road. Pipe is not needed	Remove crossing and associated fill (~ 10 cy)	LM	10	Y	Y	$820
640	**75**	Stream Crossing: Culvert	48 inch and two 18 inch culverts on main driveway crossing over La Honda Creek. Crossing built up on 11 foot high concrete headwalls.	Additional work required to evaluate long-term stability of the crossing	M	10	Y	Y	$5,000
640	**76**	Stream Crossing: Culvert	15 inch culvert with plugged outlet. Diversion at 71 prevents flow to this site.	Clean culvert outlet and 100 feet of inboard ditch	LM	2	N	N	$98
640	**77**	Road Drainage: Long inboard ditch	Long inboard ditch but without much problems	Install ditch relief culvert	L	3	N	Y	$760
640	**78**	Road Stability: Crib wall	300 foot long log crib wall support wall. Logs are rotting out	Additional work required to evaluate long-term stability of the wall	MH	120	N	N	$7,000
640	**79**	Ditch Relief Culvert:	15 inch ditch relief culvert without problems	None required	L	0	N	N	$0
640	**80**	Stream Crossing: Bridge	44 foot long bridge without visible problems	None required	L	0	N	N	$0
640	**81**	Ditch Relief Culvert:	15 inch ditch relief culvert without problems	Add rock energy dissipater	LM	3	N	Y	$622
640	**82**	Stream Crossing: Culvert	12 inch culvert at junction on driveway and parking area. Poor road drainage directed to culvert.	Replace with 24 inch culvert, relocate and enlarge 170 feet of inboard ditch	MH	0	Y	Y	$7,997
640	**83**	Road Drainage: Stream diverted down ditch	Stream diverted down inboard edge of road	Install new 24 inch culvert at natural crossing	MH	10	Y	Y	$2,995
640	**84**	Road Drainage: Stream diverted down ditch	Stream diverted down inboard edge of road.	install 18 inch by 60 foot ditch relief culvert and clean inboard ditch. Correct diverted stream at MP 83.	MH	10	Y	Y	$2,251
642	**85**	Stream Crossing: Earth Ford	Ford crossing on seldom used spur road	Dip road through crossing or add permanent 24 inch culvert	MH	5	Y	Y	$471
642	**86**	Stream Crossing: Bridge	35 foot long flat car bridge. Decking starting to rot.	Remove bridge or upgrade decking	MH	0	Y	Y	$10,000
642	**87**	Stream Crossing: Diverted	Ephemeral watercourse diverted down road but causing only minor erosion	Either add 24 inch culvert or excavate out road to prevent diversion	LM	5	Y	Y	$2,277
642	**88**	Stream Crossing: Culvert	24 inch culvert without problems	None required	L	0	N	N	$0

TABLE 2: SUMMARY OF INVENTORY SITES
LA HONDA OPEN SPACE PRESERVE

ROAD	MAP POINT	FEATURE	DESCRIPTION	TREATMENT	TREATMENT PRIORITY	FUTURE EROSION (CY)	1600[1]	GP[2]	ESTIMATED COST[3]
642	**89**	Road Drainage: Poor road drainage	Poor road drainage on about 1000 feet of road. Road may not be needed	Upgrade drainage by installing 5 additional dips if use is to be maintained	LM	5	N	N	$2,356
642	**90**	Road Drainage: Steep road	650 feet of locally steep poorly drained road which may receive year round access.	Clean 500 feet of inboard ditch and install/replace 3 ditch relief culverts. Add 1 dip.	M	10	N	Y	$2,989
642	**91**	Stream Crossing: Culvert	5 foot diameter culvert at La Honda Creek. No erosion observed	None required	L	0	N	N	$0
642	**92**	Road Drainage: Poor road drainage	1000 feet of poorly drained road that accesses the water intake on Spring Creek	Upgrade drainage by installing 6 additional dips is use is to be maintained	LM	5	N	N	$2,828
642	**93**	Road Drainage:	300 feet of road adjacent to Spring Creek, minimal erosion observed	Install 2 dips	LM	5	N	N	$943
643	**94**	Road Drainage: Steep road	350 feet of steep road branching off of Highway 35. One plugged ditch relief culvert	Install 2 dips	M	5	N	N	$943
644	**95**	Stream Crossing: Culvert	Undersized double 24 inch culverts	Remove crossing and associated fill (~ 30 cy)	H	30	Y	Y	$1,720
641	**96**	Road Drainage: Poorly drained road	Short poorly drained road. Incipient cutbank failure above road. Road is not needed	Abandon by installing 2 large dips	LM	5	N	N	$943
660	**98**	Road Drainage: Wet road	200 feet of seasonal wet road. Road is infrequently used.	No treatment is required at present. If use were to increase then install 200 foot long inboard ditch and drain to ditch relief culvert. Rock 200 feet of road and and 5 rolling dips.	LM	5	N	N	$0
660	**99**	Stream Crossing: Culvert	Washed out 24 inch culvert on seldom used road. Sediment backed up behind crossing	Alternative 1 - Existing condition: Remove culvert and associated fill (~ 20 cy) armor stream nick point with 5cy of 12 inch rock. Alternative 2 - Increased use: replace pipe with new culvert or small foot bridge.	M	50	Y	Y	$2,756
660	**100**	Stream Crossing: Earth Ford	Partially washed out ford crossing	Alternative 1 - Abandon: Remove crossing and associated fill. Alternative 2 - Culvert: Install 24 inch by 30 foot culvert. Support down stream end with rock rip rap. Alternative 3 - Foot bridge: Remove crossing and associated fill (~ 30 cy); install 20 to 30 foot long foot bridge.	LM	30	Y	Y	$1,720



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Feet
0 200 400

SYMBOL

- Stream crossing: Bridge
- Stream culvert: Existing
- Stream culvert: Proposed
- Stream crossing: Ford
- Stream crossing - other
- Dip - new - clean
- Dip - existing
- Ditch relief culvert: existing
- Ditch relief culvert: damaged
- Ditch relief culvert:proposed
- Wet area

WATERCOURSES

- Perennial
- Intermittent
- Ephemeral

ROADS/TRAIL

- Highway
- Paved
- Gravel
- Dirt
- Trail
- Ranch Road
- Tractor Trail

PRIORITY

- High
- Moderate
- Low

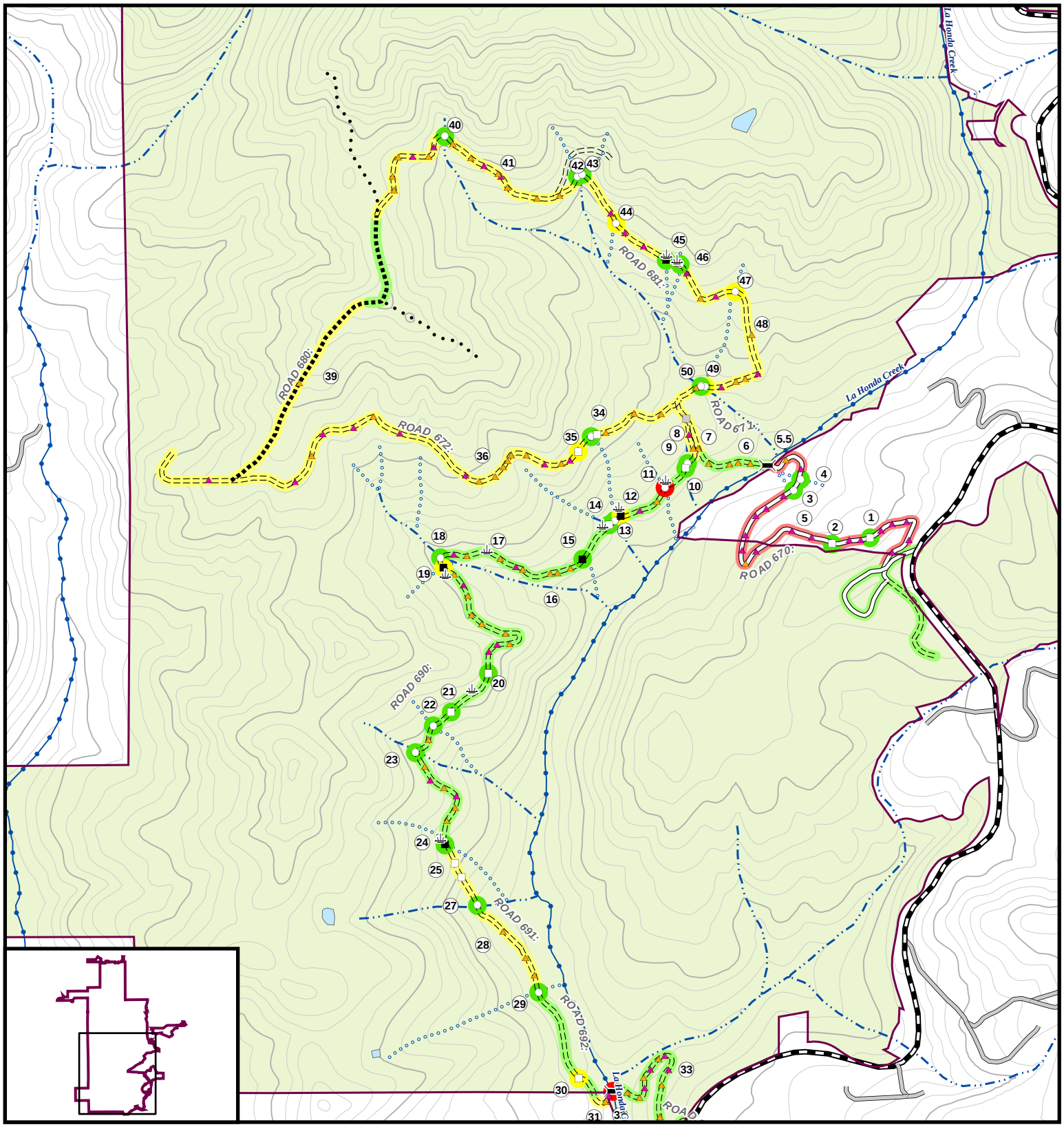
1532 Station
(1) Map Point

TIMOTHY C. BEST, CEG
ENGINEERING GEOLOGY AND HYDROLOGY
1002 Columbia Street, Santa Cruz, CA 95060
(831) 425 5832 (831) 425 5830 (fax)

ROAD AND TRAIL INVENTORY MAP
LA HONDA OSP
Midpeninsula Regional Open Space Preserve

FIGURE 3A

Job: MPEN-LAHONDA-340
Date: 6/16/2007



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Feet
0 200 400

SYMBOL

- Stream crossing: Bridge
- Stream culvert: Existing
- Stream culvert: Proposed
- Stream crossing: Ford
- Stream crossing - other
- Dip - new - clean
- Dip - existing
- Ditch relief culvert: existing
- Ditch relief culvert: damaged
- Ditch relief culvert:proposed
- Wet area

WATERCOURSES

- Perennial
- Intermittent
- Ephemerial

ROADS/TRAIL

- Highway
- Paved
- Gravel
- Dirt
- Trail
- Ranch Road
- Tractor Trail

PRIORITY

- High
- Moderate
- Low

1532 Station
(1) Map Point

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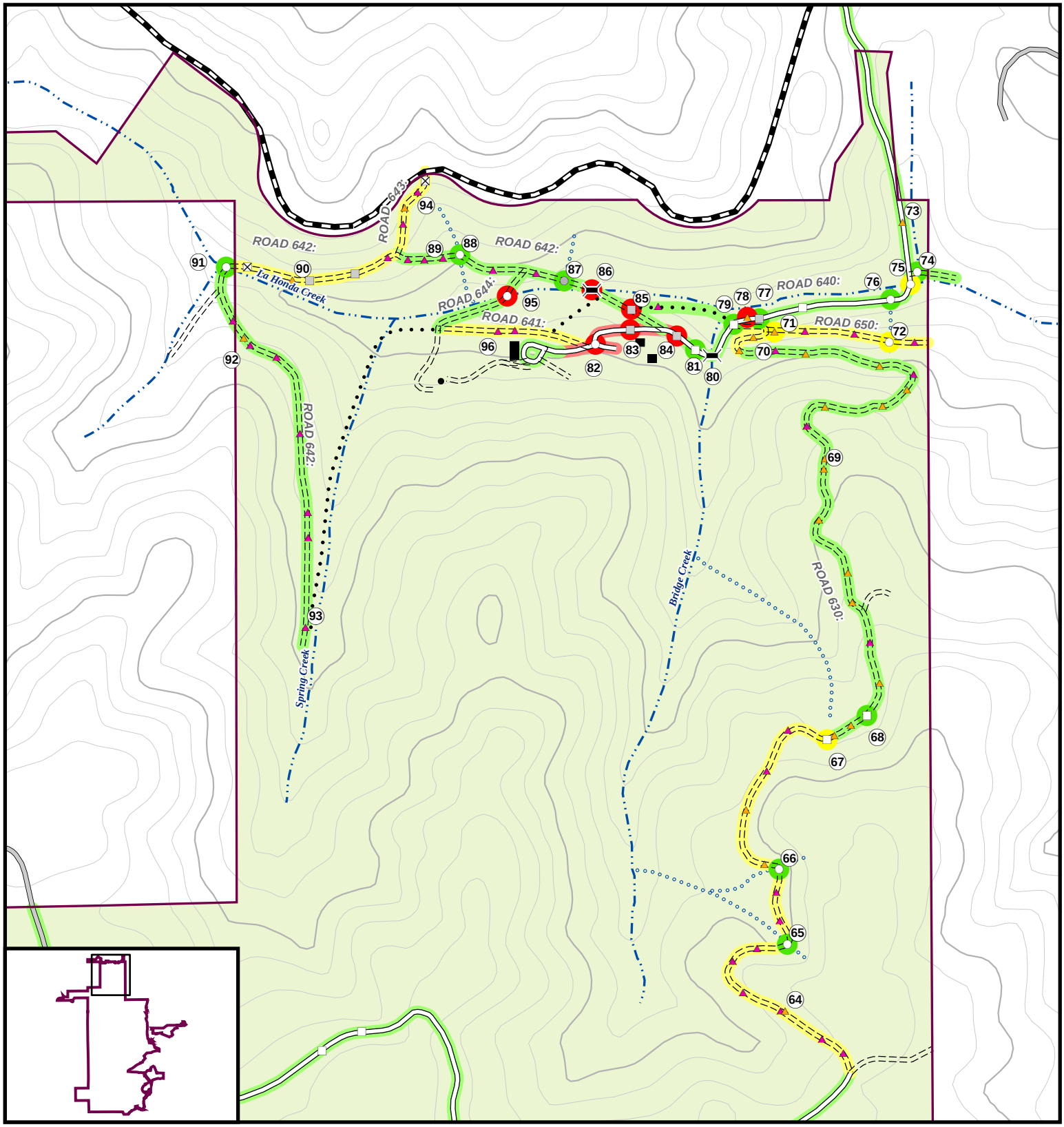
ROAD AND TRAIL INVENTORY MAP
LA HONDA OSP
Midpeninsula Regional Open Space Preserve

FIGURE 3B
Job: MPEN-LAHONDA-340
Date: 6/16/2007



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0 200 400 Feet

SYMBOL

- Stream crossing: Bridge
- Stream culvert: Existing
- Stream culvert: Proposed
- Stream crossing: Ford
- Stream crossing - other
- Dip - new - clean
- Dip - existing
- Ditch relief culvert: existing
- Ditch relief culvert: damaged
- Ditch relief culvert:proposed
- Wet area

WATERCOURSES

- Perennial
- Intermittent
- Ephemerial

ROADS/TRAIL

- Highway
- Paved
- Gravel
- Dirt
- Trail
- Ranch Road
- Tractor Trail

PRIORITY

- High
- Moderate
- Low

1532 Station

(1) Map Point

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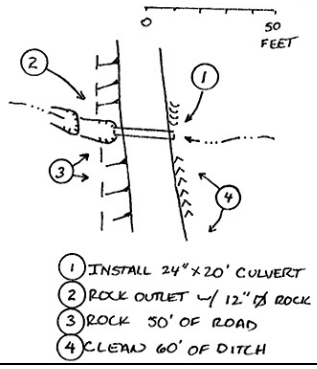
ROAD AND TRAIL INVENTORY MAP
LA HONDA OSP
Midpeninsula Regional Open Space Preserve

FIGURE 3C

Job: MPEN-LAHONDA-340

Date: 6/16/2007

7.0 APPENDIX 1: ROAD/TRAIL EROSION INVENTORY LOG

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
670	**1**	Ditch Relief Culvert	N	L	**L**	3			**DESCRIPTION** 24 inch x 40 foot plastic ditch relief culvert with concrete headwall and rocked outlet. 150 feet of the inboard ditch is partially plugged. **RECOMMENDATIONS** • Clean 150 feet of the inboard ditch
670	**2**	Ditch Relief Culvert	N	L	**L**	3			**DESCRIPTION** 18 inch x 20 foot plastic ditch relief culvert draining 150 feet of inboard ditch. Inboard ditch is partially plugged. **RECOMMENDATIONS** • Clean 150 feet of the inboard ditch
670	**3**	Stream Crossing: Culvert	N	LM	**LM**	5	X	X	**DESCRIPTION** 18 inch x 20 foot plastic culvert with geotextile fabric outfall at a small ephemeral stream. Culvert drains 150 feet of the inboard ditch. Minor erosion at the culvert outlet. **RECOMMENDATIONS** • Clean 150 feet of inboard ditch • Add rock energy dissipater at culvert outlet
670	**4**	Stream Crossing: Culvert	LM	LM	**LM**	17	X	X	**DESCRIPTION** 18 inch x 20 foot pipe at a small ephemeral stream located about 60 feet down the road from MP3. The pipe is shotgunned resulting in small (5 cy) gully at the outlet. **RECOMMENDATIONS** • Replace pipe with new 24 inch x 20 foot culvert • Rock inlet and outlet and add rock energy dissipater using 3 cy 12 inch rock • Rock 50 feet of road over crossing • Clean 60 feet of inboard ditch that drains to the culvert inlet 

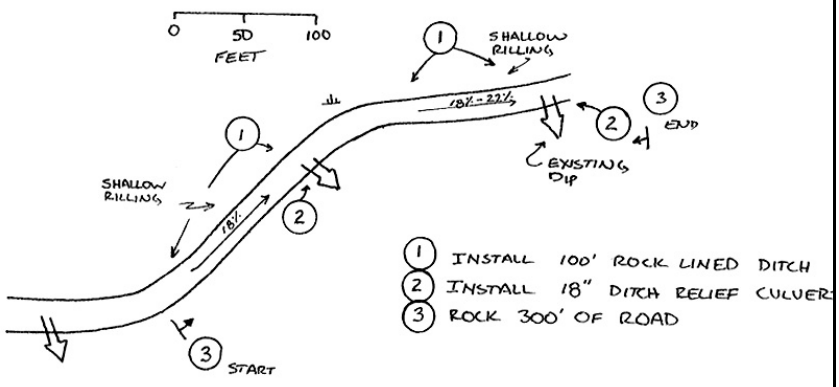
1 ROAD DAMAGE: Qualitative measure of the degree of road damage or past erosion. N: NONE; L: LOW -No impact to road (e.g. rilling and small gullies at outlets of crossings); M: MODERATE – Minor impact to roads but road is passable (e.g. deep rilling of road, gullies at outside of crossing narrowing road but not impeding passage, erosion of inboard ditch). H: HIGH – Road not passable.

2 EROSION POTENTIAL: Qualitative measure of the likelihood of future erosion.

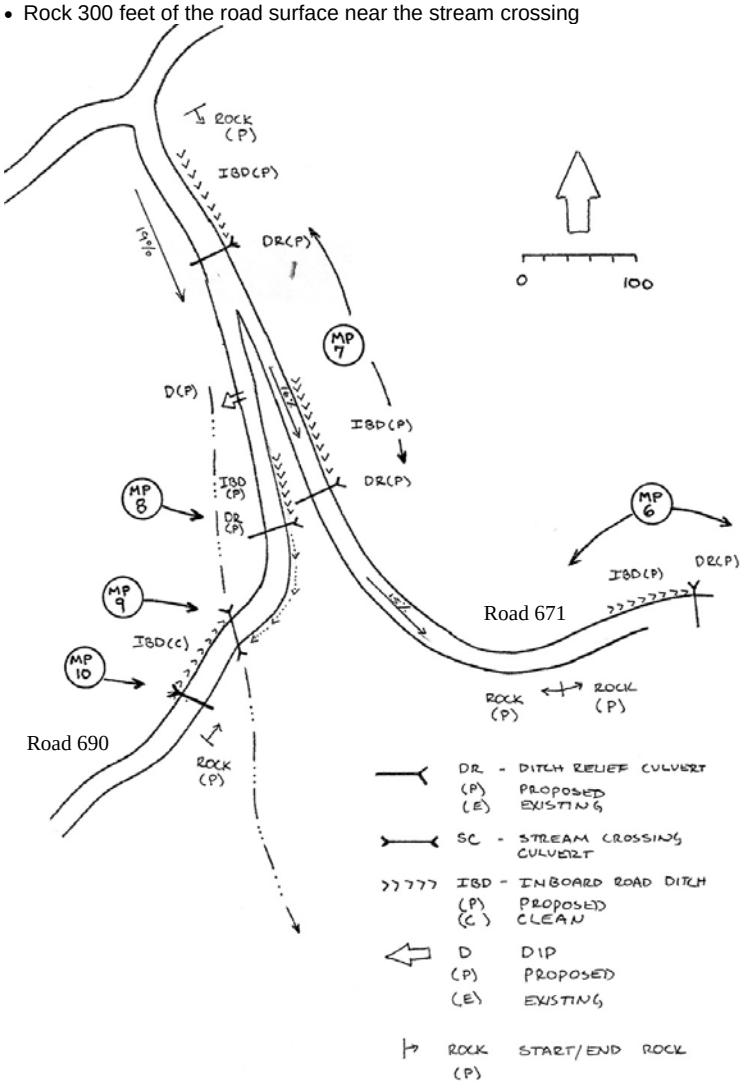
3 TREATMENT PRIORITY: Qualitative ranking for treatment based on CURRENT use. L: LOW – Sites unlikely to erode or will erode only during larger infrequent events; M: MODERATE – Sites are expected to erode damaging the road over time and/or delivering greater than 10 cy of sediment to the stream; H: HIGH – Sites are actively eroding and require immediate repairs.

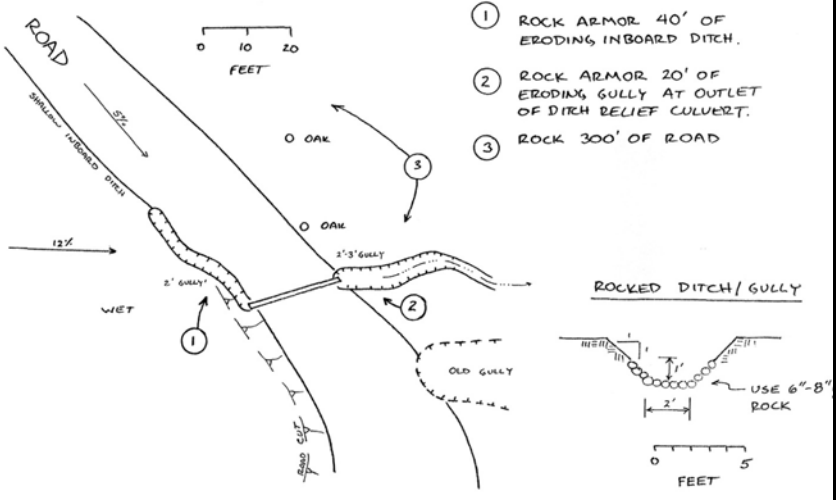
4 1600: Department of Fish and Game 1600 stream alternation agreement

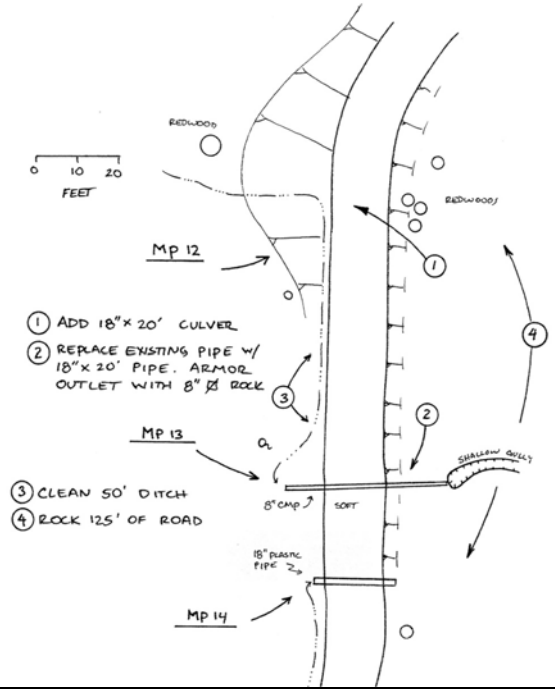
5 GP: San Mateo County grading permit may be required

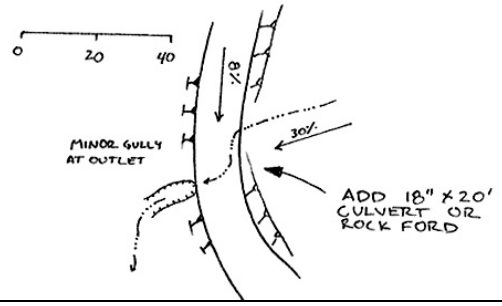
ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
670	**5**	Road Drainage	L	LM	**M**	10			**DESCRIPTION** 3,200 foot long main road switch backing down to valley bottom at 8% to 12% grade. Portions of the road are lightly rocked. Ground is locally wet and the road is drained by inboard ditch. The road is in good shape primarily because it is used infrequently. The lower 1,200 feet of road crosses soft and locally wet soils to the bridge crossing on La Honda Creek. The lower segment of road is presently grassed over and in reasonably good condition; however, soft and seasonally wet nature of the soils makes the road prone to erosion with increased use. This problem can be largely mitigated by installing additional dips and rocking soft segments of the trail. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Install 16 new dips **Increased Use** • Install 16 new dips • Rock ~ 1000 feet of lower segment of road
670	**5.5**	Stream Crossing: Bridge	L	L	**U**				**DESCRIPTION** Flat car bridge crossing on La Honda Creek. No significant erosion problems observed. Structural integrity of the bridge and foundations were not evaluated. **RECOMMENDATIONS** • A civil engineer will be required to evaluate the structural integrity of bridge and footings
671	**6**	Ditch Relief Culvert	L	LM	**LM**	5		X	**DESCRIPTION** 350 feet of road climbing at an 18% to 22% grade from the bridge crossing on La Honda Creek. There are three existing dips along this reach which are functioning adequately. Shallow rilling of the road is locally evident due to the steep grade. Steep grade may make this segment of road prone to erosion with increased use. It would be best to realign this segment of road but this may not be possible due to the way the road is laid out. Instead the potential erosion problems could be mitigated by draining the road into an inboard ditch and surfacing the road with rock. **RECOMMENDATIONS** **Infrequent Seasonal Use** • None required **Increased Use** • Drain the road into two separate 100 foot long inboard ditches • Add two 18 inch x 20 foot long ditch relief culverts a the location of the current dips • Rock 300 feet of road. 

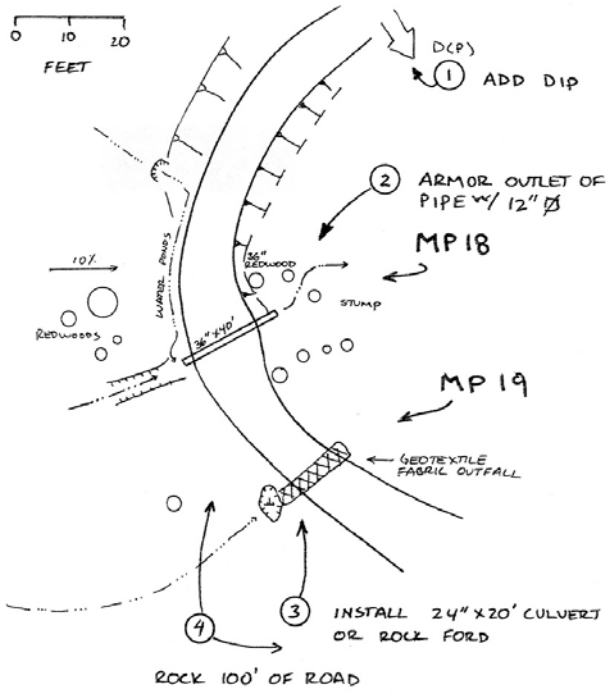
ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
671	**7**	Road Drainage	L	M	**M**	10		X	**DESCRIPTION** 500 feet of road climbs up the fall line of the hillside at a 16% to 19% grade. Under current infrequent seasonal use the road is in reasonable condition with only minor rilling noted at bottom of pitch due to soft soils and steep grade. The fall line orientation of the road makes it difficult to drain and in concert with the steep pitch and soft soils makes site susceptible to erosion and rutting especially with any increased use. Little change is needed under current use but if use is to increase then additional cross drains should be installed and soft sections of the road rocked. See Figure at MP 8 **RECOMMENDATIONS** **Infrequent Seasonal Use** • Install 2 - 100 foot long rock lined inboard ditches • Drain inboard ditch into two new dips **Increased Use** • Install 2 - 100 foot long rock lined inboard ditches • Drain inboard ditch into two new 18 inch ditch relief culverts • Rock 400 feet of road

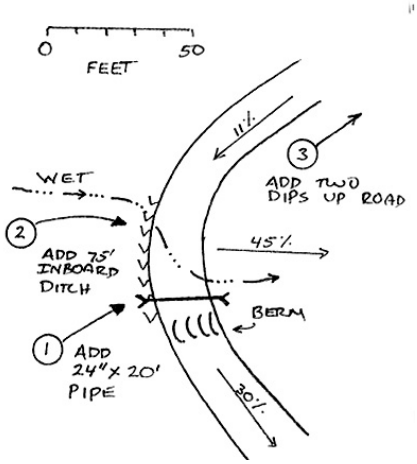
ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
690	**8**	Road Drainage	L	M	**M**	5			**DESCRIPTION** 300 feet of moderately to poorly drained road at 14% to 17% grade. Runoff from the existing dip at the lower portion of MP 7 (located on Road 201) flows into the inboard ditch of the lower road (Road 240) and then is diverted 75 feet to the outlet of the stream crossing at MP 9. With the exception of small amount of erosion in the inboard ditch little current erosion observed, primarily because of the low use the road currently receives. In general the soft and wet soils in this area make the road prone to rutting and erosion, especially with any increased use. Most of these problems could be mitigated by installing addition dips and rocking the soft sections of the trail **RECOMMENDATIONS** **Infrequent Seasonal Use** • Install two dips on Road 240 between the road junction and the stream crossing at MP 9 • Drain road into a 300 foot long inboard ditch **Increased Use** • Install one dip and one 18 inch x 20 foot ditch relief culvert between the road junction and the stream crossing at MP 9. • Drain road into 300 foot long inboard ditch • Rock 300 feet of the road surface near the stream crossing 

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
690	**9**	Stream Crossing: Culvert	L	LM	**LM**	5			**DESCRIPTION** 18 inch x 30 foot pipe at small intermittent/ephemeral stream. A large cedar tree has fallen over the pipe outlet but does not appear to have caused any damage. Ground is locally wet and may be prone to rutting with increased use. See Figure at MP 8 **RECOMMENDATIONS** **Infrequent Seasonal Use** • Clean and enlarge 100 feet of the inboard ditch and drain to culvert inlet **Increased Use** • Clean and enlarge 100 feet of the inboard ditch draining to the culvert inlet • Rock 100+ feet of the road surface as necessary
690	**10**	Ditch relief Culvert	L	LM	**LM**	0			**DESCRIPTION** 12 inch ditch relief culvert located about 60 feet south of MP 9. The ground in this area is wet and may be prone to erosion. Ditch does not drain well. **RECOMMENDATIONS** • Clean inboard ditch per MP 9
690	**11**	Ditch Relief Culvert	LM	MH	**MH**	10		X	**DESCRIPTION** 12 inch x 20 foot long ditch relief culvert draining a wet area, long inboard ditch, and possible ephemeral stream. A gully has formed at both the inlet and outlet of the pipe due to the wet nature of the area and inherently erosive nature of the underlying soils. The gully at the pipe inlet is about 30 feet long and 18 inch deep. The gully at the pipe outlet is 20 foot long and 18 inch to 24 inch deep. Continued gullying is likely. **RECOMMENDATIONS** • Enlarge and rock 40 feet of the inboard ditch draining to the culvert inlet (~ 6 cy of 8" rock) • Enlarge and rock 20 feet of gully channel at the outlet of the pipe. Rocked channel shall be 2 feet wide with rock extending 1 foot up channel banks (5 cy of 8" rock) • Rock 200 feet of road 
690	**12**	Stream Crossing: Earth Ford	L	MH	**M**	5	X	X	**DESCRIPTION** Earth ford at spring/small ephemeral stream. The stream has been diverted 70 feet down the road ditch to MP 13 resulting in less than 5 cy of erosion at that location. The ground in this area is quite wet and appears prone to rutting with increased use. **RECOMMENDATIONS** • Replace earth ford with new 18 inch x 20 foot culvert • Armor inlet and outlet to top of culvert. Use about 3 cy of 8-inch diameter rock

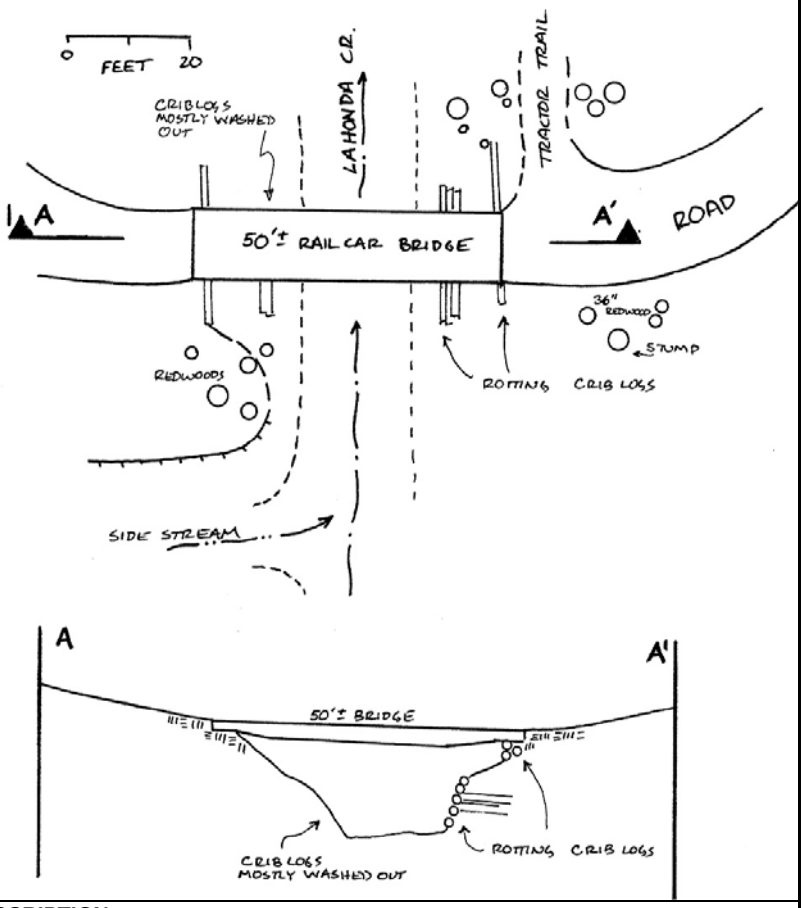
ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
690	**13**	Stream Crossing: Culvert	L	LM	**LM**	8	X	X	**DESCRIPTION** 8 inch x 40 foot ditch metal culvert at a shallow and poorly defined intermittent stream. The culvert drains both the stream and diverted stream flow from MP 12. Pipe is undersized, rusted and shotgunned. A shallow gully (< 5 cy) observed at the outlet of the pipe. The ground in this area is quite wet and appears prone to rutting with increased use. **RECOMMENDATIONS** • Replace 8 inch culvert with new 18 inch x 20 foot pipe • Armor inlet and outlet to top of culvert. Use about 4 cy of 8-inch diameter rock • Install rock energy dissipater at culvert outlet using ~3 cy of 8-inch diameter rock • Clean 50 feet of the inboard ditch • Rock 125 feet of road for increased use 
690	**14**	Stream Crossing: Culvert	N	N	**L**	0			**DESCRIPTION** 18 inch x 20 foot new plastic pipe draining a 16 acre intermittent stream and 200+ feet of inboard road ditch. Pipe is slightly undersized for design 100 year flow but few problems observed. **RECOMMENDATIONS** • None required

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
690	**15**	Stream Crossing: Earth Ford	L	M	**LM**	3	X	X	**DESCRIPTION** Earth ford at small ephemeral stream. Minimal erosion observed. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Enlarge dip and armor outside edge with 2 cy of 6 inch diameter rock **Increased Use** • Install 18 inch x 20 foot pipe or rock ford 
690	**16**	Road Drainage	L	LM	**LM**	5			**DESCRIPTION** 200 feet of steep (18% to 20%) road. Road is presently grassed over with little erosion observed. Soft and wet nature of road predisposes it to erosion with increased use. Steep gradient makes road difficult to drain. **RECOMMENDATIONS** **Infrequent Seasonal Use** • None required **Increased Use** • Rock 300 feet of road
690	**17**	Road Drainage	L	LM	**LM**	5			**DESCRIPTION** 200 feet of the road climbs at 18% grade in open grassland area. Road is presently grassed over with little apparent erosion. Ground is seasonally wet and will likely rut with increased use. **RECOMMENDATIONS** **Infrequent Seasonal Use** • None required **Increased Use** • Add 18 inch x 20 foot ditch relief culvert in wet area • Add 100 feet of inboard ditch and drain to new ditch relief culvert • Rock 250 feet of the road
690	**18**	Stream Crossing: Culvert	L	LM	**LM**	3	X	X	**DESCRIPTION** 36 inch x 40 foot new plastic culvert at 41-acre intermittent stream. Pipe is slightly undersized for 100 year flow event but no problems observed. Outlet of the pipe drains onto geotextile fabric which probably has short life expectancy. Due to low gradient of the stream channel, significant erosion is not expected. **RECOMMENDATIONS** • Install rock energy dissipater at outlet of pipe using 5 cy of 18 inch rock • Add 1 new dip on north side of crossing

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
690	**19**	Stream Crossing: Earth Ford	L	M	**M**	9	X	X	**DESCRIPTION** Earth ford at small ephemeral stream draining a 20 acre basin. Runoff is conveyed across the road in a small dip protected from erosion with woven geotextile fabric. To date the fabric has worked well but probably has a short life expectancy especially. **RECOMMENDATIONS** **Alternative 1** • Install new 24 inch x 20 foot culvert. Installation of a culvert may require the road to be built up on fill to adequately cover the pipe. Fill can be obtained onsite by cutting into adjacent banks. • Install rock energy dissipater at culvert outlet using ~3 cy of 12-inch diameter rock **Alternative 2** • Install rock ford using 5 cy of 8 inch to 12 inch rock • Rock 100 feet of road 
691	**20**	Ditch Relief Culvert	L	L	**LM**	0			**DESCRIPTION** 18 inch x 20 plastic ditch relief culvert without problems. Ditch drains a long segment of road and some benefit would be achieved by installing a couple of dips up the road to breakup drainage. **RECOMMENDATIONS** • Install two dips about 175 feet prior (north) of the crossing. Locate the dips in the natural swale
691	**21**	Ditch Relief Culvert	N	N	**N**	0			**DESCRIPTION** 12 inch x 20 foot metal ditch relief culvert without problems **RECOMMENDATIONS** • None

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
691	**22**	Stream Crossing: Culvert	N	N	**N**	0			**DESCRIPTION** 30 inch x 30 foot culvert at 5 acre ephemeral stream. No significant problems observed. **RECOMMENDATIONS** • None
691	**23**	Stream Crossing: Culvert	L	L	**L**	0			**DESCRIPTION** 24 inch X 30 foot plastic pipe at 11 acre intermittent stream. Pipe drains onto geotextile fabric outfall. No erosion observed at outlet. **RECOMMENDATIONS** • Fabric outfall can be removed
691	**24**	Stream Crossing: Earth Ford	L	M	**LM**	5			**DESCRIPTION** Earth ford at a poorly defined ephemeral stream draining a 14 acre basin. The watercourse drains across relatively flat ground resulting in about 75 feet of seasonally wet road. Few significant problems observed under current use but rutting is expected with any increased use. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Install 2 additional dips between MP 23 and 24 **Increased Use** • Install 24 inch x 20 foot pipe at the crossing • Install 75 feet of inboard ditch and drain to new culvert • Rock 100 feet of the road at the crossing. • Install 2 additional dips between MP 23 and 24 
691	**25**	Road Drainage	L	LM	**m**	5			**DESCRIPTION** 400 feet of seasonally wet road at 20% to 22% grade that drains onto a relatively flat bench. The road is reasonably well drained by inboard ditch and two ditch relief culverts. A small amount of erosion is observed in the inboard ditch. Steep gradient road and locally soft soils may make road prone to erosion especially with any increased use. However, most of the sediment would be deposited on large bench below. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Avoid winter use **Increased Use** • Clean and rock 270 feet of the inboard ditch • Further evaluate the need to rock 400 feet of the road

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
691	**27**	Stream Crossing: Culvert	L	L	**L**	2	X	X	**DESCRIPTION** 36 inch x 30 new plastic pipe at 27 acre intermittent stream. Pipe drains onto geotextile fabric outfall without much erosion. Little erosion observed. **RECOMMENDATIONS** • Remove fabric outfall • Add rock energy dissipater at pipe outlet using 3 to 5 cy of 12 inch rock
691	**28**	Road Drainage	L	M	**M**	10			**DESCRIPTION** 300 feet of road drops down fall line of hillside at 18% grade. No significant erosion observed under current use. Fall line orientation makes the road inherently difficult to drain and the steep grade and poor alignment makes this segment prone to erosion. With existing light use little erosion has occurred, but with increased use additional erosion should be expected. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Avoid winter use **Increased Use** • Realign 300 feet of the road alignment if use is increased • Consider rocking 300 feet of road
692	**29**	Stream Crossing: Culvert	N	N	**N**	0			**DESCRIPTION** 24 inch X 30 foot pipe at 29 acre intermittent stream. Pipe drains onto geotextile fabric outfall without much erosion. Pipe is undersized but shows no history of problems. A natural shallow gully has developed where the stream flows over the natural edge of a bench below the crossings. **RECOMMENDATIONS** • None required
692	**30**	Ditch Relief Culvert	L	M	**M**	5		X	**DESCRIPTION** 6 inch ditch relief culvert on flat segment of road. Road crosses bench that appears naturally poorly drained. 50 feet of the inboard ditch is partially plugged. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Clean 50 feet of the inboard ditch • Replace ditch relief culvert with new 18 inch x 20 foot pipe **Increased Use** • Clean 50 feet of the inboard ditch • Replace ditch relief culvert with new 18 inch x 20 foot pipe • Rock 200 feet of road
692	**31**	Road Drainage	LM	M	**M**	5			**DESCRIPTION** 250 feet of road dropping down to La Honda Creek at an 18% grade. The unsurfaced road is drained by an inboard ditch, but is still seasonally wet and rutted. Road may be used by adjacent landowner. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Clean 250 of the inboard ditch • Add an additional dip **Increased Use** • Clean 250 of the inboard ditch • Add an additional dip to drain road • Rock 250 feet of road

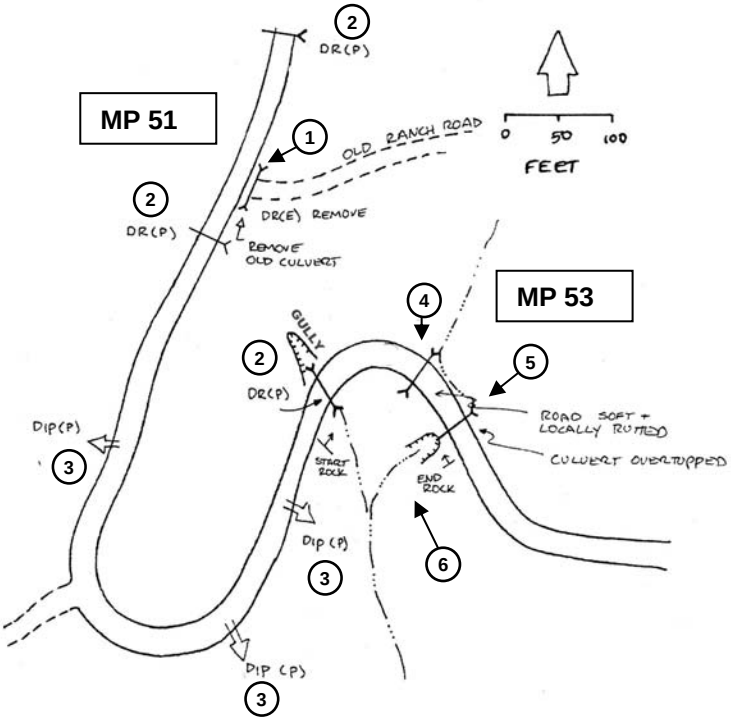
ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
692	**32**	Stream Crossing: Bridge	M	M	**MH**	100	X	X	**DESCRIPTION** 50-foot long railroad car bridge over La Honda Creek. This bridge is in marginal shape with the decking starting to rot out. Bridge originally rested on 8 to 10 foot high log crib wall abutments. The left (east) bank abutment has mostly washed out. The logs comprising right (west) abutment are rotting and will likely fail within the next 10 to 15 years. Continued erosion of abutments will exceed 100 cy of sediment and may compromise the stability of the bridge. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Conduct more in-depth analysis of bridge stability. It is most likely that the bridge will need to be either replaced or removed. **Increased Use** • Conduct more in-depth analysis of bridge stability. It is most likely that the bridge will need to be either replaced or removed • Rock 75 feet of the road on either side of the bridge. 
693	**33**	Road Drainage	L	L	**LM**	5			**DESCRIPTION** 1500 foot long segment of road connecting the bridge on La Honda Creek to La Honda Road. There are 6 dips along this alignment which appears reasonable. Minor erosion observed at lower switchback. Some rutting may occur with use. **RECOMMENDATIONS** • Add 4 additional dips • Clean 200 feet of the inboard ditch at the two switchbacks

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
672	**34**	Stream Crossing: Culvert	L	L	**L**	0			**DESCRIPTION** 15 inch X 20 foot CMP at a small intermittent stream, draining mostly an upslope wet area. The pipe is functioning adequately. About 40 feet down the road is a new 18 inch x 20 foot plastic ditch relief culvert which is also working adequately. **RECOMMENDATIONS** • No treatment required
672	**35**	Ditch Relief culvert	L	M	**M**	5			**DESCRIPTION** 12 inch x 20 foot ditch relief culvert. The inlet to the pipe is about 50% plugged with sediment and vegetation; the outlet is shotgunned but without significant erosion. Road appears to be seasonally wet and would rut with increased winter use. **RECOMMENDATIONS** • Clean culvert inlet • Clean 60 feet of the inboard ditch
672	**36**	Road drainage	LM	M	**M**	15			**DESCRIPTION** 3500 foot long segment of road climbing up the hillside 8% to 18% gradient through soft prairie grasslands. Road is presently grassed over with little apparent erosion but soft and wet nature of the soils will likely make the road prone to erosion. With infrequent seasonal use road will probably have little problems at least over the short term. Some rutting would be expected over time. Increased use, especially in the wet season (late fall – early spring) will make the road prone to erosion. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Add 7 new dips **Increased Use** • Add 7+ dips • Rock 3,000 feet of road
680	**39**	Trail Drainage	L	M	**MH**	10			**DESCRIPTION** 1800 feet of fall line road climbing spur ridge at 10% to 30% grade. Road is grassed over and used very infrequently. No erosion observed at present. Fall line orientation of the road makes it inherently difficult to drain and steep gradient and soft underlying soils will make the road prone to erosion. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Limit use **Increased Use** • Reroute road/trail. Additional work required to identify new trail alignment.
681	**40**	Stream Crossing: Culvert	L	L	**L**	0			**DESCRIPTION** 24 inch X 40 foot Plastic pipe at 14-acre steep gradient ephemeral stream. No significant problems observed. **RECOMMENDATIONS** • None required

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
681	**41**	Road Drainage	L	M	**M**	10			**DESCRIPTION** 1200 foot long segment of road at 14% to 20% gradient. Little erosion observed but steep gradient makes the road difficult to drain. Road grade may be too steep for any increased use. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Install 10 new dips • Limit use **Increased Use** • Install 10 dips • Limit to trail use. Narrow critical segments of the road as necessary • Evaluate feasibility of rerouting the steeper segments of trail or if that is not possible then rock these segments where rutting is observed
681	**42**	Stream Crossing: Culvert	L	L	**L**	0			**DESCRIPTION** 18 inch x 20 foot plastic pipe at 22- acre ephemeral stream. Pipe is slightly undersized but does not show signs of past problems. **RECOMMENDATIONS** • None required
681	**43**	Stream Crossing: Culvert	L	L	**L**	0			**DESCRIPTION** 18 inch x 30 foot plastic pipe at 8-acre ephemeral stream. Ground is locally wet in this area. No problems observed. **RECOMMENDATIONS** • None required
681	**44**	Stream Crossing: Culvert	L	L	**M**	0			**DESCRIPTION** At this site there may be an 18 inch X 20 foot plastic pipe at small ephemeral stream that is now buried. Stream flow is conveyed in the inboard ditch for about 25 feet before being discharged across the road. The road grade in this area is quite steep (25%) for a short distance. Little erosion was observed at the time of my site visit. Soft road leading to crossing ruts easily. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Check for culvert and clean as necessary **Increased Use** • Check for culvert and clean as necessary. If a culvert does not exist then install a new 24 inch x 15 foot diameter pipe. • Enlarge and rock 25 feet of the inboard ditch • Rock 100 feet of the road
681	**45**	Stream Crossing: Earth Ford	LM	M	**LM**	5	X	X	**DESCRIPTION** Small earth ford at small ephemeral drainage. A small (<2 cy) gully has eroded at the outlet of the dip (8 feet x 3 feet x 1 feet). Upstream of the crossing the channel is naturally downcutting through the prairie soils. Road in this area is quite wet and locally rutting. Continue rutting likely with winter use. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Install 18 inch x 20 foot culvert or rock ford • Armor outlet of culvert with 3 cy of 12 inch rock **Increased Use** • Install 18 inch x 20 foot culvert or rock ford • Rock 200 feet of road

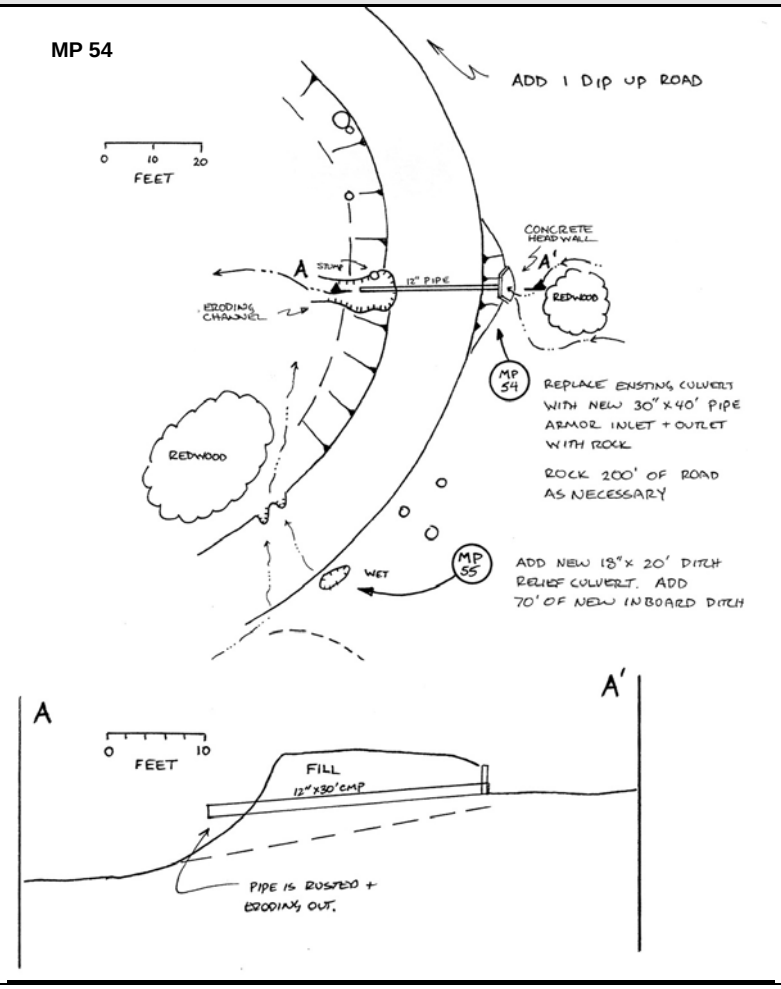
ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
681	**46**	Stream Crossing: Culvert	L	L	**LM**	0			**DESCRIPTION** 18 inch X 30 foot culvert with geotextile fabric outfall at an 8-acre ephemeral stream. Crossing is adequate. Road may rut with increased use. **RECOMMENDATIONS** **Infrequent Seasonal Use** • None required **Increased Use** • Rock 200 feet of road • Replace the fabric outfall with rock energy dissipater using about 3 cy of 12 inch diameter rock
681	**47**	Stream Crossing: Culvert	LM	M	**LM**	2	X	X	**DESCRIPTION** 24 inch X 20 foot plastic pipe with geotextile fabric outfall. Few problems observed at the crossing. About 75 feet of the road on the left (east) side of the crossing is wet and locally rutted. **RECOMMENDATIONS** • Rock 100 feet of road on the east side of the crossing to prevent fine gradient erosion and rutting • Replace the fabric outfall with rock energy dissipater using about 3 cy of 12 inch diameter rock
681	**48**	Road Drainage	L	M	**M**	10		X	**DESCRIPTION** 750 feet of road descending down the fall line of the hillside at a 22% grade across open grassland slopes. The steep fall line orientation of the road makes it inherently difficult to drain and soft soils may make road prone to erosion. Little erosion observed primarily because the road is grassed over and experiences low use. With any increased use erosion and rutting would be expected. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Avoid use • Install 5 dips. Additional work required to identify the locations of these sites **Increased Use** • Reroute trail to gentler gradient. Additional work required to identify a better trail alignment.
681	**49**	Road Drainage	L	M	**M**	40	X	X	**DESCRIPTION** 18 inch X 40 foot metal pipe at 30 acre ephemeral stream. Pipe is well undersized for 100 year storm flow but few significant problems observed at present. Pipe also appears rusted and therefore long term life expectancy is suspect. **RECOMMENDATIONS** • Replace with 30 inch x 30 foot pipe • Install rock headwalls at the inlet and outlet using about 5 cy of 18 inch diameter rock • Install rock energy dissipater using about 5 cy of 18 inch diameter rock
681	**50**	Stream Crossing: Culvert	L	LM	**LM**	20	X	X	**DESCRIPTION** 26 inch x 40 foot metal pipe at 140-acre intermittent stream. Pipe is slightly rusted and undersized for a 100-year flow. Outlet of the pipe is shotgunned several feet due to a large rock located at the outlet that prevents the pipe from being placed any lower. The stream makes a sharp left hand bench at the outlet. At high stream flows water shoots across the channel eroding the opposite channel bank. Placement of rock would minimize this but probably not warranted due to the low volume of erosion and difficulty in placing the rock. In long term pipe will need to be replaced. **RECOMMENDATIONS** • No treatment required at present

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
610	**51**	Ditch Relief Culvert	L	L	**M**	20		X	**DESCRIPTION** 500 feet of the main road is drained by a long inboard ditch. A 12 inch x 20 foot culvert is located in the ditch at the entrance of an unused spur road to convey runoff past the spur road. Since the spur road is not needed the culvert can be removed. Ditch flow is drained off the road in a dip located a short distance down from the spur road. A deep gully at the outlet of this dip. Erosion is attributed to concentrated road runoff. This problem can be mitigated by breaking up drainage. **RECOMMENDATIONS** • The culvert at the entrance of the spur road can be removed • Install two 18 inch diameter ditch relief culverts further down the road as mapped (See Figure at **MP 53**)
610	**53**	Ditch Relief Culvert	M	M	**MH**	30	X	X	**DESCRIPTION** At this site a small ephemeral stream drains into the inboard road ditch and is conveyed 50 feet to an 18 inch x 24 foot culvert. The culvert is not located at the natural channel and as a result a small (< 10 cy) gully has formed at the pipe outlet. The culvert is undersized and appears to overtop at high flows diverting the stream further down the inboard ditch. Presently the inlet is partially plugged with debris. This culvert will need to be replaced. To the west of the crossing about 500 feet of the road is poorly drained causing erosion of the road surface and inboard ditch. The road grade is locally up to 15% and the soft and wet road base has rutted from winter use. **RECOMMENDATION** • Add permanent 24 inch x 40 foot culvert at the natural stream crossing (~ 50 feet west of the existing 18" pipe o Armor inlet and outlet to top of culvert. Use about 3 cy of 12-inch diameter rock o Install rock energy dissipater at culvert outlet using ~3 cy of 18-inch diameter rock o Install a critical dip. Plug the inboard ditch to prevent flow from being diverted down the road to the exiting ditch relief culvert. • Clean the inlet of the existing 18 inch ditch relief culvert • Add a ditch relief culvert about 150 feet west of the new culvert • Add 3 new rolling dips further up the road to the west as mapped • Rock 250 feet of the road if use is to increase 

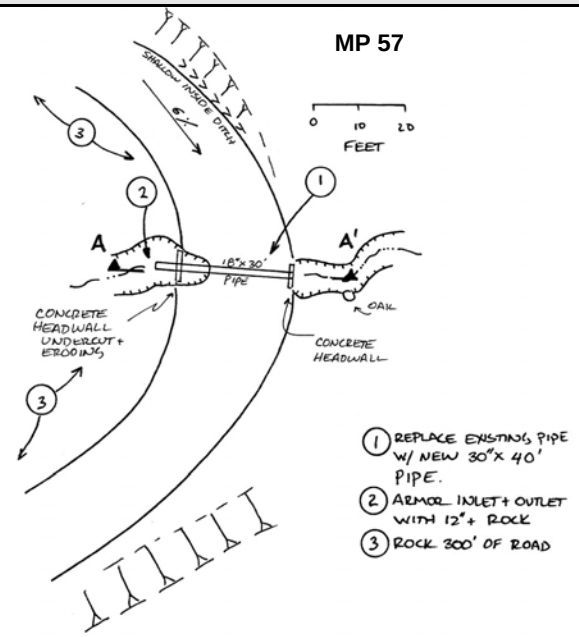
ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
	53								

1. Remove the old culvert
2. Add ditch relief culverts
3. Add dips
4. Add permanent 24 inch x 40 foot culvert at the natural stream crossing. Add critical dip to prevent diversion
5. Clean culvert inlet
6. Rock 250 feet of road if use increases

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
610	**54**	Stream Crossing: Culvert	L	H	**H**	30	X	X	**DESCRIPTION** 12 inch X 30 foot metal culvert at a 15 acre intermittent stream. The culvert is rusted and the outlet is beginning to erode out. A concrete headwall is found at the inlet. The road leading to this site is poorly drained causing it to be seasonally wet. Crossing volume is about 30 cy with fill a maximum of 5 feet deep. **RECOMMENDATIONS** • Install new 30 inch x 40 foot pipe • Rock the inlet and outlet using 3 cy of 12 inch rock • Add rock energy dissipater using about 3 cy of 18 inch rock • Add 1 additional rolling dip to the north of the crossing • Rock 200 feet of road over the crossing as necessary 

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
	54								**MP 54** 
610	**55**	Road Drainage	L	LM	**LM**	2			**DESCRIPTION** Poor road drainage allowing water to pond in the inboard ditch. Minor erosion observed where runoff ultimately flows over the road. Site is located about 25 feet south of **MP 54**. **RECOMMENDATIONS** **Infrequent Seasonal Use** • None required **Increased Use** • Install 18 inch x 20 foot ditch relief culvert to drain the wet area • Add 70 feet of new inboard ditch to drain into the ditch relief culvert
610	**56**	Road Drainage	L	LM	**LM**	5			**DESCRIPTION** 650 foot long segment of poorly drained road. There is only one natural dip along this segment of road. The outlet of this dip is protected with geotextile fabric. Although poorly drained, little active erosion observed. **RECOMMENDATIONS** • Add 6 additional rolling dips to facilitate drainage

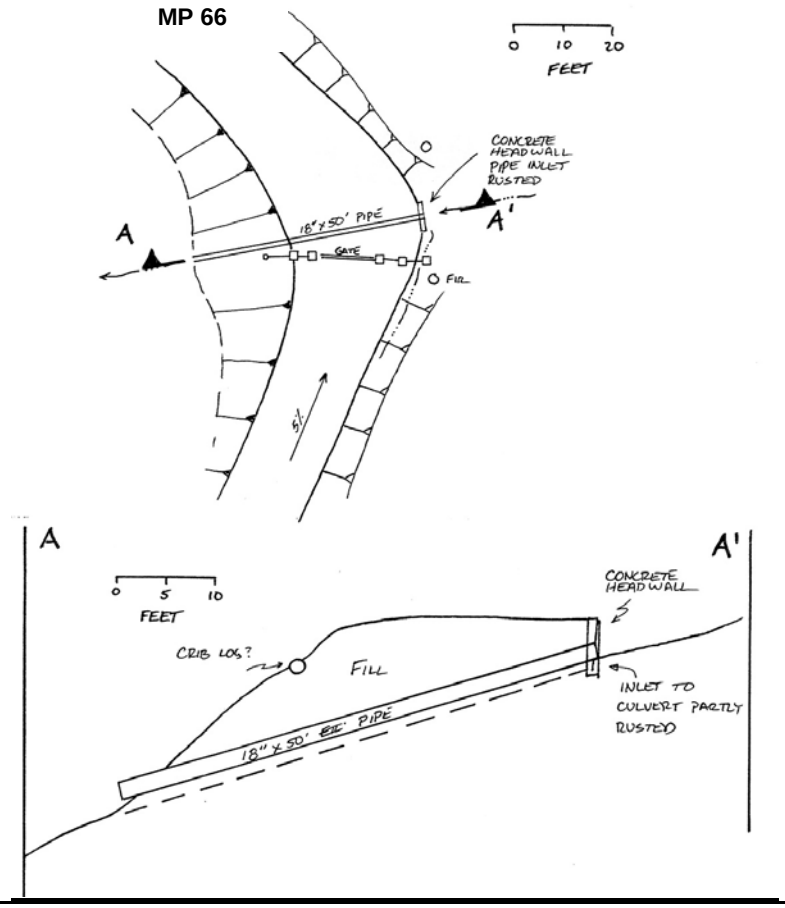
ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
610	**57**	Stream Crossing: Culvert	M	H	**H**	30	X	X	**DESCRIPTION** 18 inch X 30 foot metal pipe at an 18 acre intermittent stream. Concrete headwalls are found at both the inlet and outlet of the crossing. The culvert has partially rusted out with concrete headwall at the culvert outlet undermined and tipping over. Crossing volume is about 30 cy with fill a maximum of 6 feet deep. **RECOMMENDATIONS** • Replace pipe with new 30 inch x 40 foot pipe • Remove failing headwalls • Armor inlet and outlet to top of culvert. Use about 10 cy of 12+ inch diameter rock. Key rock a minimum of 2 feet below grade and incline no steeper than a 1.5:1 slope. • Install rock energy dissipater at culvert outlet using ~3 cy of 18-inch diameter rock • Rock 300 feet of road leading to the site (?) 

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
	57								
610	**58**	Road Drainage	L	M	**M**	10			**DESCRIPTION** 2200 feet of road in soft prairie soils at 5% to 15% grade. Road is grassed over and little erosion is observed. However, rutting of the road should be expected with increased use. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Install 16 new dips. **Increased Use** • Install 16 new dips • 1100 feet of road may need to be rocked to prevent it from rutting with increased use
615	**59**	Road Drainage	L	LM	**H**	0			**DESCRIPTION** 1500 feet of fall line road descending spur ridge at 10% to 30% grade. Road is grassed over and used very infrequently. No erosion observed primarily because the road is grassed over and receives little use. Substantial erosion should be expected with increased use. **RECOMMENDATIONS** • Do not reopen

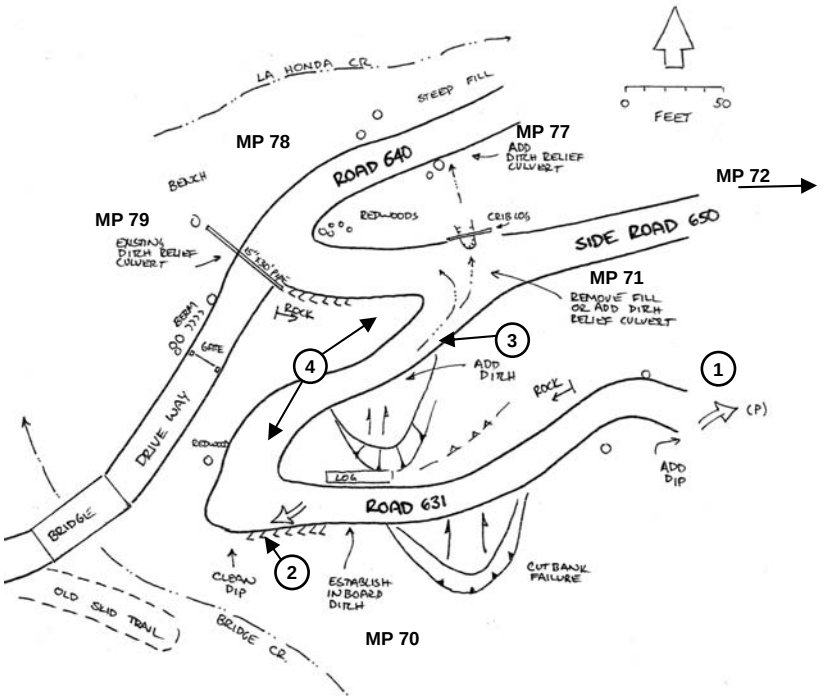
ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
620	**60**	Road Drainage	H	H	**MH**	0		X	**DESCRIPTION** 300 feet of poorly drained ridge top road at 20% to 27% grade. Road eroded down to blocky sandstone. Little sediment delivery. **RECOMMENDATIONS** • Realign 300 feet of road to gentler gradient 
620	**61**	Road Drainage	M	M	**M**	5		X	**DESCRIPTION** 200 foot long segment of 15% gradient ridge top road. Road is difficult to drain. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Minimize use **Increased Use** • Realign 300 feet of road to gentler gradient 

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
620	**62**	Road Drainage	LM	M	**M**	5		X	**DESCRIPTION** 150 feet of 15% gradient fall line road behind ridge top residence. **RECOMMENDATIONS** **Infrequent Seasonal Use** • Minimize use **Increased Use** • Realign 250 feet of road to gentler gradient
625	**63**	Stream Crossing: Earth Ford	M	M	**M**	100	X	X	**DESCRIPTION** Earth ford at 6 acre ephemeral stream. Crossing volume is about 20 cy with maximum depth of fill of about 4 feet. The stream has been diverted over 450 feet down the road where eroding a 2 to 4 foot wide, 1 to 2 foot deep gully. Gully walls are mostly moss covered suggesting the bulk of erosion is old. The road is not used and therefore can be abandoned **RECOMMENDATIONS** • Remove the crossing by excavating out the old fill to native channel. Excavation should result in 4 foot wide channel with channel banks laid back to a 1.5:1 slope. About 20 cy of material will need to be removed from the crossing. Fill can be feathered out along the cutbank to either side of the crossing.
630	**64**	Road Drainage	L	LM	**M**	10			**DESCRIPTION** 1500 feet of road descending at 8% to 15% gradient. The road is inadequately drained resulting in shallow rilling. **RECOMMENDATIONS** • Install 8 additional dips
630	**65**	Stream Crossing: Culvert	L	L	**LM**	10			**DESCRIPTION** 18 inch x 50 foot pipe at ephemeral stream draining a roughly 1 acre basin. Concrete headwall found at the inlet. Long inboard ditch draining to the culvert. Pipe is old but functioning adequately. **RECOMMENDATIONS** • Upgrade drainage per **MP 64**

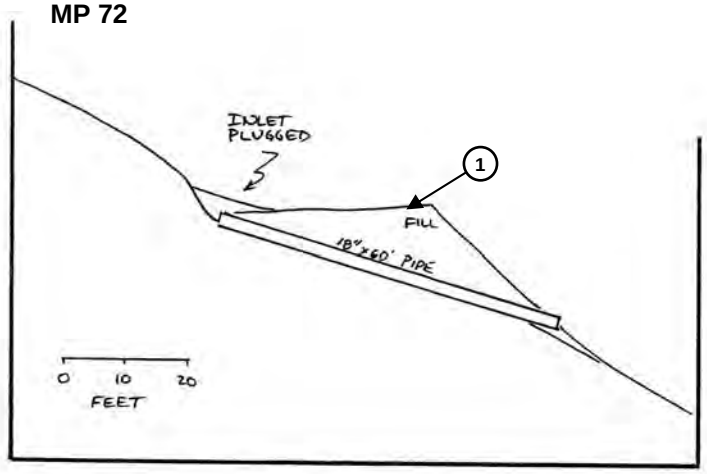
ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
630	**66**	Stream Crossing: Culvert	L	L	**LM**	0	X	X	**DESCRIPTION** 18 inch x 50 foot pipe at ephemeral stream draining a roughly 1 acre basin. Inlet to the pipe is slightly rusted and may need to be replaced in time. Concrete headwall found at the inlet. Long inboard ditch draining to the culvert. Pipe is old but functioning adequately. **RECOMMENDATIONS** • Upgrade drainage per **MP 64** • Replace pipe as funding allows 

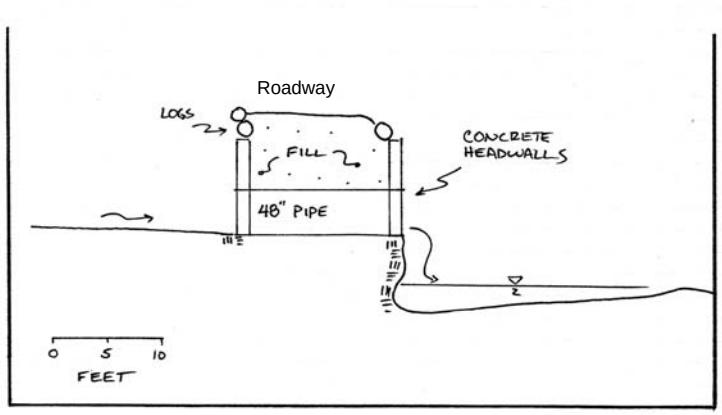
ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
									

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
630	**67**	Ditch Relief Culvert	M	M	**M**	30	X	X	**DESCRIPTION** 18 inch ditch relief at swale. Inlet has plugged in past allowing water to overtop the road causing a small gully. Presently the inlet is rusted and partially plugged with debris. **RECOMMENDATIONS** • Prudent to replace the rusted inlet. At minimum the inlet should be cleared of debris. • Add two additional dips south of the crossing to breakup drainage 
630	**68**	Ditch Relief Culvert	N	N	**N**	0			**DESCRIPTION** 18 inch ditch relief culvert. Locally wet. Minimal erosion observed **RECOMMENDATIONS** • None
630	**69**	Road Drainage	LM	M	**M**	5			**DESCRIPTION** 2400 feet of road descending lower portion of the hillside. Road has been recently regraded to install 10 new dips which are adequate for current use. Experience at ECDM has shown that multiuse trails and roads of this grade are prone to significant erosion problems. No treatment is warranted at present but District should be aware that problems will likely develop if use of this road/trail system is increased. **RECOMMENDATIONS** • Restrict to seasonal road use • Monitor and maintain drainage structures

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
630	**70**	Road Drainage	LM	M	**M**	25		X	**DESCRIPTION** About 450 feet of steep gradient road switch backing down the hillside to the old driveway (Road 40) following La Honda Creek. A couple of old cutbank failures are visible but the debris has been cleared from the road and are not blocking access. The problem with this reach is its steep grade (18% to 20%) in concert with the erosive nature of the underlying sandstone bedrock. Moreover, road drainage is in marginal and long term stability is questionable. **RECOMMENDATIONS** • Add new rolling dip at top of road segment • Establish an 80-foot long inboard ditch at first switchback. Enlarge the dip at the outlet of the switchback. • Establish a 90-foot long inboard ditch along the middle section of the switchback. Inboard ditch should drain to dip/ditch relief culvert at **MP 71** • At MP 71 either enlarge the dip or install an 18-inch diameter ditch relief culvert • Rock 350 feet of road  **MP 70** (1) Add dip (2) Add 80 foot long inboard ditch to drain to end of switchback (3) Add 90 foot long inboard ditch to drain to MP 71 (4) Rock 350 feet of road **MP 71** Gully – remove road fill or add pipe. Add two dips between MP 71 and MP 72 **MP 72** Plugged culvert – remove crossing or replace pipe **MP 77** Add ditch relief culvert **MP 78** Old crib wall – evaluate stability **MP 79** Existing ditch relief culvert - OK

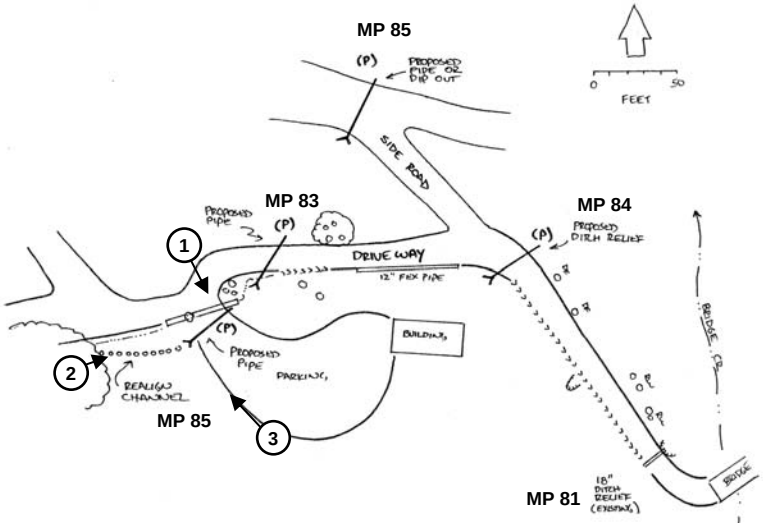
ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
650	**71**	Road Drainage	M	M	**M**	20	X	X	**DESCRIPTION** This site is located at the junction of the main road (Road 31) and a secondary spur road accessing neighboring property to the east. At the junction there is a small dip that has eroded an 8 foot x 13 foot x 4 foot gully into the outside edge of the road. An old 2 foot diameter crib log wall supports outside edge of the fill at this location. The erosion is attributed to concentrated runoff from the main road as well as from stream flow diverted down the road from the crossing at **MP 72**. **RECOMMENDATIONS** • Correct diversion at stream crossing **MP 72** • Excavate 5+ cy of perched fill at the outlet of the first dip (**MP 71**) and remove the old crib logs. Fill can be feathered out on the road. If road is to be permanent then install ditch relief culvert with rock energy dissipater. • Install 2 new dips on the secondary road • Add a ditch relief culvert on the main driveway at **MP 77**   Diverted stream flow from MP 72

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
650	**72**	Stream Crossing: Culvert	M	M	**M**	20	X	X	**DESCRIPTION** 18 inch X 60 foot culvert at a 1-acre ephemeral stream. The inlet to the culvert is totally plugged allowing water to be diverted down the road to **MP 71**. The crossing is built up on thick overstepped fill. The crossing volume is about 200 cy with maximum depth of fill at about 13 feet. **RECOMMENDATIONS** Mitigation is depended upon the long term use of this road. Several alternatives exist at this site depending upon if the crossing is to be removed (abandoned) or replaced. **Alternative 1: Abandon Road** • Remove the crossing by excavating fill down to the natural channel. • The excavated channel shall be a minimum of 6 feet wide with banks laid back to a 1.5:1 slope. About 200 cy of material will need to be removed. • The excavation channel should incorporate a 3 foot wide bench located 3 feet above the channel to intercept material that may slough off of the steep banks. • Install 9 inch wattles at 5 foot spacings along the excavated channel to act as temporary erosion control until site revegetates. Wattles to be placed parallel to the stream channel. **Alternative 2: Upgrade Road** • Additional work will be required to develop mitigation measures upgrade the road for permanent use **MP 72**  (1) Remove the old culvert and crossing fills to form channels that are as close as feasible to the natural watercourse grade and orientation. The excavated channels shall have a minimum of 6 foot wide channel bottom Channel banks shall be laid back to a 1.5:1 slope and incorporate a 3 foot wide bench 3 feet above the channel bottom.
640	**73**	Road Drainage	LM	LM	**LM**	5			**DESCRIPTION** 300 feet of rocked driveway road adjacent to an intermittent stream. The road is drained by an inside ditch that is actively eroding. **RECOMMENDATIONS** • Clean and rock 300 feet of the inboard road ditch

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
648	**74**	Stream Crossing: Culvert	L	LM	**LM**	10	X	X	**DESCRIPTION** 24 inch X 20 foot metal culvert on spur road. No significant erosion observed but diversion potential exists. Spur road may not be needed in which case it would be prudent top remove this pipe. **RECOMMENDATIONS** • Remove pipe and excavate crossing to native channel. Excavated channel should be a minimum of 4 foot wide with banks laidback to a 1.5:1 slope. About 10 cy of fill will need to be excavated from the channel. Fill can be feathered adjacent to the road.
640	**75**	Stream Crossing: Culvert	L	LM	**M**	?	X	X	**DESCRIPTION** The old driveway crosses La Honda Creek. The crossing consists of a 48 inch diameter and two 18 inch diameter culverts. The 48 inch pipe appears to be from an old steam donkey boiler. The up and downstream sided of the crossing consist of 11 foot high concrete headwalls making the crossing seem like a bridge. The outlet of the crossing is shotgunned about 4 feet. Capping the concrete headwalls is several feet of fill retained by rotting crib logs. Although the crossing apparently has preformed well over time there are several potential problems. First, the crossing is undersized for a design 100 flow. Second, the concert headwall on the downstream side is undercut in a few places making is structural integrity questionable. Site is presently stable for short term – Long term stability is suspect. **RECOMMENDATIONS** • Evaluate long term stability of the crossing  

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
640	**76**	Stream Crossing: Culvert	L	LM	**LM**	10			**DESCRIPTION** 15 inch x 20 metal pipe draining a small ephemeral stream. Presently there is little flow in the channel, in part, due to the upstream diversion at **MP 72**. Outlet to this culvert is plugged and could not be found which could lead to erosion if the diversion at **MP 72** is repaired. **RECOMMENDATIONS** • Clean culvert outlet and 100 feet of the inboard ditch
640	**77**	Long inboard ditch	L	L	**L**	5		X	**DESCRIPTION** Long inboard ditch without problems. Ditch collects some water from **MP 71** locate on the spur road immediately upslope. **RECOMMENDATIONS** • Install a 18 inch x 20 foot ditch relief culvert
640	**78**	Road Stability	L	M	**MH**	120			**DESCRIPTION** 200 feet of the road is supported by an approximately 10 foot high near vertical log crib wall. The logs comprising the wall are deteriorating and beginning to fail. Portions of the road prism may fail as erosion along the toe of the crib occurs and as the logs deteriorate further. Additional work will be required to evaluate erosion potential and stability hazard at this site. **RECOMMENDATIONS** • Additional analysis of the stability and erosion potential of the old crib wall is required 
640	**79**	Stream Crossing: Culvert	L	L	**L**	0			**DESCRIPTION** Existing 15 inch x 30 foot ditch relief culvert without problems **RECOMMENDATIONS** • None required
640	**80**	Stream Crossing: Bridge	L	L	**L**	0			**DESCRIPTION** Approximately 44 foot long, 11-foot wide wood bridge at Bridge Creek. The bridge is constructed from 4 inch x12 inch pressure treated Douglas-fir joists at 1-foot on center and decked with 4 inch x 12 inch pressure treated Douglas-fir planks. The bridge is 44 feet long with two intermediate supports; the maximum span is 6 foot feet. No signs of active erosion and no history of problems at this site. Structural integrity of the bridge is outside the scope of this study. **RECOMMENDATIONS** • None required
640	**81**	Ditch Relief culvert	L	L	**LM**	3		X	**DESCRIPTION** This is a 15 inch x 17 foot metal ditch relief culvert. Minor active erosion observed at the culvert outlet. **RECOMMENDATIONS** • Add rock energy dissipater using about 3 cy of 12 inch diameter rock

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
640	**82**	Stream Crossing: Culvert	M	M	**MH**	10	X	X	**DESCRIPTION** This is a 12 inch x 20 foot culvert located on an ephemeral stream at the junction of main driveway and adjacent parking area. Stream flow is directed down the road ditch for 80 feet before entering the culvert inlet. There is a small (1 foot wide) separation in the pipe about 15 feet from the inlet to allow runoff from an adjacent parking area to also enter the pipe. This break in the pipe is only marginally effective in collecting runoff. The outlet of the pipe discharges in to the inboard ditch and ultimately conveyed over 450 feet down the road to ditch relief culvert above Bridge Creek (See **MP 81**). Below this culvert runoff is conveyed about 460 feet down the inside ditch to a ditch relief culvert at **MP 81** located just before the bridge over Bridge Creek. Where the road is narrow a 40 foot long culvert has been placed in the inside ditch. This culvert is slowly being crushed by vehicular traffic. Overall road drainage and culvert layout is poorly designed and inadequate. **RECOMMENDATIONS** Refer to the figure below **MP 82** • Relocate and enlarge 70± feet of the inboard ditch upstream of the culvert inlet. The channel shall be a minimum of 2 feet deep with a 2 foot wide channel bottom. Banks shall be laid back to a 2:1 slope. A berm shall separate the ditch from the road. Exposed soils shall be mulched and revegetated with native plants. • Replace the 12 inch x 40 foot pipe with new 24 inch x 30 foot culvert. The inlet to the culvert should be located about 9 feet to the south as shown on the figure below. Add a rock energy dissipater at the culvert outlet. • Clean ~100 feet of the inboard ditch of the adjacent parking area into the culvert inlet **MP 83:** • Install a new permanent 18 inch x 60 foot culvert on the main driveway direct streamflow out of the inside ditch. This culvert will receive stream flow from the small ephemeral stream draining past MP 82. The outlet of this culvert should discharge into the inside edge of the lower road. • A rock energy dissipater will be required at the outlet using about 3 cy of 12 inch rock • Rock the inlet and outlet to the top of the pipe using 2 cy of 8 inch rock **MP 84:** • Clean the inside road ditch and remove the 18 inch pipe located within the inside ditch. • Install a 18 inch x 60 foot ditch relief culvert down grade of the old pipe **MP 85:** Either dip the road out through the crossing or install a permanent 24 inch x 20 foot culvert

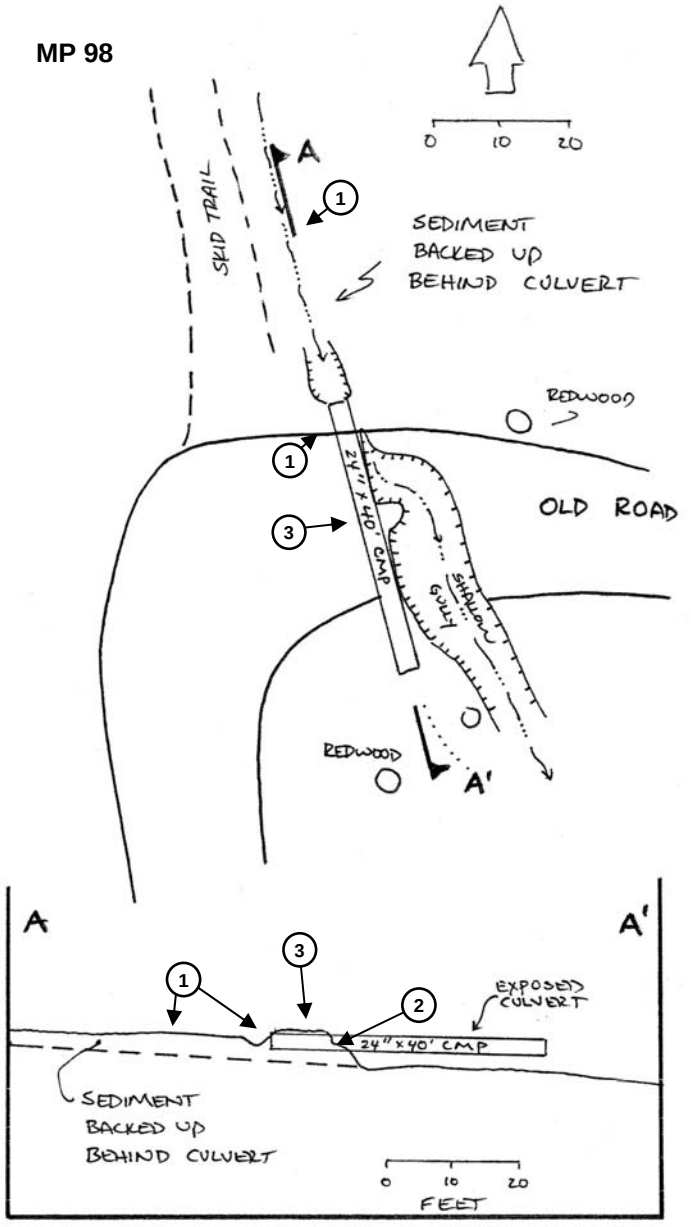
ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
	82								 **MP 81** Existing ditch relief culvert – add rock energy dissipater **MP 82** (1) Relocate and enlarge 70± feet of the inboard ditch upstream of the culvert inlet (2) Replace the 12 inch x 40 foot pipe with new 24 inch x 30 foot culvert. (3) Clean ~100 feet of the inboard ditch of the adjacent parking area into the culvert inlet **MP 83** Install a permanent 24 inch x 60 foot culvert **MP 84** Clean inboard ditch and drain to new 18 inch x 60 foot ditch relief culvert **MP 85** Either dip the road out through the crossing or install a permanent 24 inch x 20 foot culver
640	**83**	Stream Crossing	M	M	**MH**	20	X	X	**DESCRIPTION** Ephemeral stream diverted down inboard edge of the driveway. See **MP 82** for complete description **RECOMMENDATIONS** • Install a new permanent 24 inch x 60 foot culvert on the main driveway direct streamflow out of the inside ditch. This culvert will receive stream flow from the small ephemeral stream draining past **MP 8**2. The outlet of this culvert should discharge into the inside edge of the lower road. • A rock energy dissipater will be required at the outlet using about 3 cy of 12 inch rock • Rock the inlet and outlet to the top of the pipe using 2 cy of 8 inch rock
640	**84**	Road drainage	M	M	**MH**	10	X	X	**DESCRIPTION** Ephemeral stream is diverted down the inboard road ditch from **MP 82**. An 18 inch culvert has been placed in the inside ditch to gain extra road width where the road is narrow. This culvert is partially crushed. **RECOMMENDATIONS** • Clean the inside road ditch and remove the 18 inch pipe located within the inside ditch. • Install a 18 inch x 60 foot ditch relief culvert down grade of the old pipe

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
642	**85**	Stream crossing	LM	M	**MH**	5	X	X	**DESCRIPTION** Unused spur road crosses a small ephemeral stream. This stream does not receive flow since it had been diverted down the inside ditch at **MP 83**. See **MP 82** for complete description **RECOMMENDATIONS** • Either dip the road out through the crossing or install a permanent 24 inch x 20 foot culvert
642	**86**	Road Drainage	H	L	**MH**	0	X	X	**DESCRIPTION** This is a 35-foot long old flat car bridge over La Honda Creek. The decking to the bridge is starting to rot and is no longer suitable for safe passage. No significant erosion observed. **RECOMMENDATIONS** • Either upgrade the bridge or remove. Additional work will be required to develop final recommendations.
642	**87**	Stream Crossing	L	L	**LM**	8	X	X	**DESCRIPTION** A small ephemeral stream draining mainly a wet upslope area is diverted down the inboard road ditch for about 125 feet where it has caused minor erosion. The crossing is located northwest of the bridge at **MP 86** so upgrades are dependent on whether the bridge site is to be upgraded or abandoned. **RECOMMENDATION** **Alternative 1** • Install a new 24 inch x 20 foot culvert at the stream crossing • Install 1 new dip about 120 feet to the east **Alternative 2** • Remove the crossing and establish natural drainage path • Install 1 new dip about 120 feet to the east
642	**88**	Stream Crossing: Culvert	N	N	**L**	0			**DESCRIPTION** 24 inch x 40 foot CMP at an ephemeral watercourse. Crossing appears adequate. **RECOMMENDATION** • No treatment required
642	**89**	Road Drainage	LM	LM	**LM**	2			**DESCRIPTION** 1000 feet of intermittently poorly drained road with little to no erosion due to low use. This road may not be needed if the bridge at **MP 86** is removed. **RECOMMENDATIONS** • Install 5 waterbars/rolling dips at the flagged locations
642	**90**	Road Drainage	M	M	**M**	10		X	**DESCRIPTION** 650 feet of locally steep poorly drained road which may receive year round access. There is one plugged ditch relief culvert at the western end of the road and small waterbar about mid reach. The steep road pitch makes the road difficult to drain and in the past concentrated road runoff has resulted in at least one shallow landslide/gully and is currently causing persistent fine grained sediment to be delivered to La Honda Creek. Future erosion is expected along this road reach. **RECOMMENDATIONS** • Clean the inboard ditch • Replace the existing plugged 18 inch x 20 foot ditch relief culvert • Add 2 additional 18 inch X 20 foot ditch relief culverts • Add rolling dip at upper end of road segment

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
642	**91**	Stream Crossing: Culvert	L	L	**L**	0			**DESCRIPTION** 5 foot CMP at La Honda Creek. At this location La Honda Creek drains about 420 acres. The culvert outlet is shotgunned a few feet above the stream with a large plunge pool at the outlet. The pipe is undersized but functioning adequately. **RECOMMENDATIONS** • None required at present
642	**92**	Road Drainage	L	LM	**LM**	5			**DESCRIPTION** 1000 feet of poorly drained road that accesses the water intake on Spring Creek. Concentrated road runoff is resulting in rilling of the road bed and the contributing persistent fine grained sediment to La Honda Creek. **RECOMMENDATIONS** • Install 6 waterbars
642	**93**	Road Drainage	L	LM	**LM**	5			**DESCRIPTION** 300 feet graded road located within 15 feet of Spring Creek. Although the road is poorly drained allowing runoff to concentrate. Minimal erosion was observed. **RECOMMENDATIONS** • Install of 2 rolling dips/waterbars as flagged
643	**94**	Road Drainage	LM	M	**M**	5			**DESCRIPTION** 350 feet of steep road branching off of Highway 35. There is a buried 18 inch ditch relief culvert at the upper end of the road. Runoff from Highway 35 is diverted down the dirt road causing erosion of the inboard ditch and road surface. Some of this runoff may be conveyed further down the road to Site 90 and contributed to the problems at that location. **RECOMMENDATIONS** • Install 2 waterbars or rolling dips
644	**95**	Stream Crossing: Culvert	M	H	**H**	30	X	X	**DESCRIPTION** Double 24 inch diameter CMP on a recently constructed road across La Honda Creek. At this location La Honda Creek drains about 420 acres. The two culverts are undersized for a 100 year flood flow. Crossing volume is about 25 cy. **RECOMMENDATIONS** • Remove pipes and abandon the road by excavating the crossing to native stream channel. The excavated channel shall be a minimum of 5 feet wide with bank inclined at about 1.5:1 slope. About 30 cy of fill material will need to be excavated. • Material can be pushed up the road on the left bank of the stream to prevent access • Exposed ground shall be mulched or slash packed
641	**96**	Road Drainage	LM	LM	**LM**	5			**DESCRIPTION** Poorly drained dirt road dropping down to La Honda Creek. Road is infrequently used and probably not needed. There is no significant erosion on the road due to low use. About 100 feet above the road, however, are several 2 to 4 foot high recent scarps likely representing incipient movement of a cutbank failure. Additional work would be required to evaluate the stability of this feature if the road were to remain open. **RECOMMENDATIONS** • Decommission the dirt road by installing 2 large waterbars as mapped
660	**97**	Road Drainage	LM	LM	**LM**	5			**DESCRIPTION** Moderately drained infrequently used road. There is no significant erosion on the road due to low use. **RECOMMENDATIONS** • Install 7 new dips

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
660	**98**	Road Drainage /Stream crossing	LM	M	**LM**	5			**DESCRIPTION** This is a roughly 200 foot long segment of road that crosses moderate gradient ground towards the base of the hillside. The road crosses two shallow, poorly defined ephemeral streams. Some of the water from these watercourses is diverted down the road causing the ground to be seasonally wet and resulting in minor erosion, Increase erosion is expected with increased use. **RECOMMENDATION** **Alternative 1: Current use** • None required **Alternative 2: Increased use** • Install a 200 foot long inboard ditch • Add 18 inch x 10 foot ditch relief culvert • Rock 200 feet of the trail • Add 5 dips on the segment of road leading from the ridge to this site
660	**99**	Stream crossing: Culvert	H	M	**M**	50	X	X	**DESCRIPTION** Washed out 24 inch x 40 foot culvert at a low gradient ephemeral stream draining a roughly 45 acre basin. The inlet has plugged with debris causing the crossing to be overtopped and resulting in a 30 foot long, 8 foot wide and 2 to 3 foot deep gully. About 40% of the crossing has washed out with the remaining material expected to slowly erode over time. However, because the rate of erosion is relatively slow, immediate attention is not required. Removal of the crossing will result headward gully erosion. Therefore if the crossing is to be removed then nick point will need to be armored with rock. The overall low rate of erosion indicates a lower priority for treatment. **RECOMMENDATION** **Alternative 1: Current Use** • Remove old culvert and excess crossing fill. Excavated crossing shall have a minimum 5 foot wide channel bottom with banks laid back to a 2:1 slope. About 20 cy of material will need to be removed. • Armor the nick point with 5 cy of 12 inch to 18 inch diameter rock **Alternative 2: Increased Use** • Replace the old culvert wit a new 36 inch diameter by 20 foot long pipe or a short foot bridge. A rock ford is not recommended due to the wet nature of the ground. • If a foot bridge is installed than the old culvert and excess crossing fill will need to be removed and the nick point armored with ~ 5 cy of 12 inch to 18 inch diameter rock

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
	99								**MP 98**



ALTERNATIVE 1 – Current use

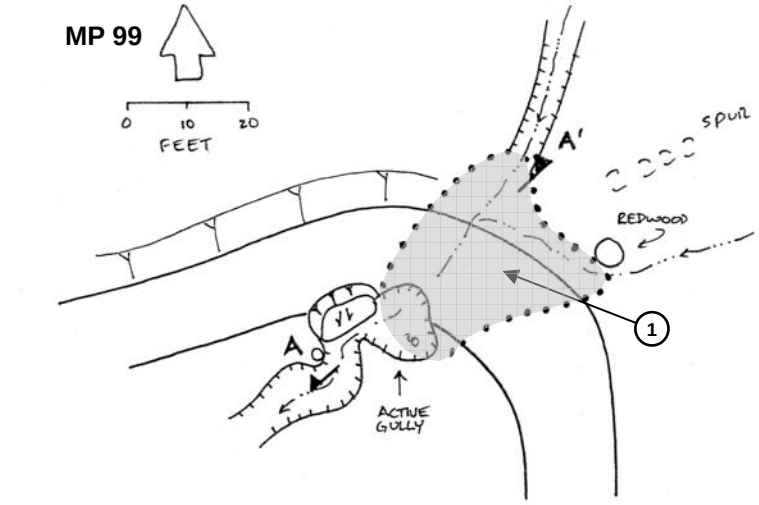
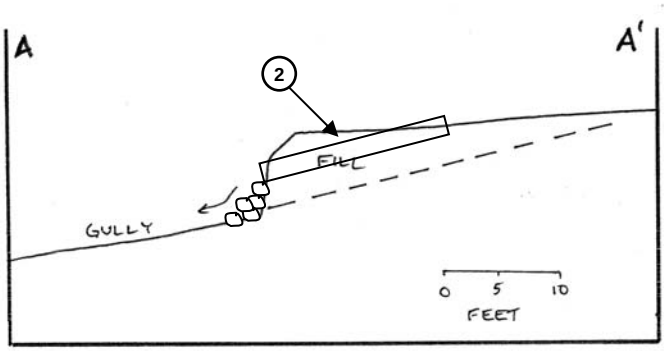
(1) Remove old culvert and excess crossing fill. Excavated crossing shall have a minimum 5 foot wide channel bottom with banks laid back to a 2:1 slope. About 20 cy of material will need to be removed.

(2) Armor the nick point with 5 cy of 12 inch to 18 inch diameter rock

ALTERNATIVE 2 – Increased use

(3) Replace the old culvert wit a new 36 inch diameter by 20 foot long pipe or a short foot bridge. If a foot bridge is installed than the old culvert and excess crossing fill will need to be removed and the nick point armored with ~ 5 cy of 12 inch to 18 inch diameter rock

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
660	**100**	Stream crossing: ford	H	M	**LM**	10	X	X	**DESCRIPTION** This is a partially washed out earth ford crossing located where an old skid trail (tractor trail) crosses the confluence of an intermittent and ephemeral stream. Combined the two watercourses drain about 28 acres. About 50% of the crossing has washed out resulting in a 10 foot long, 10 foot wide and 7 foot deep gully that has eroded partway into the outlet of the crossing. The eroded scarp is near vertical. The remaining road is about 10 feet wide as it makes a tight turn through the crossing. About 20 to 30 cy of future erosion is expected. **RECOMMENDATION** **Alternative 1: Abandon** • Excavate crossing fill. The excavated channel shall have a minimum 5 foot wide channel bottom with banks laid back to a 1.5: 1 slope. About 30 cy of material will need to be removed. Fill can be spread out on the adjacent segments of road and straw mulched. **Alternative 2: Culvert** • Install a 24 inch x 30 foot culvert at the crossing • Support the downslope side of the crossing with rock armor. Rock shall consist of 12 inch diameter rock inclined no steeper than a 1:1 slope. **Alternative 3: Foot Bridge** • Excavate crossing fill. The excavated channel shall have a minimum 5 foot wide channel bottom with banks laid back to a 1.5:1 slope. About 30 cy of material will need to be removed. Excavated spoils shall be endhauled to the landing west of the crossing • Install a 20 to 30-foot long foot bridge. Additional work would be required to develop design specifications for the foot bridge

ROAD NUMBER	MAP POINT	FEATURE	ROAD DAMAGE [1]	EROSION POTENTIAL [2]	TREATMENT PRIORITY [3]	FUTURE EROSION (cy)	1600 [4]	GP [5]	DESCRIPTION - RECOMMENDATIONS
	100								  **1 Alternative 1: Abandon** • Excavate crossing fill **2 Alternative 2: Culvert** • Install a 24 inch x 30 foot culvert at the crossing. Support the downslope side of the crossing with rock armor. **3 Alternative 3: Foot Bridge (not shown)** • Excavate crossing and install a 20 to 30-foot long foot bridge.

La Honda Master Plan

San Mateo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Library	10	1000sqft
City Park	5	Acre

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	5	**Precipitation Freq (Days)**	70		

1.3 User Entered Comments

Project Characteristics -

Vehicle Trips - Changed trip length to account for rural location of the Preserve.

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	46.85	42.38	27.54		24.92	1.98	26.86	2.25	1.98	4.19						5,016.66
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2012	46.85	42.38	27.54		1.12	1.98	3.06	0.05	1.98	2.00						5,016.66
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.28	0.00	0.00			0.00	0.00		0.00	0.00						0.00
Energy	0.01	0.07	0.06			0.00	0.01		0.00	0.01						83.28
Mobile	2.85	5.32	32.51		46.63	0.22	46.85	4.22	0.22	4.43						5,343.33
Total	**3.14**	**5.39**	**32.57**		**46.63**	**0.22**	**46.86**	**4.22**	**0.22**	**4.44**						**5,426.61**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.28	0.00	0.00			0.00	0.00		0.00	0.00						0.00
Energy	0.01	0.07	0.06			0.00	0.01		0.00	0.01						83.28
Mobile	2.85	5.32	32.51		46.63	0.22	46.85	4.22	0.22	4.43						5,343.33
Total	**3.14**	**5.39**	**32.57**		**46.63**	**0.22**	**46.86**	**4.22**	**0.22**	**4.44**						**5,426.61**

3.0 Construction Detail

3.1 Mitigation Measures Construction

3.2 Demolition - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.59	0.00	0.59	0.00	0.00	0.00						0.00
Off-Road	4.62	36.78	21.38			1.93	1.93		1.93	1.93						3,612.05
Total	**4.62**	**36.78**	**21.38**		**0.59**	**1.93**	**2.52**	**0.00**	**1.93**	**1.93**						**3,612.05**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.18	1.46	1.70		4.45	0.04	4.49	0.42	0.04	0.46						200.50
Vendor	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00						0.00
Worker	0.11	0.13	1.36		3.82	0.01	3.83	0.36	0.01	0.37						230.33
Total	**0.29**	**1.59**	**3.06**		**8.27**	**0.05**	**8.32**	**0.78**	**0.05**	**0.83**						**430.83**

3.2 Demolition - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.59	0.00	0.59	0.00	0.00	0.00						0.00
Off-Road	4.62	36.78	21.38			1.93	1.93		1.93	1.93						3,612.05
Total	**4.62**	**36.78**	**21.38**		**0.59**	**1.93**	**2.52**	**0.00**	**1.93**	**1.93**						**3,612.05**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.18	1.46	1.70		0.01	0.04	0.05	0.01	0.04	0.05						200.50
Vendor	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00						0.00
Worker	0.11	0.13	1.36		0.01	0.01	0.02	0.01	0.01	0.02						230.33
Total	**0.29**	**1.59**	**3.06**		**0.02**	**0.05**	**0.07**	**0.02**	**0.05**	**0.07**						**430.83**

3.3 Grading - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.07	0.00	1.07	0.00	0.00	0.00						0.00
Off-Road	4.30	35.68	18.55			1.75	1.75		1.75	1.75						3,884.07
Total	**4.30**	**35.68**	**18.55**		**1.07**	**1.75**	**2.82**	**0.00**	**1.75**	**1.75**						**3,884.07**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.80	6.58	7.63		20.03	0.19	20.22	1.88	0.19	2.07						902.26
Vendor	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00						0.00
Worker	0.11	0.13	1.36		3.82	0.01	3.83	0.36	0.01	0.37						230.33
Total	**0.91**	**6.71**	**8.99**		**23.85**	**0.20**	**24.05**	**2.24**	**0.20**	**2.44**						**1,132.59**

3.3 Grading - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.07	0.00	1.07	0.00	0.00	0.00						0.00
Off-Road	4.30	35.68	18.55			1.75	1.75		1.75	1.75						3,884.07
Total	**4.30**	**35.68**	**18.55**		**1.07**	**1.75**	**2.82**	**0.00**	**1.75**	**1.75**						**3,884.07**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.80	6.58	7.63		0.03	0.19	0.22	0.03	0.19	0.22						902.26
Vendor	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00						0.00
Worker	0.11	0.13	1.36		0.01	0.01	0.02	0.01	0.01	0.02						230.33
Total	**0.91**	**6.71**	**8.99**		**0.04**	**0.20**	**0.24**	**0.04**	**0.20**	**0.24**						**1,132.59**

3.4 Paving - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.93	17.81	10.54			1.56	1.56		1.56	1.56						1,464.35
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**2.93**	**17.81**	**10.54**			**1.56**	**1.56**		**1.56**	**1.56**						**1,464.35**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00						0.00
Vendor	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00						0.00
Worker	0.11	0.13	1.36		3.82	0.01	3.83	0.36	0.01	0.37						230.33
Total	**0.11**	**0.13**	**1.36**		**3.82**	**0.01**	**3.83**	**0.36**	**0.01**	**0.37**						**230.33**

3.4 Paving - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.93	17.81	10.54			1.56	1.56		1.56	1.56						1,464.35
Paving	0.00					0.00	0.00		0.00	0.00						0.00
Total	**2.93**	**17.81**	**10.54**			**1.56**	**1.56**		**1.56**	**1.56**						**1,464.35**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00						0.00
Vendor	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00						0.00
Worker	0.11	0.13	1.36		0.01	0.01	0.02	0.01	0.01	0.02						230.33
Total	**0.11**	**0.13**	**1.36**		**0.01**	**0.01**	**0.02**	**0.01**	**0.01**	**0.02**						**230.33**

3.5 Architectural Coating - 2012

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	46.31					0.00	0.00		0.00	0.00						0.00
Off-Road	0.52	3.16	1.96			0.29	0.29		0.29	0.29						282.18
Total	**46.83**	**3.16**	**1.96**			**0.29**	**0.29**		**0.29**	**0.29**						**282.18**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00						0.00
Vendor	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00						0.00
Worker	0.01	0.02	0.17		0.48	0.00	0.48	0.05	0.00	0.05						28.79
Total	**0.01**	**0.02**	**0.17**		**0.48**	**0.00**	**0.48**	**0.05**	**0.00**	**0.05**						**28.79**

3.5 Architectural Coating - 2012

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	46.31					0.00	0.00		0.00	0.00						0.00
Off-Road	0.52	3.16	1.96			0.29	0.29		0.29	0.29						282.18
Total	**46.83**	**3.16**	**1.96**			**0.29**	**0.29**		**0.29**	**0.29**						**282.18**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00						0.00
Vendor	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00						0.00
Worker	0.01	0.02	0.17		0.00	0.00	0.00	0.00	0.00	0.00						28.79
Total	**0.01**	**0.02**	**0.17**		**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**						**28.79**

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.85	5.32	32.51		46.63	0.22	46.85	4.22	0.22	4.43						5,343.33
Unmitigated	2.85	5.32	32.51		46.63	0.22	46.85	4.22	0.22	4.43						5,343.33
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	135.00	270.00	270.00	1,263,600	1,263,600
Library	0.00	0.00	0.00		
Total	135.00	270.00	270.00	1,263,600	1,263,600

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
City Park	20.00	20.00	20.00	0.00	100.00	0.00
Library	14.70	6.60	6.60	52.00	43.00	5.00

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.01	0.07	0.06			0.00	0.01		0.00	0.01						83.28
NaturalGas Unmitigated	0.01	0.07	0.06			0.00	0.01		0.00	0.01						83.28
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
City Park	0	0.00	0.00	0.00			0.00	0.00		0.00	0.00						0.00
Library	703.562	0.01	0.07	0.06			0.00	0.01		0.00	0.01						83.28
Total		**0.01**	**0.07**	**0.06**			**0.00**	**0.01**		**0.00**	**0.01**						**83.28**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
City Park	0	0.00	0.00	0.00			0.00	0.00		0.00	0.00						0.00
Library	0.703562	0.01	0.07	0.06			0.00	0.01		0.00	0.01						83.28
Total		**0.01**	**0.07**	**0.06**			**0.00**	**0.01**		**0.00**	**0.01**						**83.28**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.28	0.00	0.00			0.00	0.00		0.00	0.00						0.00
Unmitigated	0.28	0.00	0.00			0.00	0.00		0.00	0.00						0.00
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.06					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.21					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00			0.00	0.00		0.00	0.00						0.00
Total	**0.27**	**0.00**	**0.00**			**0.00**	**0.00**		**0.00**	**0.00**						**0.00**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.06					0.00	0.00		0.00	0.00						0.00
Consumer Products	0.21					0.00	0.00		0.00	0.00						0.00
Landscaping	0.00	0.00	0.00			0.00	0.00		0.00	0.00						0.00
Total	**0.27**	**0.00**	**0.00**			**0.00**	**0.00**		**0.00**	**0.00**						**0.00**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

This worksheet is for internal use only and need not be included in the Air Quality Appendix.

Construction Activities Summary

This worksheet summarizes the the various construction-related activities that would occur during different phases of the Master Plan. More detail is provided in the project description.

	PARKING	TRAILS	ADDITIONAL ACTIONS
Phase I			
	Allen Road Enhancements	Driscoll Ranch Main Access Road	
	ten parking spaces and turnaround	5.6 miles	
	Sears Ranch Road	bypass trails that go around existing residences	
	interim informal parking area for 10-20 vehicles	drainage improvements	
	portable restroom	new signage and gates	
	Driscoll Ranch West Gate	drainage improvements, incl. rocking/armoring, correcting inside ditches, installing rolling dips, re-crowning Rd surface	
	temporary parking lot	replacing culverts	
	10-20 vehicles	Allen Road parking Area/Easy Access Loop Trail	
	6 horse trailers	0.9 miles	
		resurfing	
		La Honda Creek Loop	
		4.8 miles	
		new trail, except for 1 mile	
		drainage improvements	
Phase II			
	Red Barn	Vista Poitnt Loop	demolition of dilapidated and obsolete structures
	15-25 vehicle parking spaces	2.8 miles	water infrastructure improvements
	3-6 horse trailers	using 2.2 miles of existing ranch roads	establish picnic areas
	restroom	drainage improvements	
	new driveway	Connection to Red Barn Area	
		0.3 miles	
	Sears Ranch Road	Connection to Driscoll Ranch	
	permanent parking area for 10-20 vehicles	1.5 miles of existing ranch road	
	permanent restroom	new ditch relief culverts and rocked fords	
		drainage improvements	

Phase III

Redwood Cabin Loop
- 2.3 miles
- 0.8 miles of existing road
- drainage improvements

Interior Loop
- 2.4 miles
- mostly along existing ranch roads
- 0.6 miles of realignment
- drainage improvements

Red Barn Loop
- 2.0 miles
- using existing ranch roads

Folger Ranch Loop
- 3.9 miles
- some existing ranch roads
- drainage improvements
- rocking

move overhead utility lines underground or replace w/solar

Phase IV

Sears Ranch Loop
- 1.9 miles

Harrington Creek Trail
- 1.6 miles

Restore Red Barn pond

Phase(s) Not Yet Determined

extensive repair of fencing and gates
stream bank restoration and reinforcement
mowing
prescribed burns or pile burning
selective conservation logging - A Forest Management Plan would be prepared and analyzed in a separte CEQA document
creation of fire fuel breaks
reduction of fire fuels along roadways
bridge repairs and upgrades
restoration of former ponds
depening of existing ponds

Trail to Ray's Peak
an in-and-out destination trail

This worksheet is for internal use only and need not be included in the Air Quality Appendix.

Construction Phase Dates used in CalEEMod Model Run

These are the dates use for construction phasing in CalEEMod. It is assumed that summer of 2012 is the earliest date when some construction activities might occur. The purpose of this model run is to estimate what the worst-case maximum daily emisisons. Thus, the order of the construction phases and the lenght of each phase are not important.

Phase Name	Start	End	days/week
Demolition	4-Jun-12	8-Jun-12	5
Grading	9-Jun-12	15-Jun-12	5
Paving	16-Jun-12	25-Jun-12	5
Architectural Coating	26-Jun-12	2-Jul-12	5

Notes Regarding Operational Emissions Sources

Vehicle Activity

180	weekend maximum peak-hour trips (10am-2pm)
1.5	factor for total daily trips
270	maximum daily trips
5	acres (proxie value for CalEEMod model run)
54	trips per acre
	includes trips by visitors and for park maintenance

mowing (accounted for in landscaping module of CalEEMod)

100 additional cattle (GHG emissions estimated outside of CalEEMod)

GHG Emissions from Cattle

	Value	Units	Source
Additional cattle on Preserve	100	head/year	project description
Enteric Fermentation			
CH4 emission rate	90.05	kg/head	Reference 1
CH4 emissions	9,005	kg	calculation
CH4 global warming potential	21	unitless	Reference 2
mass conversion rate	1,000	kg/MT	Reference 5
CH4 emissions expressed in CO2-e	189	MT/year	conversion calculation
Manure Management			
CH4 emission rate	2.67	kg/head	Reference 3
CH4 emissions	267	kg	calculation
CH4 global warming potential	21	unitless	Reference 2
mass conversion rate	1,000	kg/MT	Reference 5
CH4 emissions expressed in CO2-e	6	MT/year	conversion calculation
N2O emission rate	0.00	kg/head	Reference 4
N2O emissions	0	kg	calculation
N2O global warming potential	310	unitless	Reference 2
mass conversion rate	1,000	kg/MT	conversion calculation
N2O emissions expressed in CO2-e	0	MT/year	conversion calculation
CH4 + N2O emissions expressed in CO2-e	6	MT/year	summation
Total	195	MT/year	summation

References

1 California Air Resources Board. [no date]. Documentation of California's Greenhouse Gas Inventory, Fourth Edition, Last Updated October 26, 2011. Available: <http://www.arb.ca.gov/cc/inventory/doc/docs3/3a1aii_entericfermentation_livestockpopulation_beefcows_ch4_2000.htm>. Accessed April 10, 2012.

2 Table C.1 on pg. 94 (SAR column) of California Climate Action Registry (CCAR). 2009. General Reporting Protocol. 2009. v 3.1 Appendix C. Available: <http://www.climateregistry.org/resources/docs/protocols/grp/GRP_3.1_January2009.pdf>. Accessed: December 2010.

3 California Air Resources Board. [no date]. Documentation of California's Greenhouse Gas Inventory, Fourth Edition, Last Updated October 26, 2011. Available: <http://www.arb.ca.gov/cc/inventory/doc/docs3/3a2aii_manuremanagement_pasture_livestockpopulation_notonfedbeefcows_ch4_2000.htm>. Accessed April 10, 2012.

4 California Air Resources Board. [no date]. Documentation of California's Greenhouse Gas Inventory, Fourth Edition, Last Updated October 26, 2011. Available: <http://www.arb.ca.gov/cc/inventory/doc/docs3/3a2aii_manuremanagement_pasture_livestockpopulation_notonfedbeefcows_n2o_2000.htm>. Accessed April 10, 2012.

5 onlineconversion.com/weight_common.htm

This worksheet is for internal use only and need not be included in the Air Quality Appendix.

status	task
done	change unpaved roads to 1%
done	need to add a building to account for architectural coatings on existing buildings that would be preserved
done	reduce off-road equipment use for demolition phase a lot
done	reduce off-road equipment use for grading phase a bit
done	check inputs for demolition phase, reduce amount
done	check inputs for grading phase
done	remove building construction phase
done	check parameters of paving phase, particularly acreage
done	add a building in the land uses so that square footage is provided in the operational architectural emissions screen
done	Compare to BAAQMD TOSs.
done	Review note on the "Dust from Material Moving" tab of the Construction page.
done	May reduce the % of paved road in the "On-Road Fugitive Dust" tab of the Construction page.
done	use correct trip rate for mobile operational
constantly	readjust dates in construction phasing

Summary of Construction-Related Emissions (lb/day)

	ROG	NO_x	PM10 Exhaust	PM2.5 Exhaust	CO_2e
Maximum Daily Emissions by Construction Activity					
Demolition					
Off-Road Equipment	4.62	36.78	1.93	1.93	3,612.05
Mobile-Source (on-road)	0.29	1.59	0.05	0.05	430.83
Subtotal	4.91	38.37	1.98	1.98	4,042.88
Grading					
Off-Road Equipment	4.30	35.68	1.75	1.75	3,884.07
Mobile-Source (on-road)	0.91	6.71	0.20	0.20	1,132.59
Subtotal	5.21	42.39	1.95	1.95	5,016.66
Paving					
Off-Road Equipment	2.93	17.81	1.56	1.56	1,464.35
Mobile-Source (on-road)	0.11	0.13	0.01	0.01	230.33
Subtotal	3.04	17.94	1.57	1.57	1,694.68
Architectural Coating					
Off-Gassing	46.31	—	0.00	—	0.00
Off-Road Equipment	0.52	3.16	0.29	0.29	282.18
Mobile-Source (on-road)	0.01	0.02	0.00	0.00	28.79
Subtotal	46.84	3.18	0.29	0.29	310.97
Combined Maximum Daily Emissions	60.00	101.88	5.79	5.79	11,065.19
Average Daily Combined Emissions	30	51	3	3	2,766
BAAQMD Thresholds (average daily)	54	54	82	54	1,100 MT/year

Assumed ratio of average daily emissions to maximum daily emissions:	50%
Portion of year when construction activity would occur:	50%

Notes

Emissions estimates were generated with the BAAQMD-approved CalEEMod model based on the types of construction activities discussed in the project description and default parameters representative of conditions in San Mateo County. The worst-case maximum level of emissions was estimated for demolition, grading, paving, and architectural coatings. The average daily emissions are estimated based on the assumption that demolition, grading, paving, and architectural coating would take place simultaneously even though it is likely that there would be very little construction activity on some days.

Summary of Daily Operational Emissions (lb/day)

	ROG	NO_X	PM_{10}	$PM_{2.5}$	CO2e
Maximum Weekend Peak-Day Operational Emissions					
Area Sources	0.28	0.00	0.00	0.00	0.00
Energy Use	0.01	0.07	0.01	0.01	83.28
Mobile-Sources	2.85	5.32	46.85	4.43	5,343.33
Total	3.14	5.39	46.86	4.44	5,426.61
Average Daily Operational Emissions					
Area Sources	0.28	0.00	0.00	0.00	0.00
Energy Use	0.01	0.07	0.01	0.01	83.28
Mobile-Sources	1.43	2.66	23.43	2.22	2,671.67
Total	1.57	2.70	23.43	2.22	2,713.31
BAAQMD Thresholds (average daily)	54	54	82	54	1,100 MT/year

Assumed ratio of average daily mobile-source emissions to maximum daily emissions: 50%

Notes

Emissions estimates were generated with the BAAQMD-approved CalEEMod model based on vehicle trips provided in the traffic analysis and default parameters representative of conditions in San Mateo County. It is assumed that average daily mobile-source emissions would be approximately half of emissions on a peak weekend day due to there being less visitors, as stated for peak-hour periods in the traffic analysis.

Summary of Daily Operational Emissions (lb/day)

	value	units	source
Average daily operational CO2e emissions	2,713.31	lb/day	worksheet: Operational Emiss Summary
weekend days (and holidays) per year	115	days/year	calendar
weekdays per year	261	days/year	calendar
Annual operational CO2e emissions	1,020,203	lb/year	calculation
Avg. daily construction CO2e emissions	2,766	lb/day	worksheet: Construction Emiss Summary
Annual construction CO2e emissions	723,189	lb/year	calculation
mass conversion rate	2,204.62	lb/MT	onlineconversion.com/weight_common.htm
Annual CO2e from area, energy, and mobile sources	463	MT/year	conversion calculation
Annual construction CO2e emissions	328	MT/year	conversion calculation
Annual CO2e emissions from additional cattle	195	MT/year	worksheet: cattle GHGs
Total Annual CO2e emissions	986	MT/year	summation
BAAQMD Threshold for CO2e	1,100	MT/year	BAAQMD's CEQA Guide

Appendix C-1. Special-Status Plants That Have Potential to Occur in the La Honda Open Space Preserve.

Common and Scientific Name	Legal Status [1] Federal/State/ Rare Plant Rank	Geographic Distribution	Habitat Requirements	Likelihood to Occur with the Study Area[2]
Anderson's manzanita *Arctostaphylos andersonii*	–/–/1B.2	Western San Francisco Bay region, Santa Cruz Mtns. Santa Clara, Santa Cruz, and San Mateo Counties. In chaparral and edges of broad-leaved upland forest, chaparral, north coast coniferous forest, below 2,300 feet.	Drier, exposed areas in mixed evergreen forest. Blooms from November-April.	Low. Last documented in the study area in 1934. Habitat still extant, but not observed during 2004 and 2007 surveys.
Kings Mountain manzanita *Arctostaphylos regismontana*	–/–/1B.2	Western San Francisco Bay region, northern Santa Cruz Mtns. Santa Cruz and San Mateo Counties. Found in broad-leaved upland forest, chaparral, North Coast coniferous forest, on granitic or sandstone-derived soils.	Drier, exposed areas in mixed evergreen forest. Blooms from January – April.	Known to occur. Documented in the study area in 2004 and 2007 surveys.
western leatherwood *Dirca occidentalis*	–/–/1B.2	San Francisco Bay region, Alameda, Contra Costa, Marin, Santa Clara, San Mateo, and Sonoma Counties. Found in moist areas in broad-leaved upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland, 165–1,300 feet.	Riparian forest, riparian woodland. Blooms from January-March.	Known to occur. Documented in the study area in 2002, 2005, and 2007 surveys.
Blasdale's bent grass *Agrostis blasdalei*	–/–/1B.2	Southern north coast, northern central coast, northern San Francisco Bay regions including portions of Mendocino, Marin, Santa Cruz, Sonoma Counties.	Coastal bluff scrub, coastal dunes, coastal prairie, perennial grasslands, below 330 feet	Low. Perennial grassland areas small and fragmented. Not observed during 2007 surveys.
San Francisco onion	–/–/1B.2	Central Coast, San Francisco Bay	Clay and often	Low.

Allium peninsulare var. franciscanum		region, Santa Clara, San Mateo, and Sonoma Counties	serpentinite soils of cismontane woodland, valley and foothill grassland, below 1,000 feet	Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
Schreiber's manzanita *Arctostaphylos glutinosa*	–/–/1B.2	Southwestern San Francisco Bay region, The Chalks, Santa Cruz County	Closed-cone coniferous forest, chaparral on diatomaceous shale	Low. Habitat may be present, but no known occurrences in the vicinity and not observed during 2007 survey.
Congdon's tarplant *Centromadia parryi ssp. congdonii*	–/–/1B.2	East San Francisco Bay Area, Salinas Valley, Los Osos Valley	Annual grassland, on lower slopes, flats, and swales, sometimes on alkaline or saline soils, below 700 feet	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
Franciscan thistle *Cirsium andrewsii*	–/–/1B.2	Klamath Ranges, Cascade Ranges, Sierra Nevada, Marin, San Francisco, San Mateo, and Sonoma Counties	Broad-leaved upland forest, coastal bluff scrub, coastal scrub, sometimes on serpentinite.	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
Mt. Hamilton thistle *Cirsium fontinale var. campylon*	–/–/1B.2	Mt. Hamilton Range, eastern San Francisco Bay area, Alameda, Santa Clara, and Stanislaus Counties	Freshwater seeps and streams on serpentine outcrops, chaparral, cismontaine woodland, valley and foothill grassland, 1000-2500 feet.	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
San Francisco collinsia *Collinsia multicolor*	–/–/1B.2	Northern and central central coast, northern outer south Coast Ranges. Monterey, Santa Cruz, San Francisco,	Closed-cone coniferous forest, coastal scrub	Low. Habitat present, but no known occurrences in the vicinity and not

		and San Mateo Counties		observed during 2007 survey.
Lost thistle *Cirsium praeteriens*	–/–/1A	Known only from 2 historic collections in Santa Clara County near Palo Alto (last in 1901)	Habitat is unknown, not in Jepson Manual, elevation 0–100 meters	Unknown.
California bottle-brush grass *Elymus californica*	–/–/4	Near the coast from Sonoma County to Santa Cruz County	Moist, mostly shady placed in a variety of habitats	Known to occur in the lower La Honda Creek and Harrinton Creek canyons
Ben Lomond buckwheat *Eriogonum nudum* var. *decurrens*	–/–/1B.1	Contra Costa and Santa Cruz Counties	Chaparral, cismontane woodland, maritime ponderosa pine sandhills	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
San Mateo woolly sunflower *Eriophyllum latilobum*	E/E/1B.1	One known occurrence in San Mateo County	Open areas in coast live oak woodland, often on roadsides, sometimes on serpentine, 150–500 feet. Blooms May-June	Low. Documented occurrence within 5 miles of study area, but not observed during 2007 survey.
Round-leaved filaree *Erodium macrophyllum*	–/–/1B.1	Sacramento Valley, northern San Joaquin Valley, Central Western California, South Coast, & northern Channel Islands (Santa Cruz Island)	Open sites, dry grasslands, & shrublands below 4,000 feet. Blooms Mar- May	Low. Documented occurrence within 5 miles of study area, but not observed during 2007 survey.
Fragrant fritillary *Fritillaria liliacea*	–/–/1B.2	Coast Ranges from Marin County to San Benito County	Adobe soils of interior foothills, coastal prairie, coastal scrub, annual grassland, often on serpentinite, below 1,350 feet	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
San Francisco gumplant	–/–/3.2	Coastal California, Monterey, Marin,	Coastal bluff scrub,	Low.

Grindelia hirsutula var. *maritima*		Santa Cruz, San Francisco, San Luis Obispo, and San Mateo Counties	coastal scrub, sandy soils on serpentine grassland	Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
Santa Cruz cypress *Hesperocyparis abramsiana*	E/E/1B.2	Santa Cruz and San Mateo Counties	Closed-cone coniferous forest, lower montane coniferous forest, sandstone or granitic derived soils.	Low. Documented occurrence within 5 miles of study area, but not observed during 2007 survey.
Marin western flax *Hesperolinon congestum*	T/T/1B.1	Marin, San Francisco, and San Mateo Counties	Chaparral, serpentinite grassland	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
Perennial goldfields *Lasthenia macrantha* ssp. *macrantha*	–/–/1B.2	Central Coast, Mendocino, Marin, San Luis Obispo, San Mateo, and Sonoma Counties	Coastal bluff scrub, coastal dunes, coastal scrub, 15–1,700 feet. Blooms Jan-Nov.	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
Legenere *Legenere limosa*	–/–/1B.1	Primarily located in the lower Sacramento Valley, also from north Coast Ranges, northern San Joaquin Valley and the Santa Cruz mountains.	Deep, seasonally wet habitats such as vernal pools, ditches, marsh edges,and river banks, below 500 feet.	Low. Habitat disturbed, no known occurrences in the vicinity, and not observed during 2007 survey.
Arcuate bush mallow *Malacothamnus arcuatus*	–/–/1B.2	Santa Clara, Santa Cruz, and San Mateo Counties	Chaparral	Low. Habitat present, known occurrence near Honda, but not observed during 2007 survey.
Marsh microseris *Microseris paludosa*	–/–/1B.2	San Francisco Bay area and Central coast	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland.	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
Dudley's lousewort	–/R/1B.2	Monterey, Santa Cruz*, San Luis	Maritime chaparral,	Low.

Pedicularis dudleyi		Obispo, and San Mateo Counties	North Coast coniferous forest, valley and foothill grassland. Blooms Apr-Jun	Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
Santa Cruz Mtns. beardtongue *Penstemon rattanii* var. *kleei*	–/–/1B.2	Santa Clara and Santa Cruz Counties	Chaparral, lower montane coniferous forest, North Coast coniferous forest, 1,300–3,600 feet. Blooms May-Jun	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
White-rayed pentachaeta *Pentachaeta bellidiflora* Yes	E/E/1B.1	One occurrence in San Mateo County, historically known also from Marin and Santa Cruz Counties	Annual grassland, often on serpentinite, flowers Mar-May	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
Monterey pine *Pinus radiata*	–/–/1B.1	Monterey, Santa Cruz, San Luis Obispo, and San Mateo Counties, Baja California	Closed-cone coniferous forest, cismontane woodland	Present in study area, but this species is only protected on the Monterey peninsula.
Choris's popcorn-flower *Plagiobothrys chorisianus* var. *chorisianus*	–/–/1B.2	Santa Cruz, San Francisco and San Mateo Counties	Chaparral, coastal prairie, coastal scrub, in mesic areas. Blooms from Mar-Jun	Known to occur. Documented in the study area in 2007.
San Francisco popcornflower *Plagiobothrys diffusus*	–/E/1B.1	Santa Cruz and San Francisco Counties	Coastal prairie, valley and foothill grassland. Blooms Apr-Jun	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
Slender-leaved pondweed *Stuckenia filiformis*	–/–/2.2	Lassen, Merced, Mono, Placer, Santa Clara*, and Sierra Counties, Arizona, Nevada, Oregon, Washington	Freshwater marsh, shallow emergent wetlands	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
San Francisco campion	–/–/1B.2	Northern Central Coast, San Francisco	Coastal bluff scrub,	Low.

Silene verecunda ssp. *verecunda*		Bay area, San Francisco, San Mateo, Santa Cruz, and Sutter Counties	chaparral, coastal prairie, coastal scrub, valley and foothill grassland, in sandy areas, 100-2,100 feet. Blooms Mar-Jun	Marginal habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
Santa Cruz microseris *Stebbinsoseris decipiens*	–/–/1B.2	Monterey, Marin and Santa Cruz Counties	Open areas in broad-leaved upland forest, closed-cone coniferous forest, chaparral, coastal prairie, and coastal scrub, sometimes serpentinite. Blooms Apr-May.	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.
Caper-fruited tropidocarpum *Tropidocarpum capparideum*	–/–/1B.1	Historically known from the northwest San Joaquin Valley and adjacent Coast, only currently known to occur in San Luis Obispo County	Range foothills Grasslands in alkaline hills below 1,500 feet. Blooms Mar-Apr.	Low. Presumed extirpated from the state.
Long beard lichen *Usnea longissima*	–/–/–	California populations are centered in Humboldt County, with additional occurrences in Del Norte, Mendocino and Sonoma counties. Historically known from Santa Cruz and San Mateo counties.	North coast coniferous forest, broadleafed upland forest. Grows in the "redwood zone" on a variety of trees, including big leaf maple, oaks, ash, douglas fir, and bay. 0–2,000 feet	Low. Possibly extirpated from study area vicinity
Slender silver-moss *Anomobryum julaceum*	–/–/2.2	Humboldt, Mariposa, and Santa Cruz Counties. Oregon and elsewhere. Infrequent in CA but abundant elsewhere.	Broadleafed upland forest, lower montane coniferous forest, North Coast coniferous forest	Low. Habitat present, but no known occurrences in the vicinity and not observed during 2007 survey.

			damp rock and soil on outcrops, usually on roadcuts,300–3,000 feet	
[1] **Status definitions:**				
Federal: E = listed as Endangered under the federal Endangered Species Act T = listed as Threatened under the federal Endangered Species Act – = no listing or legal protection	**State:** E = listed as Endangered under the California Endangered Species Act R = listed as Rare under the California Native Plant Protection Act. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation T = listed as Threatened under the California Endangered Species Act – = no listing or legal protection	**California Rare Plant Rank:** 1A Presumed extinct in California 1B Considered rare or endangered in California and elsewhere (protected under CEQA, but not legally protected under ESA or CESA) 2 Considered rare or endangered in California but more common elsewhere (protected under CEQA, but not legally protected under ESA or CESA) **Extensions:** .1 Seriously endangered in California (>80% of occurrences are threatened and/or high degree and immediacy of threat) .2 Fairly endangered in California (20 to 80% of occurrences are threatened) .3 Not very endangered in California		
2 Potential to Occur Definitions				
Known: Documented to occur in the study area High: Known occurrences in the region; or presence of suitable habitat conditions and suitable microhabitat conditions. Moderate: Known occurrences in the region; or presence of suitable habitat conditions but suitable microhabitat conditions are not present Low: Plant not known to occur in the region; or habitat conditions of poor quality.				
Sources: La Honda Creek Open Space Preserve Master Plan, Existing Conditions Report (MROSD 2007) and DFG 2012				

Appendix C-2. Special-Status Animals That Have Potential to Occur in the La Honda Open Space Preserve.

Species	Status[1] Federal/State/Other			Distribution and Habitat Requirements	Potential for Occurrence
Invertebrates					
Bay checkerspot butterfly *Euphydryas editha bayensis*	T	–	–	Serpentine grassland containing oviposition and larval food plant *Plantago erecta*	Unlikely to occur. No known serpentine outcrops or soils on the site. The study area does not contain designated critical habitat (USFWS 2008).
Fish					
Coho salmon-Central CA Coast ESU *Oncorhynchus kisutch*	E	E	–	Clear, cool, perennial sections of relatively undisturbed low gradient streams, with high dissolved oxygen levels. Prefer streams with dense canopy cover (generally conifers) without rooted or aquatic vegetation. Require stream temperatures between 40°F-58°F. Gravel substrates are optimum for spawning habitat.	Could occur. Species has been recently documented in San Gregorio Creek watershed (Nelson 2006), and historically documented in La Honda Creek. Rearing habitat is present; limited spawning habitat in the study area. La Honda, Bogess, and Harrington Creeks in the Preserve are designated as critical habitat.
Steelhead Trout – central California coast DPS *Oncorhynchus mykiss irideus*	T	–	–	Clear, cool, perennial sections of relatively undisturbed streams. Prefer streams with dense canopy cover without rooted or aquatic vegetation and water temperatures ranging between 40°F-58°F. Gravel substrates are optimum for spawning habitat. Ideal rearing habitat contains pools formed by logjams and loose woody debris.	Known to occur. Observed during September 2004 surveys and known from several locations within La Honda Creek (CDFG 2003 and Jones & Stokes 2004). Rearing habitat is present; limited spawning habitat in the study area. Creeks in the Preserve are designated as critical habitat.

Amphibians and Reptiles					
California Red-legged Frog *Rana draytonii*	T	–	CSC	Pools (generally >3 feet deep) in creeks and rivers, and ponds below 4,500 feet. Pools must have emergent or dense riparian vegetation, such as willows, tules or cattails. Can survive in temporarily dry seasonal bodies of water when permanent water bodies or dense vegetation is nearby.	Known to occur in fifteen locations in the study area (Seymour, Westphal, and Launer 2006). Breeding pools and upland habitat present in study area. The entire Preserve is federally designated as critical habitat.
California Tiger Salamander *Ambystoma californiense*	T	T	–	Vernal pools and seasonal wetlands with a minimum 10-week inundation period and surrounding uplands, primarily grasslands, with burrows and other below ground refugia (e.g., rock or soil crevices).	Unlikely to occur. No observation of this species on site. Only known occurrence in the Santa Cruz mountains is at Stanford University (DFG 2012). Federally designated critical habitat is over 35 miles east of the study area.
Foothill Yellow-legged Frog *Rana boylii*	–	–	CSC	Perennial streams with predominantly cobble, boulder, and gravel substrates.	Unlikely to occur. No known occurrences on site or on adjacent properties. Extensive amphibian surveys conducted in 2000 (Seymour and Westphal) concluded that this species is not likely to be present on any of MROSD's holdings.
San Francisco Garter Snake *Thamophis sirtalis tetrataenia*	E	E	FP	Natural sag ponds or artificial waterways with dense vegetative cover, basking sites, and large amphibian populations. Require adjacent upland areas with small mammal burrows for hibernation. Endemic to San Mateo County.	Unlikely to occur. Although there are a number of known observations in lands adjacent to the Preserve, this species was not detected during 3 years of focused surveys.
Western Pond Turtle *Emys marmorata*	–	–	CSC	Permanent or nearly permanent water in a variety of habitats.	Known to occur. Species documented at two locations in the Preserve (Seymour, Westphal, and Launer 2006). Suitable aquatic and upland habitat present in study

					area.
Birds					
Alameda Song Sparrow *Melospiza melodia pusillula* (year round)	–	–	CSC	Tidal salt marshes adjacent to San Francisco Bay	Unlikely to occur. *Pusillula* race is restricted to saline environments. *Gouldii* race is common in riparian and freshwater marsh habitats throughout Santa Clara County (Bousman 2007, p. 412).
Burrowing Owl *Athene cunicularia* (breeding)	–	–	CSC	Nests and forages in grasslands, agricultural lands, open shrublands, and open woodlands with existing ground squirrel burrows or friable soils.	Unlikely to nest in the study area due to lack of suitable nesting and foraging habitat.
Golden Eagle *Aquila chrysaetos*	–	–	FP BG EPA	Nests in large trees in open woodlands. Forages in large open areas of foothill woodlands and grassland habitats and occasionally croplands.	Could nest in study area. Known to nest in Santa Cruz mountains (Bousman 2007, p. 184), and Calero Reservior (CNDDB 2011).
Grasshopper Sparrow *Ammodramus savannarum* (breeding)	–	–	CSC	Nests and forages in dense grasslands; favors a mix of native grasses, forbs, and scattered shrubs.	Could nest in study area. Potentially suitable breeding and foraging habitat is present.
Long-eared Owl *Asio otus* (breeding)	–	–	CSC	Woodlands, especially dense riparian areas or thickets, with nearby open meadows for foraging.	Unlikely to nest in study area due to lack of dense riparian woodlands
Loggerhead Shrike *Lanius ludovicianus* (breeding)	–	–	CSC	Forages and nests in grasslands, shrublands, and open woodlands.	Could nest in study area. Potentially suitable breeding and foraging habitat is present.
Marbled Murrelet *Brachyramphus marmoratus*	T	E	–	Nests along the Pacific Coast high in old growth conifer forest. Forages in the nearshore ocean.	Could occur. Northern area of the Preserve contains suitable habitat but is at extreme of expected range. Federally designated critical habitat is approximately 1 mile south of the study area.

Northern Harrier *Circus cyaneus* (breeding)	–	–	CSC	Nests and forages in grasslands, agricultural fields, and marshes.	Could nest in study area. Potentially suitable breeding and foraging habitat is present.
Purple Martin *Progne subis* (breeding)	–	–	CSC	Open riparian forests with large trees such as sycamores or snags with cavities for nesting	Unlikely to nest in study area. No known suitable nesting habitat.
Olive-sided Flycatcher *Contopus cooperi* (breeding)	–	–	CSC	Montane forests dominated by Douglas fir, but also tan oak, live oak and madrone	Likely to nest in the study area. Breeds widely in Santa Cruz Mountains (Bousman 2007, p. 272)
Tricolored Blackbird *Agelaius tricolor* (breeding)	–	–	CSC	Forages in agricultural lands and grasslands; nests in marshes, riparian scrub, and other areas that support cattails or dense thickets of shrubs or herbs.	Unlikely to occur. No suitable foraging or breeding habitat in the study area.
Vaux's Swift *Chaetura vauxi* (breeding)	–	–	CSC	Mature coniferous forests, with snags or cavities for nesting. Also in chimneys.	Unlikely to occur. All known breeding records in the region are in residential chimneys (Bousman 2007, p. 244)
White-tailed Kite *Elanus leucurus* (breeding)	–	–	FP	Forages in grasslands and agricultural fields; nests in riparian zones, oak woodlands, and isolated trees.	Could nest in study area. Suitable nesting and foraging habitat is present.
Yellow-breasted Chat	–	–	CSC	Well developed riparian habitats with cottonwoods, willows, and thick understory of brambles and brush	Unlikely to nest in study area. No suitable breeding habitat in the study area.
Yellow Warbler	–	–	CSC	Streams supporting willow, alder, and bigleaf maple with thick shrub understory	Likely to nest in study area. Relatively common breeder along Santa Cruz mountain foothill streams (Bousman 2007, p. 376)
Mammals					
Pallid Bat *Antrozous pallidus*	–	–	CSC	Found foraging along rivers, lakes, streams, estuaries, ponds, lakes, chaparral, and woodlands below	Known to occur. Observed in the Red Barn, this appears to be the last remaining maternity roost in the region. Detected in

				6,000 feet with nearby man-made structures or natural features suitable for roosting. Intolerant of roosts with temperatures greater than 104°F.	the redwood riparian habitat near Red Barn, in area surrounding the White Barn, and near the former Driscoll Ranch Folger Lodge using acoustical monitoring (Heady and Frick 2000, 2001).
Ringtail *Bassariscus astutus*	–	–	FP	Found in a variety of woodlands, often near water	Could occur. Suitable habitat is present.
Townsend's big-eared bat *Corynorhinus townsendii*	–	–	CSC	Require areas with high insect activity, such as rivers, lakes, streams, estuaries, ponds, lakes, chaparral, and woodlands with nearby man-made structures or natural features suitable for roosting.	Known to occur. Observed using the Red Barn and White Barn as a day roost. Detected in the redwood riparian habitat near Red Barn, in area surrounding the White Barn, and near the former Driscoll Ranch Folger Lodge using acoustical monitoring. Guano deposits indicate occasional night roost in two buildings within the former Driscoll Ranch - Wool House Trailer and Lower Sears Ranch Storage Building (Heady and Frick 2000, 2001, 2007).
Western red bat Lasiurus blossevillii	–	–	CSC	Roosts primarily in tree foliage, especially in cottonwood, sycamore, and other riparian trees or orchards. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging, including grasslands, shrublands, and open woodlands.	Known to occur. Detected in low numbers during bat surveys on Driscoll Ranch (Heady and Frick 2007).

[1] **Status definitions:**
Federal Endangered Species Act (FESA):
E Endangered
T Threatened
California Endangered Species Act (CESA):

E Endangered

Other:

CSC Considered California species of special concern by DFG (no formal protection other than CEQA consideration)

FP Fully protected (legally protected under Fish and Game Code)

BGEPA Legally protected under the Bald and Golden Eagle Protection Act

[2] **Potential for Occurrence Definitions**

Unlikely to occur: Species is unlikely to be present on the project site due to poor habitat quality, lack of suitable habitat features, or restricted current distribution of the species.

Could occur: Suitable habitat is available at the project site; however, there are little to no other indicators that the species might be present.

Likely to occur: Habitat conditions, behavior of the species, known occurrences in the project vicinity, or other factors indicate a relatively high likelihood that the species would occur at the project site.

Known to occur: The species, or evidence of its presence, was observed at the project site during reconnaissance surveys, or was reported by others.

Sources: La Honda Creek Open Space Preserve Master Plan, Existing Conditions Report (MROSD 2007) and DFG 2012

Soil Management Plan
Driscoll Ranch Property
La Honda, San Mateo County, California

December 18, 2009

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1.0 INTRODUCTION

This Soil Management Plan (SMP) has been prepared on behalf of Midpeninsula Regional Open Space District (the District) for the Driscoll Ranch Property, located in La Honda, San Mateo County, California (the Site). This SMP documents current soil conditions and provides guidance for soil handling, disposal, or reuse procedures, including health and safety provisions for workers that might encounter contaminated soil. This SMP has been submitted to the California Regional Water Quality Control Board (RWQCB) for review and approval, per the RWQCB's February 4, 2009 letter of approval of the Remedial Investigation (RI) Report (Northgate, 2008). The RWQCB letter is included as Appendix A.

1.1 Background

Driscoll Ranch includes more than 3,682 acres of land owned by the District (Figure 1). The District plans to incorporate Driscoll Ranch into the La Honda Creek Open Space Preserve (the Preserve). The primary objective of the Preserve is ecological habitat preservation. There will be limited recreational access to the Preserve via hiking, equestrian, and potentially biking trails. The District also plans to have a residence for District personnel. Additionally, continued cattle grazing, special events parking associated with the existing Driscoll Ranch Event Center, up to three residences, and limited equestrian and pedestrian use of the property by the tenant, Rudy Driscoll, is allowed under a Lease-Agreement. It is the District's intent to manage residual contamination remaining on Driscoll Ranch while allowing safe public access to the property.

Previous environmental assessments (Erler and Kalinowski, Inc. [EKI], 2001 and 2005) identified the primary environmental concerns at Driscoll Ranch to be residual petroleum hydrocarbons (crude oil) associated with the operation of a former oil field, pesticides (primarily toxaphene and dieldrin) associated with the former ranch practice of spraying cattle in stock corrals, and residual gasoline and diesel associated with small above-ground storage tanks (ASTs) formerly used by Driscoll Ranch.

The RI performed by Northgate (Northgate, 2008) further characterized Site conditions, and determined appropriate site-specific target levels (SSTLs) for contaminants of interest (COI) consistent with the long-term use of the property as an open-space preserve. A human health risk assessment (HRA) was prepared as part of the RI Report. The HRA concluded that pesticide compounds and total petroleum hydrocarbons (TPH) are present in soil at levels for which recreational users, Ranch workers, and District staff may contact the soil without posing a health risk. However, maintenance and construction activities that cause disturbance to the impacted soil

must be performed in accordance with this *Soil Management Plan* and the *Health and Safety Plan* (Appendix B), as required by the RWQCB.

1.2 Purpose

The purpose of the SMP is to outline procedures to be utilized when handling impacted soil that may be encountered during routine or emergency maintenance or construction activities. There are five localized areas that contain residual chemicals within the Driscoll Ranch property that are subject to this SMP. These areas are shown on Figures 2 through 5. The five areas are briefly described below.

- In one localized area formerly used for cattle management (Corral #5), shallow soil at the site contains elevated levels of organochlorine pesticides (primarily toxaphene and dieldrin).
- In three areas associated with former oil exploration at the property (the Main Oil Field, the Tank Farm Area, and the Product Tank Area), TPH characterized primarily as crude oil (TPH-O) and the associated polycyclic aromatic hydrocarbon (PAH) dibenz(a,h)anthracene are present in soil.
- A small area formerly housing one above-ground diesel tank and one above-ground gasoline tank used during former ranching activities contains soil with TPH characterized as diesel (TPH-D) and gasoline (TPH-G).

1.3 Characteristics of Existing Soil

Surface and subsurface soils at the property contain elevated levels of TPH-O, TPH-D, TPH-G, dibenz(a,h)anthracene, toxaphene, or dieldrin, as described above. The SSTLs of these compounds that are approved by the RWQCB for soil in recreational land use areas are presented in Table 1. These SSTLs have been shown through a HRA to be protective of human health for recreational users of the property, Ranch workers, and District staff. Chemical testing performed during the RI indicates that actual chemical concentrations in most soil at the site are well below the SSTLs. However, chemical concentrations are above RWQCB environmental screening levels (ESLs, May 2008) for residential and/or general unrestricted land use areas.

The RI characterized environmental conditions at Driscoll Ranch to the extent necessary to evaluate potential impacts to human health and the environment caused by previous uses at the property for oil production and cattle ranching. The focus of the RI was on residual petroleum hydrocarbons in soil at an oil field that had been closed in the 1990s; residual pesticides from applications associated with cattle management prior to the 1990s; and the use of ASTs for fuel storage in association with ranching activities in the 1990s and early 2000s. Potential impacts to

the health of future workers and visitors were evaluated by performing a HRA and developing SSTLs for residual chemicals of interest. A recreational-use scenario was used as the basis for exposure assumptions in the HRA, which is considered appropriate and conservative for the anticipated future use of the property.

The sections below provide a summary of soil characteristics at each of the areas subject to this SMP. The RI Report provides details of soil characteristics, including graphical descriptions of the extent of residual contamination in each of the areas.

1.3.1 Main Oil Field Area

The investigation conducted in 2005 by EKI identified the presence of heavy distillate petroleum hydrocarbons in shallow soil in the vicinity of several abandoned oil production wells. The RI conducted in 2008 by Northgate further characterized the distribution and character of the petroleum hydrocarbons in the vicinity of two of the former well sites that had contained the highest concentrations of petroleum hydrocarbons. Results indicated that the extents of petroleum hydrocarbon contamination were limited both in depth (less than 10 feet) and aerial distribution (within a distance of approximately 20 feet from the former well sites). Additionally, analytical results and field observations confirmed that the petroleum hydrocarbons were highly weathered and degraded crude oil, lacking mobile or volatile constituents that could cause a threat to the environment or be a nuisance to future users of the property. Although two of the former well sites could not be accessed, it is reasonable to assume that conditions at those well sites would be similar to the well sites that were investigated by EKI in 2005 and by Northgate in 2008. The HRA concluded that residual petroleum hydrocarbons remaining at the well sites would not pose a health risk to future users of the property. TPH-O concentrations in soil averaged approximately 324 milligrams per kilogram (mg/kg) with a maximum concentration of 1,600 mg/kg, well below the SSTL of 19,000 mg/kg developed for a recreational use scenario. Other constituents were below RWQCB ESLs for residential use. Naturally occurring degradation processes likely will continue to reduce petroleum hydrocarbon concentrations in the soil over time.

1.3.2 Tank Farm Area

The investigation conducted in 2005 by EKI identified the presence of heavy distillate petroleum hydrocarbons in shallow soil in the vicinity of several former ASTs, collectively referred to as the Tank Farm Area, which had been used to store oil extracted from the oil field. The RI conducted by Northgate in 2008 further characterized the distribution and character of the

petroleum hydrocarbons in the vicinity of three of the AST sites that had contained the highest concentrations of petroleum hydrocarbons.

Results indicated that the extent of petroleum hydrocarbon contamination was widespread in the Tank Farm Area, and extended locally to a depth of 41 feet below ground surface (bgs) (in one soil boring), though more typically the contamination only extended to depths of 20 to 30 feet bgs. Concentrations generally were highest in shallow soil, and decreased with depth. Analytical results, results of petroleum hydrocarbon characterization, and field observations confirmed that the product was highly weathered and degraded crude oil.

The residual oil in the upper five to six feet of soil and bedrock lacked mobile and volatile constituents that could cause a threat to the environment or be a nuisance to future users of the property. The residual oil at deeper depths was also highly degraded, but exhibited different characteristics compared with the oil at shallower depths. It is likely that the deeper oil had weathered anaerobically rather than aerobically. Though the material contained a noticeable odor and registered a photoionization detector (PID) response in the field, laboratory analyses only identified relatively low levels of volatile constituents (ethylbenzene and xylenes) present in a small percentage of samples. Given the depth of the oil and its characteristics, it was concluded that the residual oil was unlikely to cause a threat to the environment or be a nuisance to future users of the property. The HRA concluded that residual petroleum hydrocarbons remaining at the former Tank Farm Area would not pose a health risk to future users of the property. TPH-O concentrations in soil averaged approximately 660 mg/kg with a maximum concentration of 7,600 mg/kg, well below the SSTL of 19,000 mg/kg developed for a recreational use scenario. Dibenz(a,h)anthracene concentrations averaged approximately 0.032 mg/kg with a maximum concentration of 0.069 mg/kg, also well below the SSTL of 1.2 mg/kg developed for a recreational use scenario. Other constituents were below RWQCB ESLs for residential use. Naturally occurring degradation processes likely will continue to reduce petroleum hydrocarbon concentrations in the soil over time.

1.3.3 Product Tank Area

The investigation conducted in 2005 by EKI identified the presence of heavy distillate petroleum hydrocarbons in shallow soil in the vicinity of several former ASTs, collectively referred to as the Product Tank Area, which had been used to store oil extracted from the oil field. Sampling results from the 2005 investigation were sufficient to evaluate the approximate distribution of petroleum hydrocarbons, so no further testing of the Product Tank Area was completed during the 2008 RI.

TPH-O concentrations in soil ranged from approximately 69 to 1,160 mg/kg, well below the SSTL of 19,000 mg/kg developed for a recreational use scenario. No other petroleum-related constituents were detected in the soil tested in this area. Naturally occurring degradation processes likely will continue to reduce petroleum hydrocarbon concentrations in the soil over time.

1.3.4 Stock Corral #5

The investigation conducted in 2005 by EKI identified the presence of organochlorine pesticides, primarily toxaphene, dieldrin and DDT, in shallow soil at Stock Corral #5 which is used for livestock management. The RI conducted in 2008 by Northgate further characterized the distribution and character of the organochlorine pesticides in the corral.

Results confirmed that toxaphene, dieldrin, and DDT, as well as several other pesticides, were present in shallow soil in Stock Corral #5. The occurrence of toxaphene and dieldrin in particular was widespread within the corral boundary (historical boundary, which is slightly larger than current boundary), though concentrations generally were higher and extended deeper in the eastern portion of the corral, where historical cattle spraying activities had occurred. Pesticide concentrations diminished with depth, and over most of the corral, were not detected at 2.5 feet bgs. At three locations in the eastern end of the corral, pesticides persisted to depths of 4.5 feet bgs.

The shallow depth of contamination and absence of shallow groundwater or surface water features in the vicinity of this corral limits the adverse impact the residual pesticides could have on the environment. The HRA concluded that residual pesticides remaining at Stock Corral #5 would not pose a health risk to future users of the property. Toxaphene concentrations in soil averaged approximately 0.42 mg/kg with a maximum concentration of 2.4 mg/kg, well below the SSTL of 4.2 mg/kg developed for a recreational use scenario. Dieldrin concentrations averaged approximately 0.0049 mg/kg with a maximum concentration of 0.038 mg/kg, also well below the SSTL of 0.38 mg/kg developed for a recreational use scenario. Other constituents, including DDT compounds, were below RWQCB ESLs for residential land use.

1.3.5 Fuel AST Area

The investigation conducted in 2005 by EKI identified the presence of TPH-D and TPH-G in shallow soil in the vicinity of two former ASTs that had been used to store small quantities of gasoline and diesel near a maintenance shed at the Lower Ranch. The RI conducted in 2008 by

Northgate further characterized the distribution and character of the petroleum hydrocarbons in the vicinity of the former ASTs.

Results of the RI indicated that very little TPH-D and TPH-G remain in the soil, and the only volatile constituents present are methyl-tert-butyl ether (MTBE) and 1,3,5-Trimethylbenzene (TMB), which were detected at low concentrations and at a low frequency. The low concentrations of residual TPH-D, TPH-G and the fuel additives in the soil suggest that the contamination has little potential to threaten the environment or to be a nuisance to future users of the property.

Shallow groundwater was present at a depth of approximately 28.5 feet bgs. Impact to groundwater from the fuel ASTs was limited, with only low concentrations of MTBE detected in the groundwater. The MTBE concentrations are below the RWQCB ESL for protection of groundwater that is not a current or potential source of drinking water (1,800 µg/L) but above the California State Maximum Contaminant Level (MCL) of 13 µg/L. The shallow groundwater in this area is not being used for domestic water supply and the localized occurrence of the MTBE is unlikely to pose a threat to groundwater resources.

The HRA concluded that residual TPH-D and TPH-G remaining at the Fuel AST Area would not pose a health risk to future users of the property. TPH-D concentrations in soil averaged approximately 33.25 mg/kg with a maximum concentration of 138 mg/kg detected, well below the SSTL of 19,000 mg/kg developed for a recreational use scenario. TPH-G concentrations averaged approximately 10.5 mg/kg with a maximum concentration of 160 mg/kg, also well below the SSTL of 19,000 mg/kg developed for a recreational use scenario. MTBE and 1,3,5-TMB concentrations were below residential RWQCB ESLs or EPA preliminary remediation goals (PRGs). Naturally occurring degradation processes likely will continue to reduce petroleum hydrocarbon concentrations in the soil over time.

2.0 SOIL MANAGEMENT

All on-site activities that will disturb the soil must be performed in accordance with this SMP and the approved site Environmental Health and Safety Plan (Appendix B). Requirements of the SMP are presented in the following sections. Employees of the District, The District's tenants and lessees, and companies or individuals contracting with the District, its tenants or lessees, to conduct maintenance, construction, or repair work that would result in the disturbance of contaminated soil will be bound by the specific requirements set forth in this SMP, as appropriate.

These management procedures will be implemented during future construction activities that occur within the five identified areas, to control potential impacts to human health and/or the environment, and to alleviate possible aesthetic and nuisance conditions, if encountered.

Construction activities that are subject to the SMP include excavating, grading, removal, trenching, filling, earth movement, or mining. Minor disturbances with immediate replacement in kind (e.g., simple landscape maintenance such as fence installation, sprinkler-head repair, planting or re-planting, or similar activities that constitute a limited disturbance and immediate replacement in-kind of small amounts of soil) are not subject to the SMP. Soil that is not disturbed by construction activities or that is located outside of the five identified areas is not subject to the SMP, unless the soil exhibits conditions indicative of contamination.

2.1 Notification

Notification to the RWQCB will only be necessary if activities that disturb soil in the five identified areas (e.g., excavating, grading, removal, trenching, filling, earth movement, or mining) are not conducted in accordance with this SMP, or if an unknown area or condition of contamination is encountered. The District shall provide the RWQCB with written notice at least 10 working days prior to such planned activities, or within 15 working days of the discovery of any unplanned disturbance that did not meet SMP requirements. A sample notification form letter is included in Appendix C.

Other notification requirements pertaining to revising or modifying this SMP are discussed in Section 8.0.

2.2 Site Access Control

The potential for trespassers or visitors to gain access to construction areas and come into direct contact with potentially contaminated soil will be controlled by implementing access and perimeter security measures.

The responsibility for compliance with Site access control measures rests with the District and its contractors, if so designated by the District.

2.3 Soil Excavation

General public access shall be restricted during any activity on the Site that disturbs contaminated soil. Any soil that is brought to the surface shall be placed on plastic sheeting or other suitable containment measure (e.g., debris bin or drum). Any soil brought to the surface shall be wetted or covered to control the generation of dust. Stockpiled soil will be covered with plastic at the end of each day. Public access to the soil must be restricted at all times.

To the extent practical, any excavated soil should be used to backfill the excavation from which it was derived. Any soil that cannot be used to backfill the excavation must either be used as fill in another area approved by the RWQCB or removed from the Site.

2.4 Soil Removal

Any soil removed from the Site must be handled in accordance with existing laws and regulations. Based on the concentrations of pesticides and TPH in the soil in the five identified areas, the soil may need to be removed to a regulated landfill. A sample notification letter for removing soil from the Site is included in Appendix C.

Specific chemical testing should be performed on any soil that is to be removed from the Site. At a minimum, this testing should include analysis for:

- Organochlorine pesticides using EPA Method 8081 (from former corral #5 area);
- TPH-O using EPA Method 8015M (with silica-gel cleanup) (from the three oil field areas);
- PAHs using EPA Method 8270-SIM or 8310 (from the three oil field areas);
- TPH-D and TPH-G using EPA Method 8015M (with silica-gel cleanup) (from the former tank area); and,
- Benzene, toluene, ethylbenzene, xylenes (BTEX) and methyl-tert-butyl ether (MTBE) using EPA Method 8021B (from the former fuel AST area).

Additional chemical testing may be required based on the proposed destination of the excavated soil. Appropriate disposition of the soil will be based on comparison of the chemical test results with applicable standards or guidance, such as the following:

- U.S. EPA Preliminary Remediation Goals
- Title 22 of the California Code of Regulations (CCR)
- Acceptance criteria for permitted land disposal facilities
- Other recognized standards, as appropriate.

3.0 DISMANTLING OF REMAINING OIL FIELD INFRASTRUCTURE

Oil field closure activities are documented in a Final Closure Report, La Honda Main Oil Field, dated February 1, 1995 (Castleman, McFalone & O'Blennis [CMO], 1995). The San Mateo County Health Services Agency (SMCHSA) approved closure activities in 1995 and issued a closure letter on March 1, 1995 (SMCHSA, 1995). During closure activities, most of the oil field infrastructure was removed or abandoned in place.

Some remnant structures related to the area's former use as an oil field, however, were encountered during the RI. A few disconnected sections of empty metal piping were found at various locations, and an apparent abandoned well was also encountered in the vicinity of the former Tank Farm. The RI contains a specific description of the location of this abandoned well.

To prevent a nuisance condition on the property, dismantling of the remaining infrastructure in the oil field areas should be completed. Because the specific locations of buried piping is difficult to assess and there are few available records indicating probable locations, District and Ranch maintenance and construction workers should be advised of the potential presence of buried piping and/or abandoned well heads in the former oil field areas. If encountered, the workers should report the information to the District. The District shall arrange for the removal and disposal or recycling, or appropriate in-place abandonment, of the infrastructure by a qualified contractor licensed to handle petroleum-containing materials. Care should be taken to inspect the infrastructure for the presence of residual petroleum hydrocarbons, and remove and dispose of any liquid content according to existing laws and regulations.

4.0 DUST CONTROL

Appropriate dust control measures will be implemented during any excavation or disturbance of soil in the five identified areas. In general, dust control will consist of keeping any excavated soil wetted or covered. As described in Section 2.2, excavated soil will be placed and covered with plastic sheeting, or otherwise contained. Water from trucks, hoses, or sprinklers shall be used, as necessary, during all excavation activities to control dust generation. All visibly dry disturbed soil surface areas shall be watered to control dust emissions, as necessary.

5.0 EQUIPMENT DECONTAMINATION/CLEANING

Equipment will be cleaned prior to movement out of active work zones. Cleaning may include, but not be limited to, dry brushing or scraping to remove loose soil or mud. Paved roads and other surfaces will be cleaned if the amount of dirt tracked in the operation area has the potential to cause dust emissions. Vehicles entering or exiting the construction area will travel at a speed that minimizes dust emissions. If washing with water is used to decontaminate equipment, the rinse water must then be contained and tested prior to discharge or disposal.

6.0 HEALTH AND SAFETY

Any excavation, trenching or roadwork activity that disturbs the soil in the five identified areas will be performed in accordance with the approved Environmental Health and Safety Plan (Appendix B).

The Environmental Health and Safety Plan has identified inhalation of dust and ingestion of soil as the primary chemical hazards at the Site. To minimize potential exposures, dust control measures will be implemented during all excavation activities. In addition, workers will be required to wear gloves when directly handling impacted soil materials. The reader should refer to the Health and Safety Plan (Appendix B) for specific recommendations.

7.0 RECORDKEEPING

The District shall keep records of all activities that disturb soil in the five identified areas regardless of whether specific notification to the RWQCB is required. Records shall be kept for all activities associated with the removal of remaining oil field infrastructure. Records, which shall be kept for a period of 10 years from the date of disturbance, should include the following information:

- The date of the activity
- A description of the general nature of the activity
- The name of the entity performing the activity
- Site or dust control measures implemented
- Test results of any chemical testing performed
- The disposition of any soil or other materials removed from the property

These records will be available for review at the District's offices by the RWQCB. A sample recordkeeping form is included in Appendix C.

8.0 REGULATORY OVERSIGHT OF SMP

This section describes the regulatory oversight mechanisms to assure that the SMP remains in place and continues to be effective. Each Owner/Lessee of the Driscoll Ranch Property will be notified of the SMP and its contents, and will be required to comply with it.

8.1 Process for Modifying the SMP

In the event that the provisions of the SMP need to be modified, the District will present a proposed modification to the RWQCB for its approval. The RWQCB will review the proposed modification, request any additional background information, if needed, and issue a decision regarding the proposal within 30 days following receipt of a completed application. Once the RWQCB has approved the SMP modification, the revised pages will be filed in the RWQCB public copy of the SMP.

Conditions that may warrant modification to the SMP include (but are not limited to) changes to the future use or ownership of the property, plans to construct buildings in the contaminated areas, or the development of other conditions that are inconsistent with current plans to use the property as an ecological preserve and cattle ranch.

A page will be added to the front of each copy of the SMP when modifications are inserted, indicating the dates and pages that have been updated/revised.

8.2 Incorporating the SMP in All Future Leases, Licenses, or Other Agreements

An Owner or Lessee will incorporate the SMP in all future leases, licenses, permits, or other agreements ("agreement") that authorize another entity to engage in an activity that is subject to one or more of the requirements in this SMP. Prior to execution of the agreement, the Owner or Lessee will provide a copy of the SMP or its relevant provisions to such entity. The Owner or Lessee will also ensure that the agreement contains provisions that such entity will: (1) comply with the SMP (to the extent the SMP is applicable to such party's activities; (2) obligate other entities with which it contracts for construction, property maintenance, or other activities which may disturb the existing soil to comply with the applicable provision of the SMP; and (3) refrain from interfering with the Owner's or Lessee's compliance with the SMP.

9.0 REFERENCE DOCUMENTS

CMO, 1995. *Final Closure Report, La Honda Main Oil Field*, prepared by Barbara J. Savery, Esq., Castleman, McFalone, & O'Blennis, dated 28 February 1995 (revised).

DOG, 1986. *La Honda Oil Field*, California Department of Conservation, Division of Oil and Gas, Scott T. Hector (author), Publication No. TR30, 1986 (second edition).

EKI, 2001. *Phase I Environmental Site Assessment, Driscoll Ranch Property, La Honda, San Mateo County, California*, prepared by Erler and Kalinowski Inc., dated 1 August 2001.

EKI, 2005. *Subsurface Investigation Report, Driscoll Ranch Property, La Honda, San Mateo County, California*, prepared by Erler and Kalinowski Inc., dated 25 October 2005.

Northgate, 2008. *Remedial Investigation Report, Driscoll Ranch Property, La Honda, San Mateo County, California*, prepared by Northgate Environmental Management, Inc., dated 19 December 2008

Regional Water Quality Control Board, 2008. *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater, May*, 2008

Regional Water Quality Control Board, 2009. *Remedial Investigation Report for the Driscoll Ranch – La Honda Creek Open Space Preserve site, la Honda, San Mateo County*, Letter dated February 4, 2009

SMCHSA, 1995. *Folger Ranch Property Oil Field Closure*, letter from Dirk Jensen, Hazardous Materials Specialist, to Barbara Savery, Esq., of Castleman, McFalone, and O'Blennis, dated 1 March 1995.

TABLES

TABLE 1
Site-Specific Target Levels (SSTLs)

Recreational Land Use Site-Specific Target Levels	
Constituent	**SSTL**
Dieldrin	0.32
Toxaphene	4.2
Dibenz(a,h)anthracene	1.2
Total Petroleum Hydrocarbons	19,000

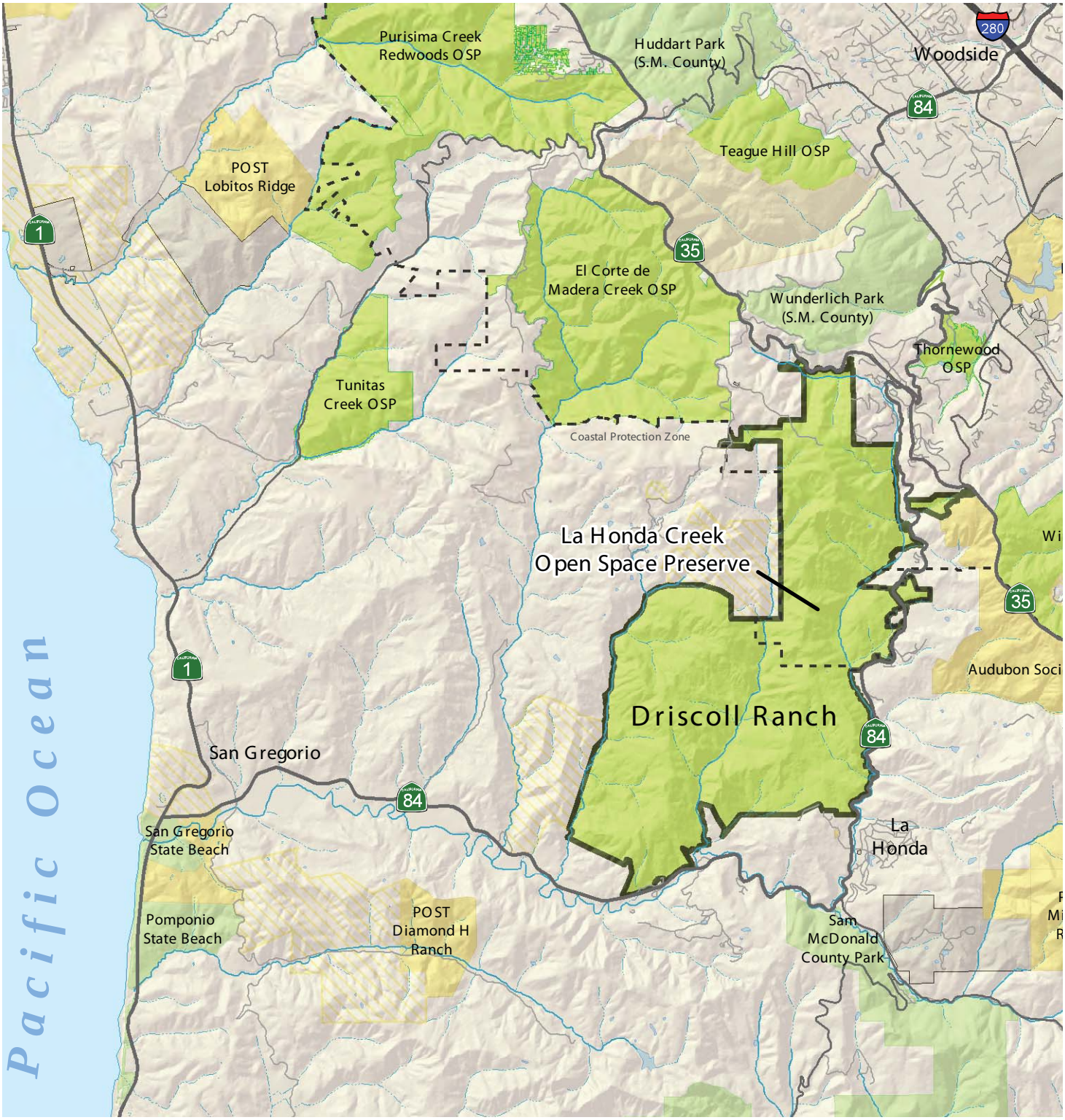
Notes:

Values reported in milligrams per kilogram (mg/kg)

See Remedial Investigation Report, Driscoll Ranch Property, *La Honda, San Mateo County, CA, December* 19, 2008, for discussion of SSTLs.

Values for Total Petroleum Hydrocarbons (TPH) apply to TPH as gasoline, diesel, motor oil and oil.

FIGURES



Regional Preserve Location

- La Honda Creek Open Space Preserve
- Other MROSD Open Space Preserve
- Other Public Open Space
- Land Trust or Academic Lands
- Watershed Lands
- Land Trust Conservation Easement

Roads

- Interstate Highways
- State Highways
- Major Roads
- Minor Roads

Map Projection: UTM Zone 10N, NAD 1927
Data Sources: USGS, County of
San Mateo, and MROSD.
Map Printed June, 2008

0 1 2
Miles

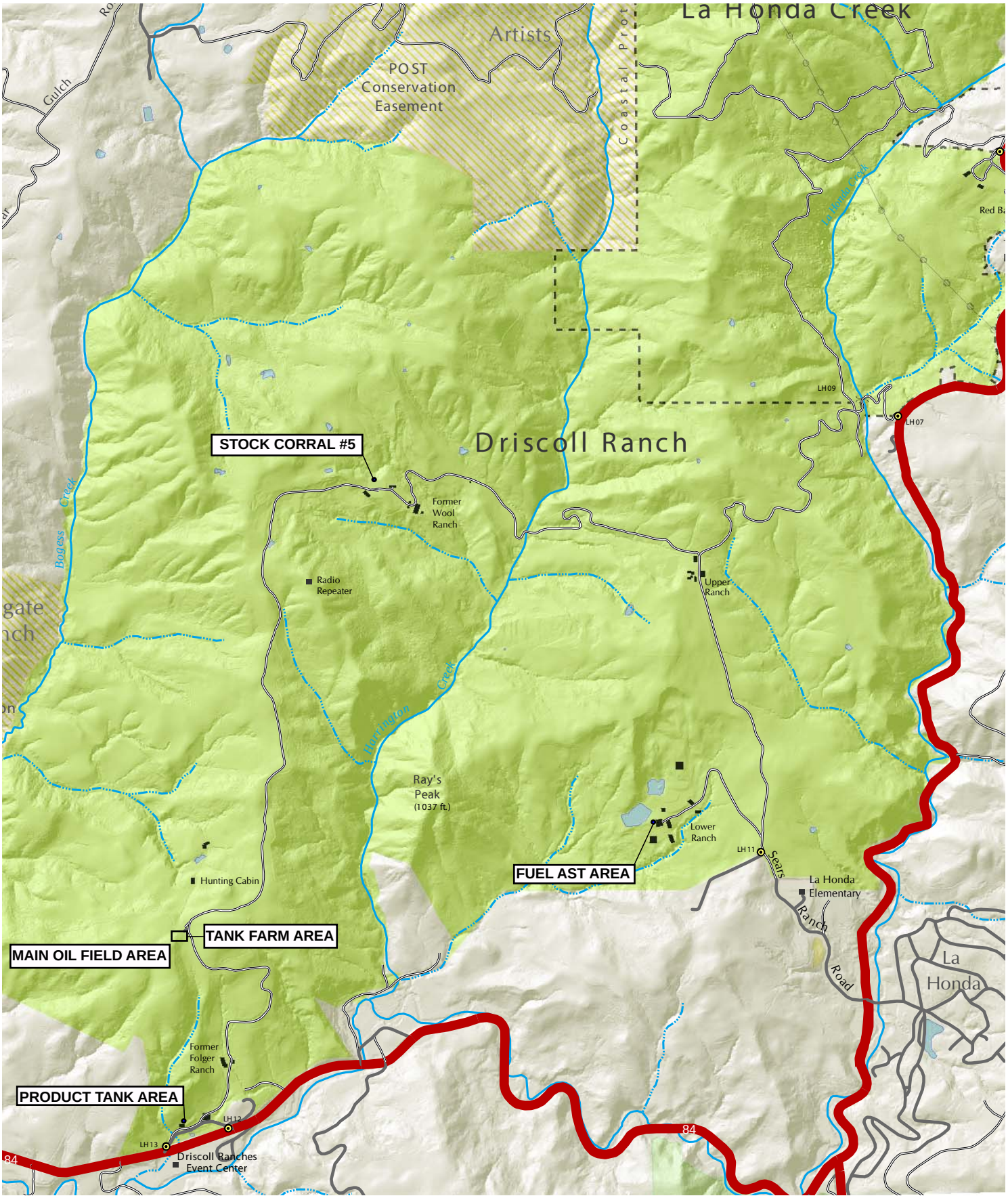
N

FIGURE 1
Regional Location Map

Driscoll Ranch
Soil Management Plan
San Mateo County, California

northgate
environmental management, inc.

Project No. 1198.02

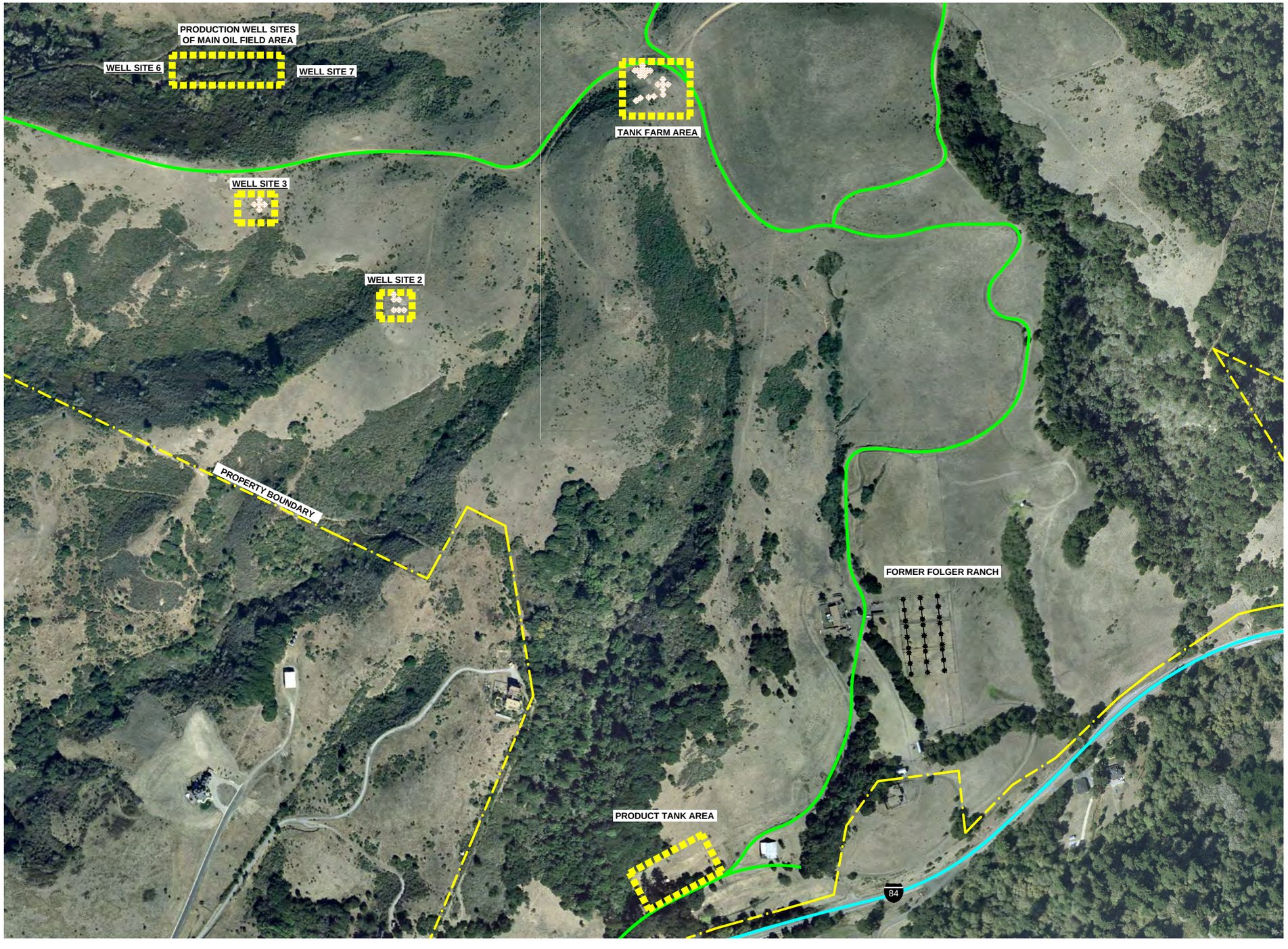


northgate
environmental management, inc.

FIGURE 2
Driscoll Ranch Map

Driscoll Ranch
Soil Management Plan
San Mateo County, California

Project No. 1198.02



LEGEND:

- Northgate exploratory trench location, December 2008 Remedial Investigation Report
- Unpaved road
- Localized Soil Management Area

N

0 200 400

Scale (Feet)

FIGURE 3
Soil Management Areas for Main Oil Field, Tank Farm and Product Tank Areas
Driscoll Ranch
Soil Management Plan
San Mateo County, California

northgate
environmental management, inc.

Project No. 1198.02

G:\Projects\Temp\1198.Midpeninsula\1198.02 Driscoll Ranch\1198.02 Soil Management Plan\Figures\Figure 3.dwg Layout: Fig3-Main Oil Field User: oleg Dec 01, 2009 - 11:32am

N

0 50 100

Scale (Feet)

LEGEND:

3-point composite sample location, Northgate December 2008 Remedial Investigation Report

Discrete sample location, Northgate December 2008 Remedial Investigation Report

Soil Management Area

FIGURE 4
Soil Management Area for Stock Corral #5

Driscoll Ranch
Soil Management Plan
San Mateo County, California

northgate
environmental management, inc.

Project No. 1198.02

LEGEND:

- Soil boring location, Northgate December 2008 Remedial Investigation Report
- Soil Management Area

N

0 20 40

Scale (Feet)

FIGURE 5
Soil Management Area for Fuel Above-Ground Storage Tank Area

Driscoll Ranch
Soil Management Plan
San Mateo County, California

northgate
environmental management, inc.

Project No. 1198.02

APPENDIX A
RWQCB APPROVAL LETTER

California Regional Water Quality Control Board
San Francisco Bay Region

Linda S. Adams
Secretary for
Environmental Protection

1515 Clay Street, Suite 1400, Oakland, California 94612
(510) 622-2300 • Fax (510) 622-2460
http://www.waterboards.ca.gov/sanfranciscobay

Arnold Schwarzenegger
Governor

Date: February 4, 2009
File No. 41S0178 (RL)

Midpeninsula Regional Open Space District
Attn: Mr. Kirk Lenington
330 Distel Circle
Los Altos, CA 95814
klenington@openspace.org

Re: Remedial Investigation Report for the Driscoll Ranch – La Honda Creek Open Space Preserve site, La Honda, San Mateo County

Dear Mr. Lenington:

We have reviewed the December 19, 2008 Remedial Investigation (RI) report for the Driscoll Ranch – La Honda Creek Open Space Preserve site, prepared on behalf of the Midpeninsula Regional Open Space District (the District) by Northgate Environmental Management, Inc. (Northgate). The RI report was subsequently amended for further clarifications, per discussion in the January 13, 2009 meeting between the District and the Water Board staff. The amended RI report was submitted electronically on January 23, 2009, and is hereby approved.

We concur with Northgate's conclusions that no further environmental investigation is necessary at the main oil field area, tank farm area, product tank area, stock corrals, or fuel aboveground storage tank area. We also concur with Northgate's conclusion that currently-known site conditions are protective of human health and the environment under the projected future use scenario of an ecological preserve and continued cattle ranching. Therefore, no remedial measures for soil or groundwater, other than naturally occurring biodegradation, will be necessary.

Northgate recommended, however, that the following follow-up tasks be performed by the fall of 2009 so as to prepare the Site for public access, which is targeted for the summer of 2010:

(1) Dismantling of remaining infrastructure at the tank farm area.
(2) Proper abandonment of the inactive water supply well in the vicinity of the tank farm area.
(3) Collect confirmation sampling at the refuse disposal area after removal of the refuse for off-site disposal.
(4) Prepare a Soil Management Plan to document current soil conditions and provide guidance on soil handling, disposal, or reuse procedures, including health and safety provisions for workers that might encounter the contaminated soils.

With regard to task (3) above, you are requested to submit a sampling plan, with implementation and report schedule, for our review and approval thirty (30) days prior to the planned work. Additionally, you are requested to submit no later than December 31, 2009 a Soil Management Plan as described in (4) above.

If you have any questions concerning this letter, please contact Randy Lee of my staff at (510) 622-2375, [e-mail rylee@waterboards.ca.gov].

Sincerely,

Bruce H. Wolfe
Executive Officer

cc:

Mr. Charles Ice cice@co.sanmateo.ca.us
San Mateo County
Environmental Health Division
2000 Alameda de las Pulgas, Suite 100
San Mateo, CA 94403

Ms. Elizabeth Nixon elizabeth@ngem.com
Northgate Environmental Management, Inc.
300 Frank H. Ogawa Plaza, Suite 510
Oakland, CA 94612

APPENDIX B
HEALTH AND SAFETY PLAN

A

ACUMEN

INDUSTRIAL HYGIENE INC

1032 IRVING STREET #922 SAN FRANCISCO CA 94122

TEL 415 242 6060 FAX 415 242 6006

WWW.ACUMEN-IH.COM

Environmental Health and Safety Plan

Driscoll Ranch Property
5460 La Honda Road
La Honda, San Mateo County, California

December 2009

Acumen Project No. NEM 2983

Prepared for:

Northgate Environmental Management, Inc.
300 Frank H. Ogawa Plaza, Suite 510
Oakland, CA 94612

Paul M. Spillane, CIH, CAC (December 17, 2009)

Table of Contents

Environmental Health and Safety Plan
Driscoll Ranch Property
La Honda, CA

December 2009

EXECUTIVE SUMMARY

This Environmental Health and Safety Plan (EHASP) provides guidelines for the safe handling of surface and subsurface soils that may contain residual petroleum hydrocarbons (crude oil and gasoline) and pesticides (primarily toxaphene and dieldrin) in the event that the soils are excavated during construction activities. The potential for occupationally significant airborne exposure to these contaminants is very low, particularly with diligent attention to dust control (see Section 3.2 of EHASP) during construction activities. The potential for skin absorption is also low because the contaminants in question have poor dermal absorption characteristics. The incidental ingestion of these contaminants can also be avoided by following good personal hygiene practices (See Section 8.1). Because the overall potential hazard to site contaminants is very low, compliance with Hazardous Waste Operations and Emergency response (HAZWOPER) regulations is not required. Nonetheless, it is appropriate to engage in prudent work practices as detailed in this EHASP. This information should be reviewed before beginning excavation work associated with soils that may be contaminated. Furthermore, it is important not to overlook the health and safety hazards associated with construction work and to adhere to the requirements of applicable Cal-OSHA regulations and any injury and illness prevention plan (IIPP) that may be in effect when work begins.

1.0 Introduction

The purpose of this Environmental Health and Safety Plan (EHASP) is to provide health and safety guidelines for operations and maintenance work at the Driscoll Ranch Property site located at 5460 La Honda Road in La Honda, San Mateo County, California. Previous investigations found low to moderate levels of residual petroleum hydrocarbons (crude oil and gasoline) and pesticides (primarily toxaphene and dieldrin). The primary activities that will trigger adherence to this EHASP are excavation, trenching, roadwork or other earthwork that causes significant disturbance of soil in the soil management areas described in the Soil Management Plan (SMP) prepared by Northgate (Northgate, 2009).

Previous environmental assessments (Erler and Kalinowski, Inc. [EKI], 2001 and 2005) identified hazards relating to portions of the site that were formerly used as an oil field and for cattle ranching operations. Soil containing residual petroleum hydrocarbons (primarily as crude oil) and pesticides (primarily toxaphene and dieldrin) were found during site investigations. Residual gasoline and diesel fuel were also found in soils associated with small above-ground storage tanks (ASTs) formerly used by Driscoll Ranch. More recent investigation by Northgate (Northgate, 2008), delineated the nature and extent of the contaminants, and assessed the potential health risks associated with the contaminants by performing a human health risk assessment (HRA). The HRA concluded that pesticide compounds and total petroleum hydrocarbons (TPH) are present in soil at levels for which recreational users, Ranch workers, and District staff may contact the soil without posing a health risk. However, maintenance and construction activities that cause disturbance to the impacted soil must be performed in accordance with the SMP and this EHASP, as required by the Regional Water Quality Control Board. Minor disturbances with immediate replacement in kind (e.g., simple maintenance such as fence installation, sprinkler-head repair, planting or re-planting, or similar activities that constitute a limited disturbance and immediate replacement in-kind of small amounts of soil are not subject to this EHASP. Soil that is not disturbed by construction activities or that is located outside of the five identified areas is not subject to this EHASP, unless the soil exhibits conditions indicative of contamination.

This EHASP is directed toward workers who perform maintenance and construction activities and whose work will require them to handle contaminated soils. Provisions of the EHASP also apply to other personnel on site who may have occasion to enter contaminated work areas. This EHASP shall be available on site during all activities that require handling of contaminated soils.

This EHASP includes the overall general responsibilities of general contractors and all subcontractors, to meet minimum prescribed safety provisions in handling contaminated soils or materials. This EHASP is not intended to either replace work practices or substitute existing safe work practices as described in the general contractor's or other subcontractor's Illness and Injury Prevention Programs as required in 8CCR3203. These IIPPs are incorporated into this document by reference.

The following document was reviewed for this EHASP:

- Northgate Environmental Management, Inc. "Soil Management Plan, Driscoll Ranch Property, La Honda, San Mateo County, California" December, 2009.

1.1 Overview of Work

The work covered by this EHASP consists of soils work necessary for as needed maintenance or construction that require the disturbance of soils. Examples of such work include trenching for the installation or removal of underground utilities, construction that requires excavation of soil, roadwork that requires earthwork, etc. Existing site conditions as reported in the SMP indicated the presence of low to moderate levels of a number of contaminants (hydrocarbons and pesticides) in shallow soils at the site. These materials may be present at the ground surface or below the ground surface to depths up to

approximately 5 feet below grade in the case of pesticides, or up to approximately 40 feet below grade in the case of petroleum hydrocarbons. Known site contaminants are further discussed in Section 3.2.

1.2 Site History

According to the project documentation, Driscoll Ranch includes more than 3,682 acres of land owned by Midpeninsula Regional Open Space District (the District). The District plans to incorporate Driscoll Ranch into the La Honda Creek Open Space Preserve. The primary objective of the Preserve is ecological habitat preservation. There will be limited recreational access to the Preserve via hiking, equestrian and potentially biking trails. The District also plans to have a residence for District personnel. Additionally, continued cattle grazing, special events parking associated with the existing Driscoll Ranch Event Center, up to three residences, and limited equestrian and pedestrian use of the property by the tenant, Mr. Rudy Driscoll, is allowed under a Lease-Agreement. It is the District's intent to manage residual contamination remaining on Driscoll Ranch while also allowing safe public access to the property.

2.0 Project Organization

2.1 Project Manager/Superintendent

The Project Manager/ Superintendent, who shall be appointed prior to the start of a construction activity that involves soil excavation, has responsibility for overall management of health and safety for the project. Specific duties include:

- Ensure safety procedures comply with applicable federal, state, and local regulations
- Investigate accidents and incidents promptly
- Conduct periodic audits of the work area health and safety conditions
- Provide technical assistance to site safety personnel as required

The Project Manager shall have the necessary training as described in Section 6.0 of this EHASP. He/She shall be on-site as a minimum whenever unknown contaminated materials or subsurface structures are encountered.

2.2 Competent Person

The Competent Person, who shall be appointed prior to the start of an excavation activity, has primary responsibility for assuring that all its personnel, and applicable sub-contractors, comply with relevant aspects of this EHASP. Specific duties of the Competent Person include the following:

- Notification of all subcontractors of activities that could involve potential work with contaminated soils
- Notify Cal-OSHA of excavation related work as needed
- Ensure the site has been cleared of underground utilities before excavation begins
- Ensure compliance with this EHASP
- Provide regular pre-task health and safety briefings
- Obtain 1-time Cal-OSHA carcinogen handler registration

2.3 Site Health and Safety Officer

The Site Health and Safety Officer (HSO), who shall be appointed prior to the start of the project, will be responsible for the following:

- Ensure personnel wear the appropriate protective equipment in the work areas (Section 5.0)
- Control access into contaminated areas and ensure that only trained and authorized personnel enter these areas
- Ensure that site personnel receive necessary training (Section 6.0)
- Ensure air monitoring is conducted (Section 7.0)
- Ensure District employees and relevant subcontractors comply with the medical surveillance requirements (Section 14.0)
- Conduct periodic inspections of the work area health and safety conditions
- Assist the project manager with his/her health and safety related responsibilities
- Stop work if there is any reason to expect that the work cannot be completed safely

3.0 Hazard Analysis

3.1 Routes of Exposure

In dealing with any hazardous or potentially hazardous substance, all routes of exposure should be protected as necessary. These routes and methods to minimize exposure are described below.

3.1.1 Inhalation

Inhalation is the most common route of occupational exposure to gases, vapors, mists, fumes or dusts. It may result in respiratory damage and/or may cause systemic illness. The risk of such adverse effects depends on the airborne concentration and on the nature of the contaminant(s). The CA Division of Occupational Safety and Health (Cal-OSHA) has promulgated Permissible Exposure Levels (PELs) for airborne contaminants. PELs represent legally enforceable limits for airborne exposure to contaminants. Exposures that exceed current PELs require protective measures such as engineering and or administrative controls and or the use of respiratory protection. Cal-OSHA's PELs may be found in Title 8 of CA Code of Regulations Section 5155 (8CCR5155).

Sections 5.0 and 13.0 discuss the selection of respiratory protection for this project. Section 7.0 describes when respirator use may be discontinued.

3.1.2 Skin Contact

Skin contact with certain materials may cause skin irritation and may also result in systemic absorption. The following precautions must be used when inspecting sites which may contain materials with the potential for dermal absorption:

1. Ensure that exposed skin is protected during site work;
2. Use proper procedures for removing contaminated clothing while still at the site;
3. Contaminated rags and other disposable items, such as gloves, should be bagged for proper disposal, avoiding skin contact;
4. Choose protective clothing suitable for anticipated materials; and
5. If skin contact with hazardous materials occurs, immediately rinse area with water and seek medical attention.

Section 5.2 discusses the appropriate personal protective equipment suitable for this project. As discussed in Section 3.2, dermal hazards associated with site contaminants are low.

3.1.3 Ingestion

The ingestion of hazardous material may occur when drinking, eating, or smoking in contaminated areas, or with contaminated hands. This can be avoided through the use of the prescribed protective clothing, through the restriction of eating, drinking, and smoking to uncontaminated areas, and through good personal hygiene practices. Eating, drinking and smoking are prohibited on-site until personal hygiene practices have been followed. The decontamination procedures described in Section 8.0 are intended to minimize the potential for accidental ingestion of toxic materials.

3.1.4 Eye Contact

The eyes are sensitive to damage from a number of solids, liquids, or vapors. Effects may range from mild irritation to severe damage. The actual effect depends on the material and on the quantity to which the eye may have been exposed. The following precautions to avoid eye injury must be taken when entering the site:

1. Wear safety glasses with side shields or goggles;
2. Do not rub eyes;
3. Never wear contact lenses when working in areas where hazardous materials may be encountered. Contact lenses cannot be worn when respirator use may be required; and
4. If eye contact with hazardous materials occurs, immediately rinse eyes with water and seek medical attention.

3.2 Chemical Hazards

The chemical hazards associated with this project are anticipated to be low. Residual site contaminants consist of low levels of hydrocarbons (gasoline, diesel, crude oil) semi-volatiles (polycyclic aromatic hydrocarbons) and pesticides (mainly toxaphene). Table 1 to Table 3 shows the maximum levels of compounds detected in soil during previous investigations at the site and provides an industrial hygiene evaluation of anticipated exposures while disturbing contaminated soil.

Potential inhalation exposures to airborne organically bound chemicals are expected to be low. Airborne dust generally becomes visible at level concentrations of approximately 0.5 milligrams of dust per cubic meter of air (0.5 mg/m^3). This level of dust represents 5% of the current Cal-OSHA Permissible Exposure Limit (PEL) for total dust.

If just visible airborne dust were to contain the highest reported level of toxaphene in areas to be potentially disturbed, this concentration of dust would represent 0.001 milligrams of toxaphene per cubic meter of air (mg/m^3). This is equivalent to 0.002% of the current Cal-OSHA Permissible Exposure Levels (PELs found in 8CCR5155 Table AC1). Note that the Cal-OSHA AL is based on an 8 hour time weighted average (8h-TWA). Therefore, to reach worst case projected exposures would require continuous emissions of just visible dust for an entire shift. Given that dust control is a project requirement, this is an unlikely scenario. Consequently, the airborne toxaphene exposure hazard is expected to be extremely low for construction and maintenance activities that may be performed at the property. Dermal exposure is not a concern because toxaphene is not absorbed through the skin. However, inadequate personal hygiene practices could lead to inadvertent ingestion of residues. Dermal exposure and incidental ingestion of hydrocarbons on site are not expected to be a significant with good hygiene practice.

Use of excavation equipment may generate airborne dust, which may be inhaled. Note that site work practices will require dust control measures so as to minimize visible dust emissions. Therefore the dust inhalation hazard is also expected to be low.

In summary, the contaminants identified on site are at too low a concentration to present a significant exposure hazard under anticipated working conditions. Dust control and personal hygiene practices will serve to minimize exposure to known site contaminants.

3.3 Physical Hazards

The physical hazards of this project should be normal to maintenance and construction work and thus should already be addressed in contractor's IIPPs. These are incorporated by reference into this EHASP and shall be available on site during field work. However, the following safety issues should be considered if trenching or excavation work is conducted..

- Underground utility clearance before excavation.
- Compliance with Cal-OSHA's excavation safety orders if the work will require anyone to enter excavations deeper than five feet. These orders require a permit from Cal-OSHA as described in 8CCR1539.
- Entry into trenches and excavations shall be considered confined space entry and shall conform to the requirements of 8CCR5158.

Other physical hazards typical of construction activities include working around heavy equipment, electrical work, noise, slips and falls, back strains from lifting, and cuts from jagged edges and protrusions. These hazards are already addressed in the contractor's IIPP, and should be discussed during routine tailgate safety meetings.

Work with and around heavy equipment will require adherence to the following general practices. The safe practices stated below are not intended to substitute existing IIPP requirements. They are reiterated below to serve as reminders for site employees:

- Use of reflective vests around moving equipment.
- Eye contact with equipment operator.
- Operators to be trained on the proper use and limitations of the equipment.
- Rated equipment capacity shall not be exceeded.
- Operators shall wear seat belts provided.
- All equipment to be inspected each day before use.
- Equipment guards shall be left in place except for routine maintenance and for repairs. Guards removed shall be replaced promptly.
- Manufacturer's recommended preventive maintenance procedures shall be followed.
- Personnel shall not work under suspended loads.
- Equipment shall be fitted with audible electronic back up alarms.
- Equipment shall be placed on firm stable ground before use.
- Operators and employees shall use seats provided only.
- Operators shall not get on or off equipment while it is in motion.

Work around equipment or noise sources that exceed 85 decibels on the A-weighted scale will require the use of either ear muffs or insert hearing protectors. Ear muffs shall be maintained in a clean and sanitary condition. Insert hearing protectors shall be disposed of after each use. Users of insert protectors shall ensure hands are clean before inserting plugs into ears.

3.4 Overview of Safety Procedures

The hazards described above shall be controlled through a combination of engineering and administrative controls and through the use of personal protective equipment.

The engineering controls applicable to this project shall be to implement appropriate dust control measures to minimize visible airborne dust emissions. This shall consist of a water truck to be used continuously on contaminated soil that is excavated so as to minimize dust emissions. If visible dust clouds are noticed at any time during construction activities, the dust-producing work in that area will be required to be discontinued until dust control measures are effective at controlling visible dust emissions.

The administrative controls for this project shall consist of limiting access to contaminated areas to properly trained and equipped personnel. These individuals shall follow the required decontamination procedures when leaving the contaminated work areas. In addition, smoking and other sources of ignition will be prohibited from trench areas until they have been evaluated for methane accumulation.

The project Health and Safety Officer shall ensure the following activities are conducted so that employees are properly protected when the work involves handling contaminated materials:

- Designate contaminated areas and establish site control;
- Provide the necessary equipment for decontamination;
- Conduct daily site inspections to verify the appropriate precautions are in effect;
- Conduct periodic air monitoring of excavations;
- Identify the nearest emergency facilities (if not already done);

These procedures are described in this EHASP.

4.0 Site Control

4.1 Contaminated Areas

Known site contaminants are present in low concentrations in most areas, with occasional pockets of higher concentrations. As explained in Section 3.2, it is unlikely that worker exposure will exceed applicable Cal-OSHA PELs. Therefore, exclusion zones as defined in 8CCR5192 will not be required. However, areas either known to be contaminated or areas where there is visible evidence of contamination (soil discoloration, odors etc.) shall be designated as contaminated areas. These shall be delineated with cones, barricade tape, temporary or other visible means. Appropriate personal protective equipment shall be worn when working in this area as described below.

The absence of exclusion zones shall not relieve site workers from the requirement for personal hygiene before eating, drinking or smoking.

Vehicle access into contaminated work areas shall be restricted only to the equipment required for the work, and to the water truck for dust control.

Access to construction zones where contaminated soil is being excavated shall be restricted to authorized personnel only. Site visitors will be required to check in with District staff upon entry and exit. Visitors authorized to enter active work areas shall sign in an entry and exit log. Access to the site shall be locked outside working hours.

4.2 Decontamination Area

Hand washing facilities shall be provided on-site, whenever soil disturbing activities occur. The station shall be stocked with soap, water and towels. The facilities shall be sufficient for the number of employees on-site.

5.0 Personal Protective Equipment

5.1 Selection Criteria

The EPA has classified personal protective equipment (PPE) ensembles into four categories for different levels of hazards. They are as follows.

- *Level A* This type of protection should be worn when the highest level of respiratory, skin, eye and mucous membrane protection is needed.
- *Level B* Level B protection should be selected when the highest level of respiratory protection is needed, but a lesser level of skin and eye protection.
- *Level C* This level protection should be selected when the actual or potential airborne substance(s) is known, the concentration(s) is measured, the criteria for using air-purifying respirators are met, and skin and eye exposure is unlikely. Periodic air monitoring is necessary.
- *Level D* Level D is primarily work clothing.

The PPE selection criteria for unexpected toxic hazards that may be encountered are based on two major parameters:

- Type(s) and measured concentration(s) of the chemical substance(s) in the atmosphere, with its (their) associated toxicity.
- Potential for exposure to high air concentrations of volatile substances, splashes of liquids, or other types of direct contact with material due to work functions being performed.

PPE for activities where the identity of contaminants is available requires consideration of the following:

- Identity of either known or suspected contaminant.
- Actual or potential airborne concentration.
- Skin toxicity data.
- Potential for skin or eye contact.

5.2 Contaminated Area PPE Requirements

As stated in Section 3.2 of this EHASP anticipated exposures by all occupationally relevant routes is not expected to be significant. Therefore, the following (EPA level D) personal protective equipment shall be worn in contaminated areas:

- Hardhat (if working around heavy equipment);
- Work boots; and
- Safety glasses with side shields.

All personnel who may come into direct skin contact with contaminated materials shall wear the above described PPE clothing, in addition to the following as necessary to prevent contact with the site materials:

- Nitrile gloves (when handling contaminated soils and equipment);
- Tyvek or equivalent disposable coveralls; and
- Chemical splash goggles (to prevent splash into the eyes).

Unnecessary contact with potentially contaminated residues shall be avoided as much as possible.

Should air monitoring results (as discussed in Section 7.0 of this EHASP) warrant the use of respirators, protective equipment shall be upgraded to Level C.

5.3 Clean Area PPE Requirements

Work outside contaminated areas shall require the use of EPA level D protective equipment normal to the construction industry. Typically, this consists of hard hats, safety footwear, normal work clothing, and safety glasses as necessary.

6.0 Employee Training

As discussed in Section 3.0 of this EHASP, it is unlikely that site activities will result in exposure to health hazards other than those associated with construction activities. Site personnel shall be familiar with the contents and requirements of this EHASP. This information shall be presented at a project start-up tailgate safety meeting mandatory for all site personnel engaged in construction activities that require soil excavation. The Health and Safety Officer will conduct this meeting. Table 4 shows an outline for the site specific tailgate safety meeting in this EHASP which shall include a brief discussion on the hazards of pesticide and petroleum hydrocarbon exposure.

Additionally, employees required to enter trenches shall receive confined space awareness training that will include a discussion of emergency procedures. This training shall be consistent with a confined space entry program.

During field work, tail-gate meetings will be held at the start of each work week to discuss the planned activities and any health and safety-related issues. Additional meetings may be needed after events such as procedure changes, PPE level adjustments, accidents, or additions to this EHASP. These meetings will be arranged by the Health and Safety Officer.

All subcontractor personnel who may disturb contaminated soil will be required to complete the same level of training as described above, and shall attend all safety briefings. Employee attendance shall also be documented in training attendance records (sign-in sheets).

This training is additional to the training required under the District's IIPP. Additional training may be required should project conditions change or warrant it. This includes respiratory protection training if air monitoring shows respirators are needed.

Prior to commencing work each day, either the Health and Safety Officer or Project Manager will ensure that the following tasks are performed:

1. Safety briefing, as scheduled, for all site personnel to discuss the activities to be performed during the day, as well as any anticipated safety or health issues. A weekly safety briefing will also emphasize proper emergency procedures, and will identify any health and safety related changes from this EHASP.

2. A site inspection to identify and eliminate or control physical hazards that may exist on the project site (moving ground, tripping hazards, slipping hazards, sharp objects, etc.).
3. Proper delineation of contaminated work areas with barricades or barrier tape as needed.
4. Scheduling of personnel so that only the personnel necessary to complete the day's work are allowed to work in contaminated work areas.

7.0 Worker Air Monitoring

As discussed in Section 3.2, airborne exposures to petroleum hydrocarbons are not expected to exceed the current Cal-OSHA Permissible Exposure Levels (PELs), with dust control. However, this shall be verified through monitoring whenever workers detect hydrocarbon odors. Hydrocarbon monitoring shall consist of periodic breathing zone monitoring with a photoionization detector (minimum 10.2 eV source). Personal protective equipment shall be upgraded from modified Level D to modified Level C (same as modified Level D but with respirators required) whenever breathing zone readings show more than 5 parts per million (ppm) for five consecutive minutes. Section 5.2 of this EHASP provides additional details on protective clothing ensembles. Respiratory protection use may be discontinued if breathing zone readings fall below this criterion. An alternative response to respirator use shall be to suspend operations until air concentrations fall below 5 ppm for 5 consecutive minutes.

Monitoring for combustible gases, including methane, and oxygen levels will be conducted for all trenches into which personnel will enter, prior to their entry. This monitoring will be conducted utilizing a calibrated combustible gas/oxygen meter. If combustible gas readings in excess of 10% LEL are encountered, personnel will not enter the trench until readings are consistently below 10% LEL. In addition, if LEL readings are encountered, soil conditions will be evaluated for the presence of unknown contaminants, and the appropriate actions taken if either soil staining or odors are noticed.

Because it is unlikely that these criteria would be exceeded during this project as explained in Section 3.2 of this EHASP, and as will be corroborated by air monitoring conducted during earth disturbing activities, personal air monitoring is not required for the work covered by this EHASP. This does not however relieve contractors who may disturb contaminated soil from minimizing dust emissions.

8.0 Decontamination

. Personnel working with soils onsite areas shall wash their hands and face before eating, drinking or smoking. This decontamination area shall consist of:

- Temporary disposal containers for disposable protective equipment, consisting of trash cans or drums with liners. When full, the liners are to be removed, secured, and placed with the other contaminated materials for proper disposal.
- Hand and face washing facilities, which provide running water, soap, and paper towels. Employees should wash their hands thoroughly with soap and rinse with copious amounts of water prior to drying. . If running water is not available, then water-less cleansers or wipes may be used.

The sequence for employees to use when decontaminating follows:

1. Remove protective equipment.
2. Wash hands and face with soap and water, or alternative.

Boots and gloves may be reused provided contaminated residues have been removed. Otherwise they shall be replaced as necessary. Respirators are not required.

If unknown contaminated materials are encountered on site, decontamination procedures will be adjusted so as to prevent the spread of contaminated materials outside of the work site.

8.1 Equipment Decontamination

At the end of each day tools and other small equipment will be cleaned in the same manner as personal protective equipment.

Contaminated heavy equipment shall be decontaminated by cleaning off visible residues and placing them either back into the excavations or onto spoils piles. Visibly clean equipment shall be considered decontaminated. Contaminated equipment shall not be removed from the regulated area until it has been cleaned.

Footwear, tools and equipment shall be cleaned of mud, dirt and other debris at the end of each day or before removal from potentially contaminated work sites. Debris and other wastes shall be placed back to their site of origin.

Rinsate and water shall be collected and handled in the same manner as other water collected on site. This may include reuse as dust control on site, or discharge to the ground surface in a manner that does not produce runoff. Disposal of all liquids will be performed only after obtaining the appropriate permission.

9.0 Emergency Response

Table 5 contains emergency response telephone numbers to be used in emergencies. Normal on site communications shall consist of two way radios and cell phones.

9.1 Employee Injury or Illness

The affected employee shall be removed (if it can be done safely and without aggravating conditions) and transported to Sequoia Hospital. Emergency telephone numbers are listed on Table 5. Only individuals currently trained in first aid or CPR shall render this type of assistance. Table 6 contains directions to the emergency facility.

9.2 Emergency Equipment

Emergency equipment available on-site shall consist of:

- First aid kits (to be used by trained personnel only).
- Fire extinguishers (10 A,B,C ratings). Fire extinguishers shall be available at the jobsite trailer, and in each supervisor vehicle. Fire extinguishers shall be inspected annually, and during each job site inspection they are re-charged as necessary.

9.3 Emergency Decontamination

As project related chemical hazards are expected to be low, it is unlikely that employee contamination can present a life threatening condition. Therefore, emergency employee decontamination shall consist of removing protective clothing and washing with soap and water as necessary. If necessary, protective clothing shall be cut away and removed before transportation to an emergency facility.

9.4 Emergency Evacuation

In the unlikely event of site evacuation, an air horn will be used to sound the alarm. Reasons for emergency evacuation include trench collapse, fires and explosions.

Employees shall report to the Project Superintendent's vehicle without delay where the Superintendent shall conduct a head count.

9.5 Unusual Conditions

Site employees shall be instructed to cease work, and immediately report to the supervisor should they encounter unusual conditions such as strange odors or liquids. The Superintendent shall assess conditions, and shall consult with Mr. Paul M. Spillane, CIH, as needed. If necessary, work shall be temporarily suspended until the situation can be properly addressed.

10.0 Spills

Contaminated soils spills onto uncontaminated areas shall be handled by prompt response that will include restricting the immediate area to authorized personnel only. The soil shall then be picked up, removed, and placed either in an appropriate spoils pile or in the excavation. Personnel handling contaminated soil shall be current in the training specified in Section 6.0 of this EHASP.

11.0 General Safe Work Practices

The project operations shall be conducted with the following minimum safety requirements employed:

- Personnel on-site are to be thoroughly briefed on the anticipated hazards, equipment requirements, safety practices, emergency procedures and communication methods, initially and in daily briefings.
- Dust control measures to minimize airborne dust emissions.
- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand to mouth transfer and ingestion of materials is prohibited in all areas of soil work.
- Removal of materials from protective clothing or equipment by blowing, shaking, or any other means that may disperse materials into the air is prohibited.
- Personnel should be cautioned to inform each other and their supervisor of subjective symptoms of chemical exposure such as headache, dizziness, nausea, and irritation of the respiratory tract.
- Contact with contaminated soil shall be minimized.
- Legible and understandable precautionary labels shall be prominently affixed to containers of raw materials, intermediates, products, mixtures, scrap, waste, debris, and contaminated clothing.
- Open excavations shall be covered, as feasible, if rain is expected, to minimize the accumulation of storm water.
- Spoils piles shall be covered with polyethylene that shall be weighed down so as to prevent contaminated soil emissions from wind and rain.
- Wherever possible, spoils shall be placed back into the excavation after work is completed. Waste soils to be transported off site shall be characterized for appropriate waste disposal.

12.0 Sanitation

The District and its subcontractors will provide the proper sanitary facilities for use by all personnel assigned to construction work involving excavation of contaminated soil. These shall include temporary

toilets that shall be serviced at least weekly, and self-contained washing facilities that shall include a clean water supply, soap dispenser, and disposable towels.

13.0 Respiratory Protection

The District and its subcontractors shall provide employees with appropriate respirators if air monitoring as described in Section 7.0 indicates their use is necessary. Respirator use shall be consistent with the requirements of 8CCR 1529 (Cal-OSHA's Respiratory Protection Standard for the construction industry). The District and its subcontractors shall provide respirators that are applicable and suitable for the purpose intended. The appropriate respiratory protection for this project if the criteria in Section 7.0 are exceeded is a half face respirator fitted with organic vapor filters and HEPA pre-filters. These respirators (NIOSH approved half face) have a rated protection factor of 10.

As described in Section 13.0 of this EHASP, all employees required to wear respiratory protection shall be required to undergo annual medical evaluations.

District and subcontractor respiratory protection policies shall not permit respirator use when conditions prevent a proper facepiece-to-face seal. Such conditions as facial hair, scars, wrinkles, facial diseases, denture removal, or other disorders could prevent a proper facepiece-to-face seal. Contact lenses may not be worn when using any respirator.

District and subcontractor supervisors and employees shall be current in the respiratory protection training including the proper selection and use of respirators and their limitations. All training is documented with records retained in the employee's training files.

Anticipated airborne exposures to site contaminants are expected to be less than 1% of applicable PELS. Therefore, respiratory protection is not required when working with contaminated soils unless air monitoring as described in Section 7.0 indicates its use is necessary. If required for other tasks, the use of respiratory protection shall be consistent with 8CCR1529 (Cal-OSHA's Respiratory Protection Standard for the construction industry). This includes the implementation of a written respiratory protection program, as well as documented medical evaluations, training and fit testing for all respirator users.

14.0 Medical Surveillance

District and subcontractor personnel engaged in construction work that may involve work with unknown contaminated materials, shall participate in an annual medical surveillance program, and shall be cleared by the examining physician(s) to wear respiratory protection devices and protective clothing for work with hazardous materials as required by 8 CCR 5192 prior to field assignment. As stated in 8CCR5192(f)(3)(A)1 through 8CCR5192(f)(3)(A)5, the medical surveillance program shall include:

- Medical and work history with emphasis on symptoms related to hazardous substance handling and health hazards, and fitness for duty including the ability to wear the required personal protective equipment under conditions expected at the site.
- Medical examination, the content of which shall be determined by the examining physician. This may include pulmonary, liver and kidney function tests, as well as hematological and neurological tests.

These examinations shall be provided without either cost to employees or loss of pay to said employees, at a reasonable time and place. A licensed physician, preferably one knowledgeable in occupational medicine, shall be retained to provide the required medical examinations. In addition, medical examinations shall be

provided at least once every twelve months (unless the attending physician believes a longer interval (not greater than biennially) is appropriate).

Medical examinations shall also be provided for employees who may have been injured, received a health impairment, or developed signs or symptoms which may have resulted from exposure to hazardous substances above applicable PELs without the necessary personal protective equipment. Such exams shall be provided as soon as possible after the incident, or the development of signs or symptoms, and at additional times as determined by the examining physician.

Medical records associated with this program are maintained in a manner consistent with the requirements of 8CCR3204. This regulation stipulates that medical records be maintained confidentially for at least 30 years following the termination of a participant in this program.

Medical surveillance is not initially required for this project because exposures to site contaminants are not expected to exceed Cal-OSHA PELs (or Action Limits) as explained in Section 3.1 of this EHASP. However, should conditions change such that exposures may be anticipated to exceed applicable PELs, site personnel engaged in project operations involving work with contaminated materials shall be cleared by the examining physician(s) to wear respiratory protection devices and protective clothing for working with hazardous materials as required under 8CCR1529 and 8CCR5192. Medical records associated with this program are maintained in a manner consistent with the requirements of 8CCR3204. This regulation stipulates that medical records be maintained confidentially for at least 30 years following the termination of a participant in this program.

15.0 Standard Operating Procedures

Section 8.0 of this EHASP contains standard operating procedures (SOPs) for decontamination. Other SOPs relevant to site construction work are included in the District's and subcontractors' IIPPs which are incorporated into this EHASP by reference. They will be available on site for review during field work.

Table 1

Industrial Hygiene Evaluation
Semi-Volatile Organic Compounds in Soils
Driscoll Ranch Property
La Honda, CA

December 2009

Contaminant	Soil Conc.[1]	Air Conc.[2]	PEL[3]	% PEL[4]
Acenaphthene	0.1800	<0.001	200	<0.001
Anthracene	0.0220	<0.001	200	<0.001
Benzo(a)anthracene	0.0081	<0.001	200	<0.001
Benzo(a)pyrene	0.0081	<0.001	200	<0.001
Benzo(b)fluoranthene	0.0580	<0.001	200	<0.001
Benzo(g,h,I)perylene	0.0470	<0.001	200	<0.001
Benzo(k)fluoranthene	0.0250	<0.001	200	<0.001
Chrysene	0.1500	<0.001	200	<0.001
Dibenzo(a,h)anthracene	0.0690	<0.001	200	<0.001
Fluoranthene	0.3800	<0.001	200	<0.001
Fluorene	0.1900	<0.001	200	<0.001
Indeno(1,2,3-cd)pyrene	0.0850	<0.001	200	<0.001
Naphthalene	0.6200	<0.001	200	<0.001
Phenanthrene	0.4800	<0.001	200	<0.001
Pyrene	0.1400	<0.001	200	<0.001

Footnotes

1. Soil Conc. Indicates maximum reported soil concentration in the project documentation reviewed. These concentrations are presented in milligrams of contaminant per kilogram of soil (mg/kg), unless otherwise indicated. PELs for Polynuclear Aromatic Hydrocarbons (PAHs) are based on total coaltar pitch volatiles (benzene or cyclohexane-soluble fraction) that evolve upon heating the distillation residues from coal tar. The PEL for coaltar pitch volatiles is 0.2 mg/m^3.
2. Air Conc. Indicates projected airborne concentration of PAHs assuming that the maximum reported levels of PAHs evaporated instantly and continuously from the top one foot of soil into a volume of 2 cubic meters (approximately 9 feet by 9 feet by 6 feet in height) at any given time. This projected calculation does not allow for any dilution associated with natural air movement. The projected calculations are given in parts per million in air (ppm).
3. PEL indicates current Cal-OSHA Permissible Exposure Limit (PEL) currently promulgated in Title 8 of California Code of Regulations. PELs are given in ppm. Neither diesel nor oil and grease have Cal-OSHA PELs.
4. %PEL indicates air concentrations shown in column 3 as a percentage of the applicable PEL.

Table 2

Industrial Hygiene Evaluation
Pesticides in Soils
Driscoll Ranch Property
La Honda, CA

December 2009

Contaminant	Soil Conc.[1]	Air Conc.[2]	PEL[3]	% PEL[4]
4,4'-DDD	0.0260	<0.001	1.0	<0.001%
4,4'-DDE	0.0510	<0.001	1.0	<0.001%
4,4'-DDT	0.0630	<0.001	1.0	<0.001%
Dieldrin	0.0380	<0.001	0.25	<0.001%
Endosulfan I	0.0035	<0.001	0.1	<0.001%
Endosulfan II	0.0082	<0.001	0.1	<0.001%
Endosulfan sulfate	0.0140	<0.001	N/A	N/A
Endrin aldehyde	0.0140	<0.001	N/A	N/A
Endrin	0.0300	<0.001	0.1	<0.001%
Endrin aldehyde	0.0045	<0.001	N/A	<0.001%
gamma-Chlordane	0.0190	<0.001	0.5	<0.001%
Heptachlor epoxide	0.0170	<0.001	N/A	N/A
Methoxychlor	0.0180	<0.001	10.0	<0.001%
Toxaphene	2.4000	0.001	0.5	0.002%
DDT	0.1390	<0.001	1.0	<0.001%

Footnotes

1. Soil Conc. Indicates maximum reported soil concentration in the project documentation reviewed. These concentrations are presented in milligrams of contaminant per kilogram of soil (mg/kg), unless otherwise indicated.
2. Air Conc. indicates predicted airborne concentration based on continuous emissions of just visible dust (500 micrograms of dust per cubic meter of air or $\mu g/m^3$). Predicted airborne chemical concentration is expressed in $\mu g/m^3$.
3. PEL indicates current Cal-OSHA Permissible Exposure Limit (PEL) currently promulgated in Title 8 of California Code of Regulations. PELs are given in ppm. Some pesticides do not have Cal-OSHA PELs.
4. %PEL indicates air concentrations shown in column 3 as a percentage of the applicable PEL.

Table 3

Industrial Hygiene Evaluation
Volatile Organic Compounds in Soils
Driscoll Ranch Property
La Honda, CA

December 2009

Contaminant	Soil Conc.[1]	Air Conc.[2]	PEL[3]	% PEL[4]
MTBE	1.3	0.018	40	0.05%
m,p-Xylene	0.1	0.001	100	0.00%
TPH-Gasoline (g)	160.0	1.778	300	0.59%
TPH-Motor Oil (mo)	3400.0	N/A	N/A	N/A
TPH-Crude Oil (o)	7600.0	N/A	N/A	N/A
TPH-Diesel (d)	1700.0	N/A	N/A	N/A

Footnotes

1. Soil Conc. Indicates maximum reported soil concentration in the project documentation reviewed. These concentrations are presented in milligrams of contaminant per kilogram of soil (mg/kg), unless otherwise indicated.
2. Air Conc. Indicates projected airborne concentration of hydrocarbons assuming that the maximum reported levels of hydrocarbons evaporated instantly and continuously from the top one foot of soil into a volume of 2 cubic meters (approximately 9 feet by 9 feet by 6 feet in height) at any given time. This projected calculation does not allow for any dilution associated with natural air movement. The projected calculations are given in parts per million in air (ppm).
3. PEL indicates current Cal-OSHA Permissible Exposure Limit (PEL) currently promulgated in Title 8 of California Code of Regulations. PELs are given in ppm. Neither diesel nor oil have Cal-OSHA PELs.
4. %PEL indicates air concentrations shown in column 3 as a percentage of the applicable PEL.

Table 4

Tailgate Safety Meeting Outline

Driscoll Ranch Property
La Honda, CA

December 2009

- Introduction
- Summary of Work
- Review of Hazards
  - Chemical
    - TPH (Hydrocarbons Gasoline)
    - SVOC (PAHs)
    - Pesticides (toxaphene and dieldrin)
    - Anticipated exposures
  - Physical
    - Work around heavy equipment
    - Noise
    - Underground utilities
    - Excavation
- Hazard Control Methods
  - Engineering
    - Use of water truck to mitigate dust
  - Administrative
    - Contaminated areas
    - Decontamination requirements
  - Personal Protective Equipment
    - Level D
  - Upgrade to level C based on air monitoring
- Air Monitoring
  - Use of Combustible Gas Indicators in trenches
  - Industrial Hygiene monitoring
- Employee Decontamination
  - Boot wash
  - Personal Hygiene Practices
- Emergency Procedures
  - Nearest emergency facility
  - Site Evacuation
  - Emergency Decontamination

Table 5

Emergency Contact Telephone Numbers

Driscoll Ranch Property
La Honda, CA

December 2009

Sequoia Hospital	(650) 369-5811
California State Office of Emergency Service	(510) 646-5908
Chemtrec	(800) 424-9300
Department of Toxic Substances Control	(510) 540-3839
Fish and Game	(800) 952-5400
Paul M. Spillane, CIH	(415) 242-6060 (office) (415) 254-6651 (mobile)
Poison Control Center	(800) 356-3129
Police/Fire (emergency)	9-1-1
Regional Water Quality Control Board	(510) 286-1255
Underground Services Alert	(800) 642-2444
Kirk Lenington, District Project Manager	(650) 691-1200 (office) (831)-419-2982 (mobile)
Onsite Competent Person (to be determined)	(___) ___-____ (mobile)
Alternate Onsite Competent Person (to be determined)	(___) ___-____ (mobile)
Health and Safety Officer (to be determined)	(___) ___-____ (mobile)

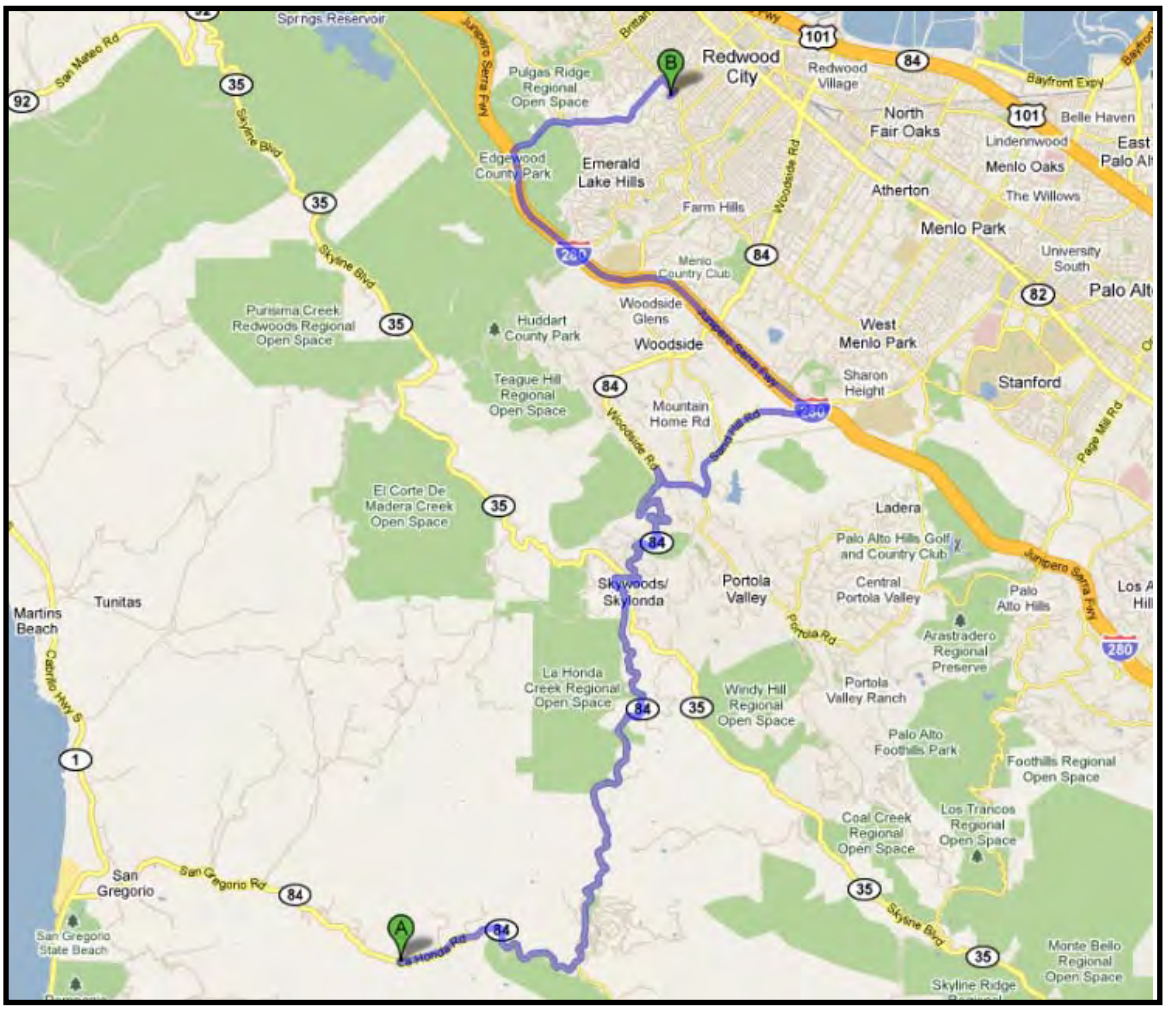
Table 6

Hospital Route

Sequoia Hospital
170 Alameda De Las Pulgas, Redwood City, CA 94062
(650) 369-5811

Directions to Hospital	**Miles**
1. Head east on CA-84 E/La Honda Rd	10.1
2. Turn left to stay on CA-84 E/La Honda Rd	3.2
3. Sharp right at Portola Rd	0.8
4. Turn left at Sand Hill Rd	2.3
5. Take the ramp onto I-280 N	5.7
6. Take exit 29 for Edgewood Rd	0.2
7. Turn right at Edgewood Rd	2.4
8. Turn right at Alameda/Alameda De Las Pulgas	0.2
9. Take the 2nd right onto Whipple Ave, destination will be on the right	

Distance: 25.1 miles
Approximate Travel Time: 40 minutes



APPENDIX C
SAMPLE NOTIFICATION LETTERS

Date: _____

Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Re: Notice of Excavation or Other Soil Disturbance
Driscoll Ranch Property, La Honda, San Mateo County, California

Dear _____:

This letter provides notice to the Regional Water Quality Control Board (RWQCB) of a planned excavation or other penetration of the Engineered Cover at the Driscoll Ranch Property, La Honda, San Mateo County, California. Information regarding the planned activity is provided below.

Date of Planned Activity: _____

Nature of Planned Activity: _____

_____

_____

Location of Planned Activity: _____

_____

If you have any questions, please contact: _____

Phone: _____

Sincerely,

Name: _____ Name: _____
(Signature) (Printed)

Date: _____

Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Re: Notice of Soil Removal
Driscoll Ranch Property, La Honda, San Mateo County, California

This letter provides notice to the Regional Water Quality Control Board (RWQCB) that soil excavated from the Driscoll Ranch Property, La Honda, San Mateo County, California will be removed to an off-site location. Information regarding the soil removal activity is provided below. If we do not hear from you, we will assume your concurrence with the proposed removal activity.

Date of Planned Off-Site Soil Removal: _____

General Source of Soil To Be Removed: _____

Volume of Soil To Be Removed Off-Site: _____

Proposed Destination of Soil: _____

_____

Chemical Test Data Attached: _____ Yes _____ No

Waste Profile on File at Facility: _____ Yes _____ No Profile Number _____

Generator of Soil: _____

Transporter of Soil: _____

_____

If you have any questions, please contact: _____

Phone: _____

Sincerely,

Name: _____ Name: _____
(Signature) (Printed)

SOIL DISTURBANCE RECORD KEEPING FORM
Driscoll Ranch Property, La Honda, San Mateo County, California

Date: _____ **Time:** _____ **Page** **of**

Entity Performing Activity

Company: _____

Address: _____

_____

Phone: _____

Fax: _____

Project Reference No: _____

Responsible Individual: _____

Title: _____

Sketch of Disturbed Area

Main Oil Field Area	☐
Tank Farm Area	☐
Product Tank Area	☐
Corral #5	☐
Fuel AST Area	☐

General Description of Activity

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Dust Control Measures Implemented: _____

Chemical Testing Performed? _____

Chemical Test Results Attached? _____

Disposition of Any Soil or Other Material Removed From Site: _____

PRINT NAME: SIGNED:

California Regional Water Quality Control Board
San Francisco Bay Region

Linda S. Adams
Secretary for
Environmental Protection

1515 Clay Street, Suite 1400, Oakland, California 94612
(510) 622-2300 • Fax (510) 622-2460
http://www.waterboards.ca.gov/sanfranciscobay

Arnold Schwarzenegger
Governor

Date: May 12, 2010
File No. 41S0178 (RL)

Midpeninsula Regional Open Space District
Attn: Mr. Kirk Lenington
330 Distel Circle
Los Altos, CA 94022
klenington@openspace.org

Re: Approval of Soil Management Plan and No Further Action for the Driscoll Ranch – La Honda Creek Open Space Preserve site, La Honda, San Mateo County, California

Dear Mr. Lenington:

This letter confirms the completion of site investigation and remedial action for the pollutant releases at the subject site.

We have reviewed your December 18, 2009 letter reporting completion of the follow-up tasks previously identified in our February 4, 2009 letter. These follow-up tasks included:

(1) Dismantling of remaining infrastructure in the tank farm area.
(2) Proper abandonment of the inactive water supply well in the vicinity of the tank farm area.
(3) Removal of refuse from the refuse disposal area for off-site disposal.
(4) Preparing a Soil Management Plan to document current soil conditions and provide guidance on soil handling, disposal, and reuse procedures.

We concur these follow-up tasks have been satisfactorily completed, and the December 18, 2009, final Soil Management Plan (SMP) is hereby approved. You are required to comply with the SMP.

As we stated in our February 4, 2009, letter and based on your satisfactory completion of the above tasks, we conclude that the currently-known site conditions are protective of human health and the environment under the projected future use scenario of an ecological preserve and continued cattle ranching.

Based upon the available information, including the current and projected future land use, and with the provision that the information provided to this agency was accurate and representative of site conditions, no further action related to the pollutant releases at the subject site is required.

If you have any questions concerning this letter, please contact Randy Lee of my staff at (510) 622-2375, [e-mail rylee@waterboards.ca.gov].

Sincerely,

Bruce H. Wolfe
Executive Officer

cc:

Mr. Charles Ice cice@co.sanmateo.ca.us
San Mateo County
Environmental Health Division
2000 Alameda de las Pulgas, Suite 100
San Mateo, CA 94403

Ms. Elizabeth Nixon elizabeth@ngem.com
Northgate Environmental Management, Inc.
300 Frank H. Ogawa Plaza, Suite 510
Oakland, CA 94612

CASE CLOSURE SUMMARY

I. AGENCY INFORMATION

Date: 3/9/2010

Agency Name: SF Bay Regional Water Quality Control Board	Address: 1515 Clay Street, Suite 1400
City/State/Zip: Oakland, CA 94612	Phone: 510-622-2375
Responsible Staff Person: Randy Lee	Title: Water Resources Control Engineer

II. SITE INFORMATION

Site Facility Name: **Driscoll Ranch – La Honda Creek Open Space Preserve**		
Site Facility Address: **Driscoll Ranch – La Honda Creek Open Space Preserve site, La Honda, San Mateo County**		
RB Case No.: **41S0178**	Local Case No.:	Priority:
Responsible Parties (include addresses and phone numbers):		
Midpeninsula Regional Open Space District		
Mr. Kirk Lenington klenington@openspace.org		
330 Distel Circle, Los Altos, CA 94022		

Tank No.	Size in Gallons	Contents	Closed In—Place/Removed?	Date
n/a	**n/a**	**n/a**	**n/a**	**n/a**

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: Historical operation as oil field and cattle ranch.		
Site characterization complete? **Yes**	Date Approved by Oversight Agency: **3/09/2010**	
Monitoring wells installed? **No**	Number: **n/a**	Proper screened interval? **n/a**
Highest GW Depth Below Ground Surface: 28 feet	Lowest Depth: 70 feet	Flow Direction: variable
Most Sensitive Current Use: **Open space preserve**		
Most Sensitive Potential Use and Probability of Use **Open space preserve**		
Are drinking water wells affected? **No**	Aquifer Name:	

Is surface water affected? **No**	Nearest surface water name:
Off-Site Beneficial Use Impacts (Addresses/Locations): **n/a**	
Report(s) on file? **Yes**	Where is report(s) filed? **Regional Water Board office**

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tanks			
Piping			
Free Product			
Soil	**30 cubic yds debris/refuse.**	**Offsite Disposal**	**10/30/2009**
Groundwater			
Barrels			

MAXIMUM DOCUMENTED POLLUTANT CONCENTRATIONS—BEFORE AND AFTER CLEANUP

POLLUTANT	Soil (ppm)		Water (ppb)		POLLUTANT	Soil (ppm)		Water (ppb)	
	Before	After	Before	After		Before	After	Before	After
endrin aldehyde	0.14	0.14			dieldrin	0.038	0.038		
toxaphene	2.4	2.4			endrin	0.03	0.03		
DDE/DDT/DDE	0.063	0.063			TPH-crude	7,600	7,600		
chlordanes	0.025	0.025			PAHs	0.62	0.62		
heptochlor epox	0.017	0.017			Lead	260	260		
endosulfin	0.015	0.015			zinc	160	160		

Comments (Depth of Remediation, etc.):

Debris from refuse area removed. Other soils left in place.

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? **Yes**
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? **Yes**
Does corrective action protect public health for current land use? **Yes**

Site Management Requirements:		
Monitoring Wells Decommissioned: **n/a**	Number Decommissioned:	Number Retained:
List Enforcement Actions Taken: **n/a**		
List Enforcement Actions Rescinded: **n/a**		

V. TECHNICAL REPORTS, CORRESPONDENCE, ETC., THAT THIS CLOSURE RECOMMENDATION WAS BASED UPON

RI Report	**12/09/2008**
Reporting completion of previously identified follow-up tasks	**12/18/2009**
Soil Management Plan	**12/18/2009**
Report for Debris Area Confirmation Soil Sampling	**12/18/2009**

VI. ADDITIONAL COMMENTS, DATA, ETC.

This document and the related CASE CLOSURE LETTER shall be retained by the lead agency as part of the official site file.