

DRAFT

ENVIRONMENTAL IMPACT REPORT

**Trail Change in Use and Improvement Project
Samuel P. Taylor State Park**



April 2011

Lead Agency



State of California
DEPARTMENT OF PARKS AND RECREATION
Acquisition and Development
One Capitol Mall - Suite 410
Sacramento, California 95814

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Acronyms and Abbreviations

AADT	Annual Average Daily Traffic
AAQS	Ambient Air Quality Standards
AB	Assembly Bill
ADA	Americans with Disabilities Act
APE	Area of Potential Effect
APEFZ	Alquist-Priolo Earthquake Fault Zoning
AQMP	Air Quality Management Plan
ARB/CARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
BMPs	Best Management Practices
CA	California
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEMA	California Emergency Management Agency
CAL FIRE	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CCAA	California Clean Air Act
CCC	California Conservation Corps
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CEPA	California Environmental Protection Act
CERCLA	Comprehensive Environmental Response, compensation and Liability act
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CGS	California Geological Survey
CHP	California Highway Patrol
CNDDDB	California Natural Diversity Database (Calif. Dept. of Fish and Game)
CNPS	California Native Plant Society
CNEL	Community Noise Equivalent Level
CNG	Compressed Natural Gas
CNPS	California Native Plant Society
CO	Carbon Monoxide
CORP	California Outdoor Recreation Plan
CPUC	California Public Utilities Commission
CRHR	California Register of Historic Resources
CRWQCB	California Regional Water Quality Control Board

CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibels
dbh	diameter at breast height
DEIR	Draft Environmental Impact Report
DFG	California Department of Fish and Game
DOJ	Department of Justice
DOT	Department of Transportation
DPR	California Department of Parks and Recreation
DTSC	California Department of Toxic Substance Control
EIR	Environmental Impact Report
EMS	Emergency Medical Service
EOP	Emergency Operations Plan
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FPD	Fire Protection District
FP	Fully Protected
ft	feet
g	gallon
GGNRA	Golden Gate National Recreation Area ()
GHG	Greenhouse Gases
GP	General Plan
H ₂ S	Hydrogen Sulfide
HCP	Habitat Conservation Plan
LCP	Local Coastal Program
Ldn	Day/night Average Sound Level
Leq	Equivalent Sound Level
LF	Linear Feet
LNG	Liquefied Natural Gas
LOS	Level of Service
LUP	Land Use Plan
MBTA	Migratory Bird Treaty Act
MCCDA	Marin County Community Development Agency
MCDPOS	Marin County Department of Parks and Open Space
MCFD	Marin County Fire Department
MCOSD	Marin County Open Space District
MCTD	Marin County Transit District
MLD	Most Likely Descendent
MMWD	Marin Municipal Water District
mph	miles per hour

MSL	Mean Sea Level
MWNM	Muir Woods National Monument
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCA	Noise Control Act
NCCP	Natural Community Conservation Plan
NO ₂	Nitrogen Dioxide
NOC	Notice of Completion
NOI	Notice of Intent
NOP	Notice of Preparation
NOx	Nitrogen Oxide
NPDES	National Pollution Discharge Elimination System
NPS	National Park Service
NWP	Nationwide Permit
O ₃	Ozone
OES	Office of Emergency Services
OHP	Office of Historic Preservation
OPR/SCH	Office of Planning and Research / State Clearinghouse
OHWM	Ordinary High Water Mark
P	Protected
Pb	lead
PG&E	Pacific, Gas, and Electric Company
PM	particulate matter
PM ₁₀	particulate matter (particles with an aerodynamic diameter of 10 Microns or less)
PM _{2.5}	particulate matter (particles with an aerodynamic diameter of 2.5 Microns or less)
POST	Peace Officer Standard Training
PRC	Public Resources Code
PRNS	Point Reyes National Seashore
PVC	polyvinyl chloride
QCA	Quiet Communities Act of 1978
RCRA	Resource Conservation and Recovery Act
RWQCB	Regional Water Quality Control Board
RV	Recreational Vehicle
SARA	Superfund Amendments and Reauthorization Act
SAFZ	San Andreas Fault Zone
SB	Senate Bill
SCS	Soil Conservation Service
SFWQCB	San Francisco Regional Water Quality Control Board
SHMA	Seismic Hazards Mapping Act
SHP	State Historic Park
SMARA	Surface Mining and Reclamation Act

SO ₂	Sulfur Dioxide
SO ₄	Sulfates
SOD	Sudden Oak Death
SP	State Park
SPTSP	Samuel P. Taylor State Park
sq	square
SR	State Route
SRA	State Recreation Area
SSC	Species of Special Concern
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TAC	Toxic Air Contaminants
TSCA	Toxic Substances Control Act
UNFCCC	United Nations Framework Convention on Climate Change
U.S.	United States
USACOE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFS	United States Forestry Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Service
VC	Vinyl Chloride
VOC	Volatile Organic Compounds
VRP	Visibility Reducing Particle

Trails Glossary

Whenever the following terms are used, the intent and meaning will be interpreted as follows:

Armored Crossing - A dip the trail grade aligned with a natural drainage that the trail has intersected and lined with large flat topped rock to create a sustainable surface during periods when the drainage carries water.

Back Slope – The bank along the uphill side of the trail usually sloped back a varying degree, depending on bank composition and slope stability.

Berm – The ridge of material formed on the outer edge of the trail that projects higher than the center of the trail tread.

Block – A puller or set of pulleys with a hook or shackle attached at one end.

Borrow – Soil, gravel, or rock materials taken from approved locations away from the trail.

Bridge – A structure, including supports, erected over a depression or stream and having a deck for carrying traffic.

Brushing – Removal of living and dead vegetation from a trail.

Classification – The designation indicating intended use and maintenance specifications for a particular use.

Clearing – Removal of windfall trees, uproots, leaning trees, loose limbs, wood chunks, etc. for a trail.

Clearing Limits – The outer edges or a clearing area as specified by trail class, shown on drawings or explained in class definition.

Climbing Turn – A turn that is constructed on a slope of 30% or less when measured between the exterior boundaries of the turn and changes the direction of the trail 120-180 degrees.

Compacted - The degree of consolidation that is obtained by tamping with hand tools or by stomping mineral soil and small aggregate in successive layers not more than 6 inches in depth.

Culvert – A drainage structure composed of rock, metal or wood that is placed approximately perpendicular to and under the trail.

Drainage Dip – A reverse in the grade of the trail bed accompanied by outslope that will divert water off the rail bed.

Duff – A layer of decaying organic plant materials deposited on the surface of the ground principally comprised of leaves, needles, woody debris and humus.

Entrenched Trail – Cupping, rutting or trenching in the trail tread surface resulting from trampling, standing water, uncontrolled surface runoff or a combination of these factors.

Fill-Slope – Area of excavated material cast on the down slope side of trail cut (also called embankment).

Ford – A water level stream crossing constructed to provide a level surface for safe traffic passage.

Full bench – Where the total width of the trail bed is excavated into slope and the trail bed width is not made of compacted fill slope.

Hazardous Tree – An unstable tree, 5 inches or greater in diameter at breast height, that is likely to fall across the trail.

Inslope – Where the trail bed is sloped downward toward the backslope of the trail.

Mineral Soil – Soil or aggregate that is free from organic substance and contains no particles larger than 2 inches in greatest dimension.

Mud Sill – Foundation on which a bridge is built.

Outslope – The trail bed is sloped downward toward the embankment or daylight side of the trail.

Parallel Ditching – A lateral drainage ditch constructed adjacent to the trail tread to catch surface water sheeting from the tread surface and divert it away from the trail. Generally, this drainage system is used in low, flat areas or areas where multiple entrenched trails have developed.

Pre-Field – Performing a physical examination of the project work site in order to evaluate solutions to trail deficiencies, select the appropriate course of action, formulate the design and quantify the material, equipment and person hour requirements.

Puncheon – A log or timber structure built to cross a swamp. Usually consists of sills, stringers and a log deck.

Retaining or Crib Wall – A log or rock construction to support trail tread or retain backslope.

Sideslope – The natural slope of the ground measured at right angles to the center line of the trail.

Slide – Material that has slid onto the trailway from the back slope and possibly beyond in quantities sufficient to block the trail.

Slough (sluff) – The materials from the back slope or the area of the back slope that has been deposited on the trail bed and projects higher than the center of the trail.

Slump – When the trail bed material has moved downward causing a dip in the trail grade.

Specifications – Standards to which trails and trail structures are built and maintained according to class.

Stringer – Log or timber that rests on mud sills and spans a water course, muddy areas, etc. supports the tread surface.

Switchback – A turn that is constructed on a slope of more than 30 percent when measured between the exterior boundaries of the trail 120 -180 degrees. The landing is the turning portion of the switchback. The approaches are the 20 foot trail sections upgrade and downgrade from the landing.

Tie Log – A structural member notched into the horizontal facer and wing walls used to secure the facer and wings by using the mass of the backfill.

Trail Bed – The portion of trailway between the hinge point of the back slope and the hinge point of the fill slope.

Trail Hardening – The manual, mechanical or chemical compaction/firming of the trail tread surface resulting in a hard and flat surface that sheets water effectively and resists the indentations that are created by trampling.

Trail Log – An inventory of physical features along or adjacent to a trail. An item by item footage record of trail features and facilities or improvements on a specific trail.

Travel Way or Corridor – Includes tread surface and clearing limits.

Turnpike – tread made stable by raising trail bed above wet, boggy areas by placing mineral soil between parallel side logs. Usually includes ditches alongside the road.

Water Bar – A device used for turning water off the trail, usually made of logs or stones.

Water Course – Any natural or constructed channel where water will collect and flow.

1.0 INTRODUCTION

1.1. Introduction

This Draft Environmental Impact Report (DEIR) has been prepared by the California Department of Parks and Recreation (DPR) to evaluate the potential environmental effects of the proposed Trail Change in Use Project at Samuel P. Taylor State Park (SPTSP), Marin County, California. This document has been prepared in accordance with the California Environmental Quality Act (CEQA), Public Resources Code (PRC) §21000 et seq., and the California Code of Regulations (CCR) §15000 et seq. As described in the CEQA Guidelines §15121(a), an Environmental Impact Report EIR is a public information document that informs the public and agency decision-makers of the potential environmental effects of a proposed project, considers reasonable alternatives, and identifies ways to avoid or reduce adverse impacts.

1.2. Lead Agency

The lead agency is the public agency with primary approval authority over the proposed project. In accordance with CEQA Guidelines §15051(a), "if the project will be carried out by a public agency, that agency will shall be the lead agency , even if the project would be located within the jurisdiction of another public agency." DPR is the lead agency for the proposed Trail Change in Use Project at SPTSP State Park.

It is the responsibility of the lead agency to determine if the proposed project has the potential to result in a significant effect on the environment [CEQA Guidelines §15063(a)]. For the purposes of CEQA, the term "project" refers to the whole of an action, which has the potential for resulting in a direct physical change or a reasonably foreseeable indirect physical change to the environment [CEQA Guidelines §15378(a)]. An (IS) is usually conducted to determine the extent of any potential impacts. If the IS reveals there is substantial evidence that a project may have a significant effect on the environment, an (EIR) must be prepared, in accordance with CEQA Guidelines §15064(a). However, if the lead agency determines there is substantial evidence that any aspect of the project, either individually or cumulatively, may cause a significant effect on the environment prior to completion of an IS, regardless of whether the overall effect of the project is adverse or beneficial, the agency is not required to complete the IS and can proceed directly with the preparation of the EIR [CEQA Guidelines §15063(a)].

1.3. Public Notice and Review

A Notice of Preparation (NOP) was filed with the State Clearinghouse (SCH#2011032070), filed March 30, 2011) and distributed to interested state agencies. The NOP was also sent directly to various local and Responsible and Trustee agencies. A copy of the NOP, distribution list, and written responses to the NOP are contained in Appendix B.

This DEIR and associated Notice of Completion (NOC) has been filed with the Governor's Office of Planning and Research - State Clearinghouse (OPR/SCH), which

will distribute copies to interested state agencies. It will also be sent directly to interested local and public agencies. DPR will provide public notice of the availability of the DEIR for public review, in compliance with CEQA Guidelines §15087 and invite comment from interested groups, organizations, and the general public. The public review period will extend for 45 days from the date the NOC is filed with the State Clearinghouse. The DEIR and associated supporting documents will be posted on the State Parks website at: http://www.parks.ca.gov/default.asp?page_id=982.

All inquiries regarding environmental compliance for this project should be addressed to:

Patricia DuMont
California Department of Parks and Recreation
Northern Service Center
One Capital Mall, Suite 410
Sacramento, CA 95814
Fax: (916) 445-8883
CEQANSC@parks.ca.gov Subject Line: Bill's Trail

All comments must be in writing and may be submitted by regular mail or email to the address indicated above, or by fax at (916) 445-8883; Attn: Patricia DuMont. Submissions must be postmarked or received by fax no later than June 3, 2011. The originals of any faxed document must be received by regular mail within ten working days following the deadline for comments, along with proof of successful fax transmission during the designated comment period. Emailed submissions must include the full name and mailing address of the commenter. Comments received during the public review period will become part of the public record and will be included in the Final EIR.

1.4. Responsible and Trustee Agencies

As described in Section 1.2 above, the lead agency has primary approval authority over the proposed project. However, other public entities, known as Responsible or Trustee agencies, could also have jurisdiction and discretionary approval authority over all or part of proposed project activities or resources potentially affected by a project. A "Responsible Agency" is a public agency, other than the Lead Agency, which has discretionary approval power over the project (CEQA Guidelines §15381). A "Trustee Agency" means a state agency having jurisdiction by law over natural resources affected by a project which are held in trust for the people of the State of California. For example, California Department of Fish and Game is a trustee agency with regard to the fish and wildlife of the state, designated rare or endangered native plants, and game refuges, ecological reserves, and other areas administered by the Department.

The following agencies have or could have jurisdiction over aspects of the proposed project, requiring consultation, coordination, and/or permits before the project may be approved and/or implemented:

- United States Army Corps of Engineers (USACOE)
- United States Fish and Wildlife Service (USFWS)

- California Department of Fish and Game (CDFG)
- California Department of Forestry and Fire Protection (CAL FIRE)
- State Water Resources Control Board (SWRCB)
- San Francisco Regional Water Quality Control Board (SFRWQCB)

1.5. Organization and Scope

The CEQA Guidelines (14 CCR §§15122-15132) identify the information that must be contained in an EIR. A Draft EIR must include the following:

- Table of Contents
- Summary of Proposed Actions and Consequences
- Project Description
- Environmental Setting
- Consideration and Discussion of Environmental Impacts and Mitigation Measures
- Significant Environmental Impacts
- Alternatives to the Proposed Project
- Effects Found Not to Be Significant
- Organizations and Persons Consulted
- Cumulative Impacts
- Economic and Social Effects

This DEIR analyzes the environmental effects of the Trail Change in Use Project, including Standard and Specific Project Requirements, and identifies and evaluates mitigation measures and alternatives to reduce or avoid significant environmental impacts resulting from this Project. CEQA requires proponents of projects approved or implemented by public agencies to mitigate or avoid significant impacts and to identify significant impacts that cannot be avoided, growth-inducing impacts, impacts found not to be significant, and significant cumulative impacts (14 CCR §§ 15122-15132).

The environmental effects addressed in this DEIR were established through review of the project scope, including, but not limited to, site evaluations, analysis of other projects in the general area, public agency responses to the Notice of Preparation (NOP), and preliminary consultation with responsible and trustee agencies.

This document is organized as follows:

Section 1 - Introduction

This chapter provides an introduction to the project, identifies CEQA requirements, and describes the purpose and organization of this document.

Section 2 - Project Description

This chapter describes the reasons for the project, location, background, project scope, project requirements, objectives, implementation, and regulatory requirements.

Section 3 - Alternatives to the Proposed Project

This section identifies and provides analysis of reasonable alternatives for the proposed project, including a discussion of potential environmental impacts that could result from implementation of each alternative and a comparative analysis. It also includes a discussion of those alternatives considered, but deemed infeasible.

Section 4 - Environmental Analysis

Section 4.0 contains an analysis of the environmental topics and potential impacts identified during initial project planning. Each subsection contains a description of the baseline conditions (environmental setting) as it relates to the specific topic; describes Project Requirements that have been incorporated into the Project; identifies and determines the significance of potential environmental impacts; and specifies mitigation measures, where appropriate, that will be implemented to reduce potential impacts to the lowest level feasible.

The following is a list and descriptive summary of the environmental topics addressed in the Environmental Analysis:

- Aesthetics/Visual Resources - Addresses visual impacts of the proposed project, including construction activities and nighttime illumination.
- Air Quality - Addresses the incremental and cumulative effect the proposed project could have on the air quality in the vicinity of the project site and within the Bay Area Air Quality Management District.
- Biological Resources - Addresses potential impacts to the plant and animal species within the project area, threatened and endangered species, jurisdictional wetlands, and habitat.
- Greenhouse Gases and Climate Change - Impacts of greenhouse gases on global climate change are addressed.
- Cultural Resources - Addresses potential impacts to historic and archaeological resources in the project's area of potential effect.
- Geology and Soils - Addresses geotechnical impacts associated with site development, including changes in topography, soil erosion, and potential geologic and seismic impacts during reconstruction and use of the trail.
- Hazards and Hazardous Materials - Addresses potential Project impacts resulting from transportation and/or use of hazardous materials and exposure to toxic materials. This section also evaluates the possibility of increased fire danger.
- Hydrology and Water Quality - Addresses changes in drainage patterns, absorption rates and runoff, surface water quality, and quality/quantity of groundwater.
- Land Use and Planning (includes Agriculture, Mineral Resources, and Recreation) - Addresses the potential impacts to land uses within the project site and in the surrounding community, including land use compatibility issues and consistency of the proposed project with existing plans and policies and recreational opportunities.
- Noise - Addresses the level of noise temporarily generated during the project.
- Public Services and Utilities - Addresses potential impacts of the Project to local public services; availability of utilities (including community sewer, water, solid waste disposal facilities, and services).

- Transportation, Circulation, and Traffic - Addresses effects of the proposed project on existing road conditions, vehicular circulation and flow, safety hazards, emergency access, and alternative modes of transportation.

Section 5 - Growth-Inducing and Cumulative Impacts

Section 5.0 identifies and discusses ways in which the Project could induce growth either, locally or regionally, by increasing population, housing, and/or employment.

Cumulative impacts associated with the Project are identified and discussed. This includes both temporary and long-term impacts that, if combined with one or more other projects in the vicinity, could result in a significant cumulative environmental impact.

Section 6 - Significance of Environmental Impacts

This section identifies both direct and indirect significant effects of the proposed project on the environment, during the construction phase and over the long-term use of the trail. This will include significant environmental effects that cannot be avoided and significant irreversible environmental changes that would be caused if the proposed project were implemented.

Section 7 - Report Preparation

This section identifies those who contributed to and/or were responsible for the DEIR preparation, distribution, and accuracy of the information contained in this document.

Section 8 - References

This section identifies the references and sources used in the preparation of this DEIR.

Appendices

The Appendices contain supportive documentation for information, evaluations, and determinations presented as part of this DEIR.

1.6. Findings

CEQA Guidelines §15091 indicates that no public agency will approve or carry out a project, for which an EIR has been certified, which identifies one or more significant environmental effects of the project, unless the public agency makes one or more written findings for each of those significant effects, accompanied by a brief explanation of the rationale for each finding. Findings have been incorporated into this DEIR at the end of each topic of Section 4.0, Environmental Analysis that identifies a potentially significant environmental impact.

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2.0 PROJECT DESCRIPTION

2.1. Introduction

The intent of this document is to evaluate the environmental effects of the Trail Change in Use Project at SPTSP.

2.2. Local and Regional Setting

SPTSP consists of approximately 2685 acres located in the coastal hills of Marin County. The park is located 6.5 miles west of the town of Fairfax and 2.5 air miles east of Olema (see Figure 2:1). The rural community of Lagunitas sits on the east boundary of the park, while the town of Nicasio is just over the ridge to the northeast 1.7 miles away. Both Sir Francis Drake Boulevard and Lagunitas Creek bisect the park travelling southeast to northwest.

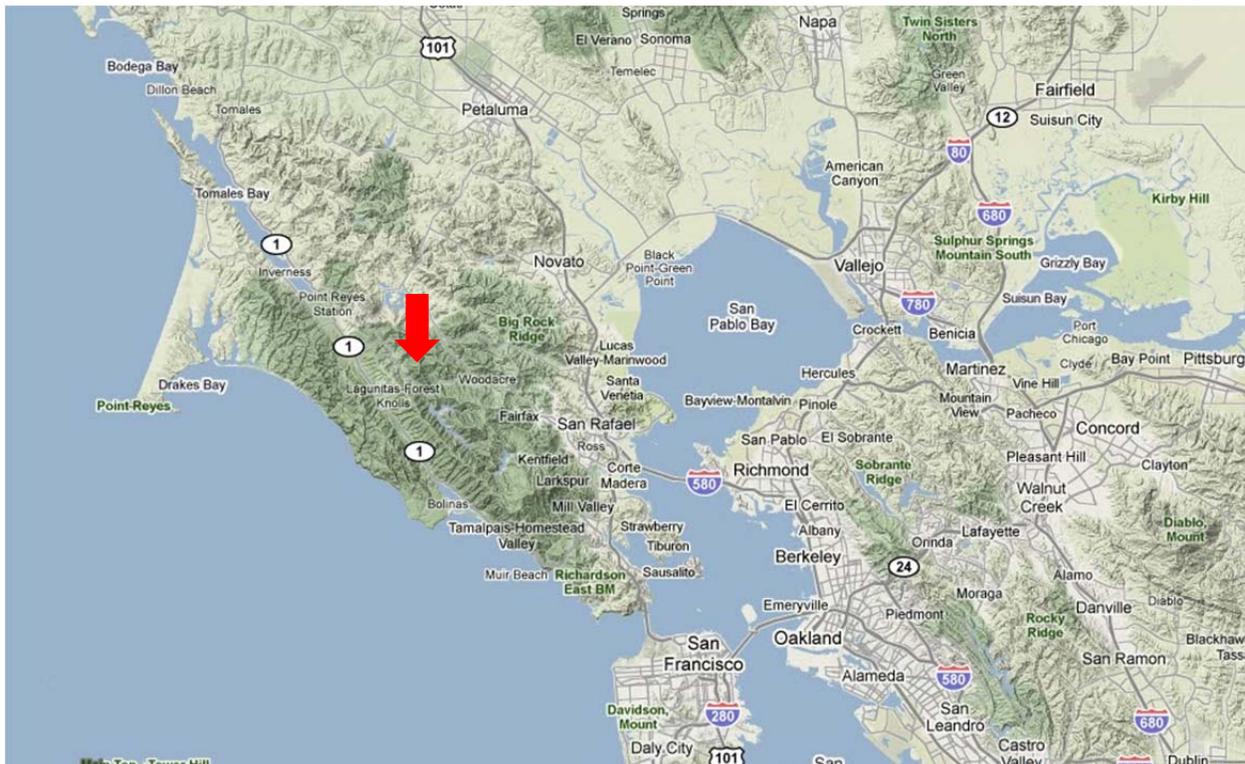


Figure 2:1 Area Map

2.3. Background and Need for the Project

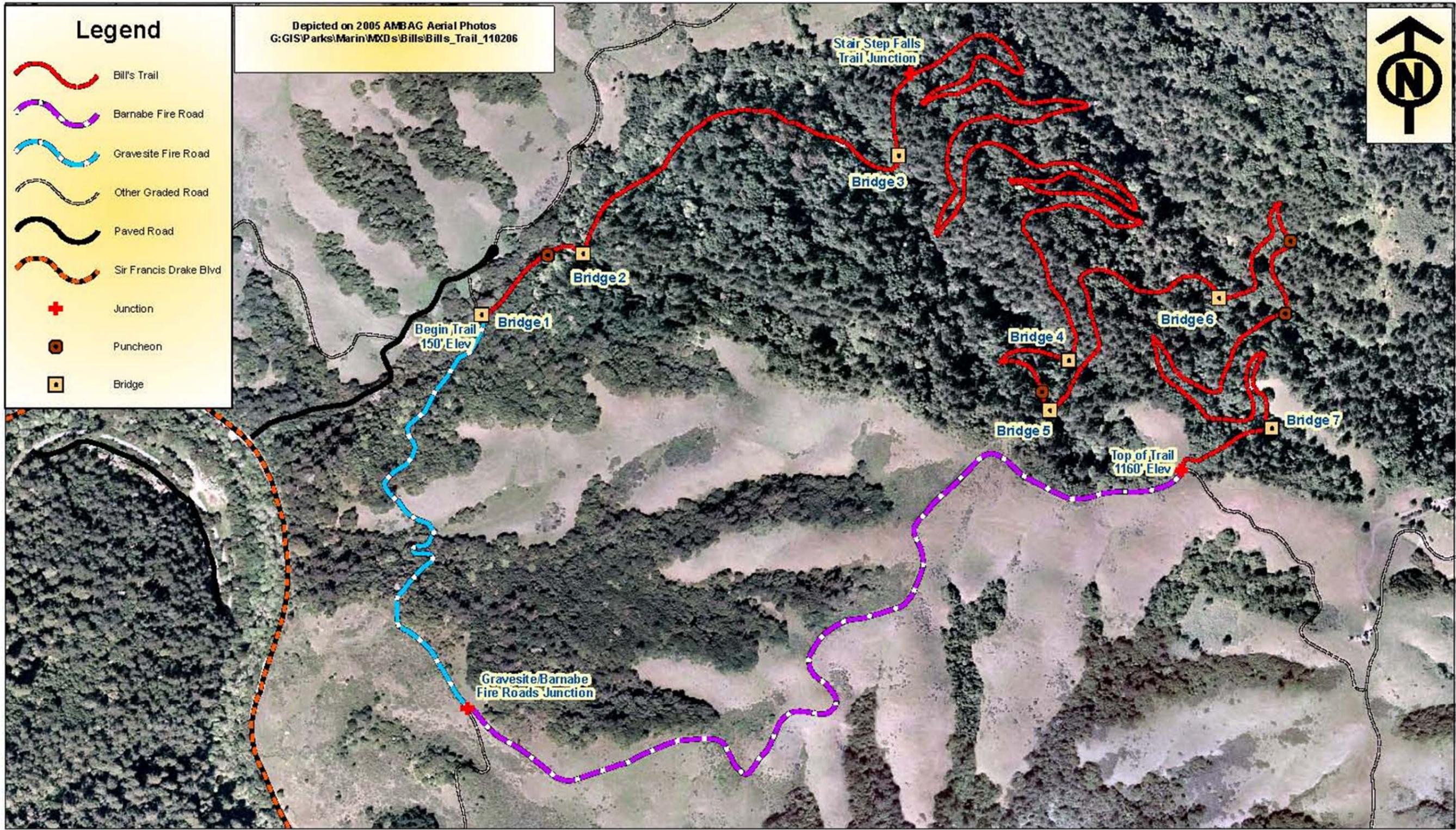
Bill's Trail (see Figure 2:2) was constructed in the late 1970's as a hiking only trail. Equestrians began using the trail in 1994 under the authorization of a Superintendent's order; and the trail has been used by both hikers and equestrians since that time. More recently mountain bikers have petitioned to use Bill's Trail as well, making the trail consistent with the Department's multiple use trail policy.

Bill's Trail is a 48" trail that begins on a bridge crossing over Devil's Gulch at an elevation of 160'. It extends 3.3 miles up Barnabe Mountain through a series of ten switchbacks, and eventually terminates at Barnabe Fire Road at an elevation of 1120'. Barnabe Fire Road, designated as a fire road, is open to hikers, horses and bicycles. No changes are proposed to Barnabe Fire Road; it is outside the scope of the project.

Aside from normal sloughing on the inside hinge and narrowing of the tread with vegetation overgrowth, Bill's Trail has aged relatively well over the years. As a result very little sediment is washing from the trail into Devil's Gulch. RWQCB made minor recommendations specifically in regard to stream crossing treatments. Gravesite Fire Road was originally constructed in part to provide maintenance access to a water well near Deadmans Gulch as well as the historic Taylor family gravesite. The road is narrow as it rises away from Devil's Gulch and widens as it approaches Deadmans Gulch. Gravesite Fire Road is open to mountain bikes, hikers and equestrians and provides a link between lower Bill's Trail and Barnabe Fire Road.

Gravesite Fire Road is poorly designed and is presently recognized as a direct source of sediment into Deadmans Gulch flowing directly into Lagunitas Creek. Temporary maintenance efforts have been employed in an attempt to reduce sedimentation into Devil's Gulch. However, improvements to a portion of Gravesite Fire Road are necessary to reduce sedimentation into Deadmans Gulch and improve water quality. Without this project, sedimentation would continue to occur from Gravesite Fire Road into Deadmans Gulch resulting in impacts to the Coho salmon and Steelhead trout habitat in Lagunitas Creek.

Designating Bill's Trail to a multi-use classification would complete a looped trail system for mountain biking, hikers and equestrians.



0 100 200 300 400 500 600 700 800 900 1,000 Meters 1:6,000 0 500 1,000 1,500 2,000 Feet

2.4. Project Objectives

DPR's mission is to provide for the health, inspiration, and education of the people of California by helping to preserve the State's extraordinary biological diversity, protecting its most valued natural and cultural resources, and creating opportunities for high-quality recreation. In addition to fulfilling the Department's mission statement, the project objectives include:

- Meet departmental policy to provide a multiuse trail;
- Provide additional opportunities for bikers and reduces the threat of illegal trail use and the potential for illegal trail development in other parts of the park;
- Converting existing well-designed trails to multi-uses thereby reducing pressure from user groups to create use-specific new trails in pristine areas.

2.5. Project Requirements

DPR has two types of Project Requirements: Standard and Specific. Standard Project Requirements are applied to projects statewide at all parks as required, and were developed from Best Management Practices (BMPs) and known regulatory requirements. For example, a Standard Project Requirement addressing the treatment of the inadvertent discovery of archaeological features is assigned to all projects statewide that include ground-disturbing work. However, for a project that does not have ground disturbance, such as replacing a roof on a historic structure, this Standard Project Requirement would not be necessary and therefore not applied to the project. Specific Project Requirements are written for, and applied to projects based on specific actions unique to a project and/or area that are necessary to complete the project while protecting resources. Table 2.6.1 Summary of Standard and Specific Project Requirements for the Project", lists Standard Project Requirements and Specific Project Requirements that will be incorporated into the Project, as applicable.

After incorporating the Requirements into the project description, whether standard or specific, DPR evaluates the significance of impacts based on CEQA Guidelines Section 15064.5 and Appendix G. After further impact analysis, if impacts are potentially significant or are potentially significant and unavoidable, DPR provides mitigation measure(s) to reduce impacts to a less than significant level. Continuing with the analysis, DPR could determine that although Project Requirements and mitigation measures have been included, project impacts are significant and unavoidable; therefore, could provide a Statement of Overriding Consideration (see Section 6.5).

2.6. Analytical Methodology

In determining the appropriate analytical methodology for this DEIR, DPR followed the following steps:

Step 1: Incorporation of Standard and Specific Project Requirements into the Project.

DPR reviewed potentially applicable environmental protection measures that it has used for other projects throughout the State and selected those that were deemed applicable to the Project. Next, DPR reviewed environmental protection measures that could be incorporated into this Project at the Park. As

discussed below in Section 2.5.2, these measures are titled Standard Project Requirements and Specific Project Requirements, respectively. Standard and Specific Project Requirements were then incorporated into the Project.

Step 2: Impact Analysis

After incorporating Project Requirements, DPR next evaluated the significance of potential impacts of the Project on the full ranges of CEQA resource topics. Many of the potential impacts were determined to be less than significant; however, DPR proceeded to Step 3, Mitigation, for impacts that could not be reduced to a level of less than significant through incorporation of Project Requirements.

Step 3: Mitigation

For impacts that were either potentially significant or potentially significant and unavoidable, DPR provided mitigation measures that reduced these impacts to the extent feasible. DPR then reviewed the potential impacts, and made applicable findings as described in Step 4, below.

Step 4: Findings Determination

After incorporation of Project Requirements and Mitigation, DPR determined the significance of impacts to environmental resources issues. Each resource section provides applicable findings for each significance determination. In addition, Section 6.0, Significance of Environmental Impacts, organizes these findings based on whether such findings were no impact, less than significant, potentially significant or potentially significant and unavoidable. For the latter category, Section 6.0 provides Overriding Considerations that make such potentially significant and unavoidable impacts acceptable.

Table 2.6.1 Summary of Standard and Specific Project Requirements for the Project

Project Requirements	Project Requirement Description
Air Quality	
Standard Project Requirement AIR 1: Ozone-Related Emissions	<ul style="list-style-type: none"> ▪ DPR and its contractor(s) will maintain all construction equipment in good mechanical condition, according to manufacturer's specifications. Construction equipment exhaust emissions will not exceed Bay Area Air Quality Management District (BAAQMD) Regulation IV – Rule 400 – Visible Emissions limitations (Cal EPA 2007b). ▪ All off-road and portable diesel-powered equipment, including but not limited to bulldozers, graders, cranes, loaders, scrapers, backhoes, generator sets, compressors, auxiliary power units, will be fueled with California Air Resources Control Board (CARB)-certified motor vehicle diesel fuel. ▪ Idling time for all diesel-powered equipment will be limited to five minutes, except as necessary to maintain a continuous workflow or for safety considerations. ▪ The use of diesel construction equipment meeting the CARB's 1996 or newer certification standard for off-road heavy-duty diesel engines will be maximized to the extent feasible. ▪ Electric and/or gasoline-powered equipment or equipment using alternative fuels, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane, or biodiesel, will be substituted for diesel-powered equipment, when available.
Standard Project Requirement AIR 2: Particulate Matter Fugitive Dust Emissions	<ul style="list-style-type: none"> ▪ Ground-disturbing activities will be suspended when sustained winds exceed 25 mph, instantaneous gusts exceed 35 mph, or dust from construction might obscure driver visibility on public roads. ▪ Disturbed areas of the site will be watered as necessary depending on the conditions, using water trucks and/or sprinkler systems, to prevent airborne dust from leaving the site. If available, reclaimed (non-potable) water will be used. ▪ All dirt stockpiles would be covered (tarp) or watered daily, as necessary to prevent dispersion of windblown dust. ▪ All trucks hauling dirt, sand, soil, or other loose materials would be covered or would maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer), in accordance with California Vehicle Code Section 23114. ▪ All disturbed areas in inactive portions of the site would be covered, seeded, and/or watered until a suitable cover is established or construction activities are resumed. Non-toxic soil stabilizers could be used in accordance with county, Regional Water Quality

Project Requirements	Project Requirement Description
	<p>Control Board (RWQCB), (CRWQCB) and California Air Resources Board (CARB) standards.</p> <ul style="list-style-type: none"> ▪ Permanent dust control measures would be implemented as soon as possible following completion of any soil disturbing activities. ▪ The name and telephone number of such persons will be posted on site throughout construction and provided to the MBUAPCD. The phone number of the Bay Area Air Quality Management District will also be visible to ensure compliance with Rule 402 (Nuisance) (CEPA 2007b). Project requirements would also be implemented during holidays, weekend periods, or times when work is temporarily suspended, as necessary to control site conditions generating fugitive dust.
Biological Resources	
Specific Project Requirement BIO 1.1: Marin blind harvestman	<ul style="list-style-type: none"> ▪ A DPR-approved biological monitor will survey for species of harvestman prior to any project activities that require the moving of any medium to large sized rocks. If any specimens are located then the DPR-approved biological monitor will relocate the species to a suitable location outside of the project area.
Specific Project Requirement BIO 1.2: Marin Hesperian	<ul style="list-style-type: none"> ▪ If any snail species is found on the project site while work activities are being conducted, work in the vicinity of the snail will be delayed until the species is relocated to a suitable location outside of the project area by a DPR-approved biological monitor.
Standard Project Requirement BIO1.3: California red-legged frog	<ul style="list-style-type: none"> ▪ Construction personnel will be instructed by a USFWS or DPR-approved biological monitor in the life history of the California red-legged frog and its habitat, and instruction in the appropriate protocol to follow in the event that a California red-legged frog is found onsite. ▪ A USFWS -approved biological monitor will be onsite during all activities within 500 feet of perennial streams to ensure there are no impacts to individual California red-legged frogs that might potentially move through the project area on dispersal. ▪ Immediately prior to the start of work each morning a USFWS or DPR-approved biological monitor will conduct a visual inspection of the construction zone, prior to the start of work. ▪ If a California red-legged frog is found, start of work at that project location will be delayed until the species moves out of the site on its own accord, or is relocated by a USFWS-approved biologist. ▪ Work will be confined to daylight hours to avoid activities during periods when California red-legged frogs are known to be active.
Standard Project	<ul style="list-style-type: none"> ▪ If possible, all noise-generating construction activities will not occur during the breeding

Project Requirements	Project Requirement Description
Requirement BIO 1.4: Northern Spotted Owl	<p>season for the northern spotted owl (February 1 – August 31). The specific dates of the breeding season could be adjusted through consultations with USFWS based on the characteristics of the local population</p> <ul style="list-style-type: none"> ▪ If construction activities must be scheduled during the breeding season, protocol-level surveys by a USFWS or DPR-approved biologist will be conducted prior to construction to locate nests, or survey data from local biologists monitoring owl populations in the area may be used if appropriate. ▪ If a breeding pair and/or nest are located during surveys, then no construction activities resulting in noise disturbance above ambient levels may occur within ¼ mile of the nest during the breeding season.
Standard Project Requirement BIO 1.5: Nesting Raptors and Migratory Birds	<ul style="list-style-type: none"> ▪ If possible, all noise-generating construction activities will not occur during the raptor and migratory bird breeding season (February 1 – September 15). ▪ If construction-related activities must be scheduled during the breeding season, then focused surveys for nesting migratory bird and raptor species will be conducted by a DPR-approved biologist before construction activities occur in these months to identify active nests. ▪ Surveys for active raptor nests will be conducted within a 500-foot radius of the project area 10 days prior to the beginning of construction at each work site. If nesting raptors are found, no construction will occur within a 500-foot radius of the nest until the young have fledged and the young will no longer be impacted by project activities (as determined by a DPR-approved biologist) and there is no evidence of a second attempt at nesting. ▪ Surveys for active migratory bird nests will be conducted within a 100-foot radius of the project area 10 days prior to the beginning of construction at each work site. If active nests are located, then no construction activities will occur within a 100-foot radius of the nest until the young have fledged and the young will no longer be impacted by project activities (as determined by a DPR-approved biologist).
Standard Project Requirement BIO 1.6: Sensitive Bat Species	<ul style="list-style-type: none"> ▪ If possible, all noise-generating construction activities will not occur during the bat maternity season (February 1 – September 31). ▪ If project activities must be conducted during the bat maternity season then a DPR-approved bat specialist will conduct a survey for bats within 100 feet of those project areas with suitable bat habitat. If bat roosts are observed, a buffer of 100 feet will be established around the roost in which only those project activities could occur without significant

Project Requirements	Project Requirement Description
	impacts to bats within the buffer zone, as determined by the bat specialist.
Standard Project Requirement BIO 2.1: Sensitive Natural Plant Communities	<ul style="list-style-type: none"> ▪ Within the root health zone (5 times dbh) of any native tree with a dbh of 12 inches or greater, no roots with a diameter of 2 inches or greater will be severed by project activities, unless authorized in advance by a DPR-approved biologist.
Standard Project Requirement BIO 2.2: Sudden Oak Death	<ul style="list-style-type: none"> ▪ All project activities that could spread <i>Phytophthora ramorum</i> to new locations will be subject to Best Management Practices (BMPs) developed by the California Oak Mortality Task Force and available online at http://www.suddenoakdeath.org/html/best_management_practices.html. ▪ Sudden Oak Death BMPs include but are not limited to: ▪ Inform personnel that they are working in a Sudden Oak Death (SOD)-infested area, unauthorized movement of plant material is prohibited, and the intent of these prevention measures is to prevent spread of SOD. ▪ Before leaving project area, remove or wash-off accumulations of plant debris, soil, and mud from shoes, boots, vehicles, and heavy equipment, etc. Clean with denatured alcohol or similar materials.
Standard Project Requirement BIO 3: Wetlands, Riparian Zones, and Waters of the U.S.	<ul style="list-style-type: none"> ▪ A wetlands and waters of the United States delineation report will be prepared and submitted to the appropriate office of the U. S. Army Corps of Engineers (USACE) for jurisdictional determination under Section 404 of the Clean Water Act. ▪ If required by the USACE then a 404 permit under the Nationwide Permit Program will be obtained for this project and all conditions imposed by the permitting authority will be implemented.
Cultural Resources	
Standard Project Requirement CULT 2: Previously Undocumented Resources	<ul style="list-style-type: none"> ▪ In the event that previously undocumented/unflagged cultural resources (including but not limited to dark soil containing shellfish, bone, flaked stone, groundstone, or deposits of historic material) are encountered during project activities, all work in that location will be temporarily halted and diverted to another location, until DPR's State Representative is contacted; a DPR-qualified cultural resource specialist will record and evaluate the find and work with the Project Proponent and/or Construction Contractor to implement avoidance, preservation, or recovery measures, as appropriate, prior to any work resuming at that specific location.
Standard Project	<ul style="list-style-type: none"> ▪ In the event that human remains are discovered during Program Actions, all work at that

Project Requirements	Project Requirement Description
Requirement CULT 3: Human Remains	<p>location will be temporarily halted and diverted to another location. Any human remains and/or funerary objects will be left in place. The Project Proponent and/or Construction Contractor will immediately contact the DPR State's Representative who will then contact the DPR Sector Superintendent. The DPR Sector Superintendent (or authorized representative) will notify the County Coroner, in accordance with §7050.5 of the California Health and Safety Code, and the Native American Heritage Commission (NAHC) will be notified within 24 hours of the discovery if the Coroner determines that the remains are Native American. The NAHC will designate the "Most Likely Descendent" (MLD) of the deceased Native American. The MLD will recommend an appropriate disposition of the remains. If a Native American monitor is at the Park at the time of the discovery, and that person has been designated the MLD by the NAHC, the monitor will make the recommendation of the appropriate disposition. Work will not resume in the area of the find until proper disposition is complete (PRC §5097.98). No human remains or funerary objects will be cleaned, photographed, analyzed, or removed from the site prior to determination. If it is determined the find indicates a sacred or religious site, the site will be avoided to the maximum extent practicable</p>
Geology and Soils	
Standard Project Requirement GEO 1 Best Management Practices	<ul style="list-style-type: none"> ▪ Bare earth materials at water course crossings shall receive 80% to 85% mulch cover using on site native materials. Where the ground is not mulched, native vegetation shall be planted. ▪ Brushing of trail cuts shall minimize the damage to root systems to help retain vegetation on the cut slope. Upon removal of temporary sidecast and initial sediment flush controls lighter materials shall be collected from brushing and placed (as feasible considering the steepness of the slope) as an additional filter at the trail edge where it is at the top of the banks of the mainstem of Devil's Gulch or within the buffer limits for sidecast control (0 to 30, 130 to 375 and 8475 to 8510). Aggregate shall also be placed along the same trail section. ▪ Rock shall be obtained from a Surface Mining and Reclamation Act (SMARA) approved quarry and contain no more fines than necessary to act as a binder. Aggregate shall be placed at crossings to inhibit rutting per the guidelines of the governing regulatory agency. ▪ Where eucalyptus will be removed at least 75 square feet of basal area per acre (any tree species) shall be retained on the slope. Logs hoisted to the trail shall be suspended to minimize ground impacts.

Project Requirements	Project Requirement Description
	<ul style="list-style-type: none"> ▪ To inhibit moisture capture logs used for pinch points shall be no longer than necessary. Logs shall not be placed within the buffers for watercourses outlined for sidecast and initial sediment control. ▪ Ditchouts and rolling dips along the fire roads shall be armored with aggregate at and near the outlet (if founded in fill) to inhibit erosion. Alternatively, the fill shall be removed from the outlet of the drainage structure.
Specific Project Requirement GEO 2 Seismic Event	<ul style="list-style-type: none"> ▪ In the event of a large earthquake on a nearby fault or significant rainfall event, the trail shall be inspected to determine if cracks or cutbank failures could contribute sediment to nearby watercourses – if such material is identified it shall either be stabilized or relocated outside the buffer zone identified for sidecast materials.
Hazards and Hazardous Materials	
Standard Project Requirement HAZ 1 a-c Spill Prevention	<ul style="list-style-type: none"> ▪ Prior to the start of construction, the Contractor would inspect all equipment for leaks and inspect equipment daily thereafter until it is removed from the project site. ▪ Prior to the start of construction, the contractor will prepare a Stormwater Pollution Prevention Plan (SWPPP) that would include Best Management Practices (BMPs) for materials management, fueling, repair, and maintenance of vehicles and equipment, and spill prevention and control. The Contractor will maintain a spill kit on-site throughout the life of the project. The SWPPP will include a map that delineates construction staging areas and where refueling, lubrication, and maintenance of equipment may occur. Areas designated for refueling, lubrication, and maintenance of equipment shall be at least 50 feet away from all streams. In the event of any spill or release of any chemical in any physical form at the project site or within the boundaries of the Park during construction, the contractor would immediately notify the appropriate DPR staff (e.g., project manager, supervisor, or State Representative). ▪ Equipment would be cleaned and repaired (other than emergency repairs) outside the park boundaries. All contaminated water, sludge, spill residue, or other hazardous compounds would be disposed of outside park boundaries, at a lawfully permitted or authorized destination.
Standard Project Requirement HAZ 2 Health and Safety	<ul style="list-style-type: none"> ▪ DPR would include, in any contract documents or in internal work plan documents, health and safety specifications on how to manage any potential hazardous incidents. The specifications would include methods for safe handling, collection, and proper disposal of any contaminated soil and refuse uncovered during the excavation and grading procedures. The specifications would discuss the proper personal protection during

Project Requirements	Project Requirement Description
Project Specific Requirement HAZ 7 a-c – Fire Safety	<p>construction, the use of an exclusion zone if necessary to prevent exposure to the public, and the proper disposal procedures for any hazardous substances encountered.</p> <ul style="list-style-type: none"> ▪ A fire safety plan would be developed by the contractor and/or DPR and approved by DPR prior to the start of construction. This plan would include the emergency reporting procedures of the Marin County Fire Department. ▪ Spark arrestors or turbo-charging (which eliminates sparks in exhaust) and fire extinguishers would be required for all heavy equipment. ▪ Construction crews would be required to park vehicles away from flammable material, such as dry grass or brush. At the end of each workday, heavy equipment would be parked over asphalt or concrete to reduce the chance of fire. The contractor would also be required to have fire extinguishers on site.
Hydrology and Water Quality	
Standard Project Requirement HYDRO 1: Erosion, Sediment Control and Pollution Prevention	<ul style="list-style-type: none"> ▪ A Stormwater Pollution Prevention Plan (SWPPP) will be required that includes temporary construction and permanent post-construction Best Management Practices (BMPs) to control soil and surface water runoff, including, but not limited to, use of silt fences, weed-free straw bales, weed-free fiber rolls, and/or sediment detention basins to prevent soil loss and siltation. SWPPP shall also include measures to allow construction to occur outside the normal construction season. Long term revegetation BMPs will be guided by the Project Revegetation Plan (see Bio 10, Revegetation Plan). ▪ The SWPPP will also include spill prevention, vehicle and equipment management, and materials management BMPs to prevent releases of non-sediment pollutants, such as vehicle and equipment fluids and any construction-related materials. ▪ Flow shall not be concentrated toward the slump near 7010 and if other drainage modifications are made shall not divert flow from one micro-watershed to another for slopes below the Barnabe and Gravesite fire roads. Berms shall be removed from the road edge where consistent with vehicular safety and micro-drainage integrity can be respected. ▪ Trail construction activities will occur between April 15 and October 15 each year to avoid the period of highest rainfall, streamflows and erosion potential. During periods of inclement weather, operations will be shut down until streamflows are sufficiently low and soil/channel conditions are sufficiently dry and stable to allow construction to continue without the threat of substantial soil compaction, erosion, sedimentation, or offsite sediment transport. Construction activities may occur outside of this window outside of riparian

Project Requirements	Project Requirement Description
	<p>areas if winter season operating conditions permit and appropriate BMPs are in place.</p> <ul style="list-style-type: none"> ▪ No excavation work will occur on slopes greater than 10% during periods of heavy rains (at least ½ inch of precipitation in a 24-hour period) or when soils are saturated. ▪ Work will be directed and/or inspected periodically on-site by the Project Manager or other qualified personnel to assure soil compaction and finish grading meet job specifications. ▪ Plant duff and organic soil will be removed from graded areas and stored. After grading is complete the stored material will be spread over disturbed areas intended for revegetation as identified in the Project Revegetation Plan. ▪ Recommendations for erosion control and sediment control.
Noise	
<p>Specific Project Requirement NOISE 1: Construction Noise Reduction Plan</p>	<ul style="list-style-type: none"> ▪ Prior to the start of construction, DPR and/or its Contractor will prepare a Construction Noise Reduction Plan that will address noise control methods during construction activities at the project site and in staging and storage areas. Measures identified in the Construction Noise Reduction Plan will be implemented by DPR and/or its Contractor throughout the construction period and monitored by DPR. The plan will be approved in advance by Marin County Community Development Agency and conform to noise reduction requirements of the County.
<p>Standard Project Requirement NOISE 2: Noise Exposure</p>	<ul style="list-style-type: none"> ▪ Project-related activities could occur seven days per week and will generally be limited to the hours of 7:00 a.m. to 6:00 p.m., ▪ Internal combustion engines used for any purpose in the project areas will be equipped with a muffler of a type recommended by the manufacturer. Equipment and trucks used for project-related activities will utilize DPR-approved noise control techniques (e.g., engine enclosures, acoustically attenuating shields or shrouds, intake silencers, ducts, etc.) whenever feasible and necessary. ▪ Stationary noise sources and staging areas will be located as far from visitors as possible. If they must be located near visitors, stationary noise sources will be muffled to the extent feasible, and/or where practicable, enclosed within temporary sheds.

2.7. Project Details

DPR is responsible for the maintenance and management of over 1,500 trails and pedestrian routes throughout the most biologically diverse state in the nation. State Park trails provide a wide variety of experiences to the visitor, from outstanding vistas, including opportunities for wildlife viewing, to access to significant natural and cultural features in an unparalleled range of environmental settings. These routes are an integral component of the many programs and facilities that the Department is trusted to interpret, maintain, and protect.

2.8. User Groups

It is likely that there will never be enough financial resources to meet demands, or space to build complete trails for every user group. As a result, safety considerations, sensitivity to other trail users and environmental resources requires trail guidelines for trails open to multiple use.

DPR policy states that “California State Parks will provide trails for accessing park features and facilities and provide planning that will effectively meet near-term and long-term recreation opportunities. The Department, through a public planning process, will strive to meet recreational, educational and interpretation needs of its diverse trail users by developing trails within state park units, consistent with unit classification, general plan directives, cultural and natural resource protection, public safety, accessibility, user compatibility and other legal and policy mandates.” Further, California Code of Regulations (CCR) includes the following:

§4359

- No person shall ride, drive, lead, or keep a saddle or pack animal in a unit, or portion thereof, except on such roads, beaches, trails, or areas so designated by the Department.
- No saddle or pack animal shall be hitched to any tree, shrub, or structure in any manner that might cause damage thereto;
- No person shall ride any animal in a manner that might endanger life or limb of any animal, person or property;
- No person shall allow their animal to stand unattended or insecurely tied;
- All persons opening a closed gate shall close the same after passing through it. Reference: Section 5008, Public Resources Code.

§4360

- No person shall operate an operator or gravity propelled device in any unit, or portion thereof, when the Department has issued an order prohibiting such activity. The Department may establish speed limits for units or portions thereof in which these devices are used. Speed limits will be posted. Reference: Section 5008, Public Resources Code
- In summary: equestrian users are allowed on designated trails, non-motorized cyclists are allowed on all trails unless specifically prohibited, and hikers are allowed on all trails.

2.8.1. Hikers/Pedestrians

Hiking has long been an important outdoor activity. Hiking trails are pathways developed and managed for the enjoyment of nature. Multi-use trails address a variety of recreation needs, accommodate both foot and other forms of travel and are managed according to those uses.

“Tread Lightly on Land and Water” includes the following suggestions for a safe, fun hiking experience:

Travel Responsibly

- Travel responsibly on designated roads, trails or areas.
- Stay on the trail even if it is rough and muddy.
- Walk single file to avoid widening the trail.
- Comply with all signs and respect barriers.
- Buddy up with two or three hikers, reducing vulnerability if you have an accident.
- Respect the rights of others
- Respect the rights of others, including private property owners, all recreational trail users, campers and others so they can enjoy their recreational activities undisturbed.
- Be considerate of others on the road or trail.
- Leave gates as you find them.
- If crossing private property, be sure to ask permission from the landowner(s).
- Keep the noise down.
- Proceed with caution around horses and pack animals. Sudden, unfamiliar activity may spook animals—possibly causing injury to animals, handlers, and others on the trail.
- When encountering horses on the trail, move to the downhill side of the trail, stop, and ask the rider the best way to proceed.
- Keep your pets under control; this protects your pet, other recreationists and wildlife.

Educate Yourself

- Educate yourself prior to a trip by obtaining travel maps and regulations from public agencies and planning for your trip.
- Make a realistic plan and stick to it. Always tell someone of your travel plans.
- Contact the land manager for area restrictions, closures, and permit requirements.
- Check the weather forecast for your destination. Plan accordingly.
- Carry a compass or a global positioning system (GPS) unit and know how-to use it.
- Carry water and emergency supplies even on short hikes.
- Choose appropriate footwear for the terrain. Solid, lightweight hiking boots are best. Sandals can be used on trails in summer and around your campsite.
- Dress in layers and always carry a jacket. Weather conditions can change unexpectedly.
- Your pack weight should not exceed one third of your body weight.

Avoid Sensitive Areas

- Avoid sensitive areas such as meadows, lakeshores, wetlands and streams and seasonal nesting or breeding areas. Stay on designated routes.
- Do not disturb historical, archeological, or paleontological sites.
- Avoid “spooking” livestock and wildlife you encounter and keep your distance.

Do Your Part

- Do your part by modeling appropriate behavior, leaving the area better than you found it, properly disposing of waste, minimizing the use of fire, avoiding the spread of invasive species, and restoring degraded areas.
- Carry a trash bag and pick up litter left by others.
- Pack out what you pack in.
- Repackage snacks and food in baggies. This reduces weight and the amount of trash to carry out.
- In areas without toilets, use a portable waste bag if possible and pack out your waste, otherwise, it’s necessary to bury your waste. Human waste should be disposed of in a shallow hole (6”-8” deep) at least 200 feet from water sources, campsites, or trails. Cover and disguise the hole with natural materials. It is recommended to pack out your toilet paper. High-use areas may have other restrictions so check with a land manager.
- Take a small bag and pack out your pet’s waste, especially in front country areas or if it is left on or near trails or trailhead areas.

2.8.2. Mountain Biking

Mountain bike trails have been designed for use by non-motorized bicycles equipped for off-road use. These trails are selected or constructed to accommodate the speed and erosive forces associated with mountain bikes. Specifications for multi-use trails, including mountain bikes closely match the trail designs for equestrians and Class I hiking trails, resulting in potential for high use and user conflicts. “Tread Lightly on Land and Water” includes the following suggestions for a safe, fun mountain biking experience:

Travel Responsibly

- Avoid trails that are obviously wet and muddy
- Cross streams slowly, at a 90-degree angle to the stream.
- When climbing, use a gear that provides comfortable momentum and maintains traction.
- When descending, avoid locking your bike’s wheels, which gauges the trail.
- Ride in the middle of the trails to minimize widening of the trails. Avoid sideslipping, which can lead to erosion.
- Slow down when sight lines are poor.
- Maintain a reasonable distance between you and your fellow riders.
- Make your presence known when approaching others and going around blind corners.
- Comply with all signs and respect barriers.
- Buddy up with two or three riders, reducing vulnerability if you have an accident or breakdown.

- Listening to headphones or ear buds can make it difficult to hear and communicate with other recreationists. In some areas it is illegal to operate bikes with both ears covered.
- Don't mix riding with alcohol or drugs.
- Respect The rights of others
- Be considerate of others on the road or trail.
- Leave gates as you find them.
- If crossing private property, be sure to ask permission from the landowner(s).
- Yield the right of way to those passing you or travelling uphill.
- Proceed with caution around pack animals. Sudden, unfamiliar activity may spook animals—possibly causing injury to animals, handlers, and others on the trail.
- When encountering horses on the trail, move to the side of the trail, stop, remove your helmet and speak—you want the horse to know you are human. Ask the rider the best way to proceed.
- Keep the dust down.

Educate Yourself

- Educate yourself prior to a trip by obtaining travel maps and regulations from public agencies and planning your trip.
- Make a realistic plan and stick to it. Always tell someone of your travel plans.
- Check the weather forecast for your destination. Plan accordingly.
- Carry a compass or a GPS unit and know how-to use it.
- Carry water and emergency supplies even on short rides.
- Dress in layers and always carry a jacket. Weather conditions can change unexpectedly.

Avoid Sensitive Areas

- Avoid sensitive areas such as meadows, lakeshores, wetlands and streams, unless on designated routes and seasonal nesting or breeding areas.
- Do not disturb historical, archeological, or paleontological sites.
- Avoid “spooking” livestock and wildlife you encounter and keep your distance.
- Motorized and mechanized vehicles are not allowed in designated Wilderness Areas

Do Your Part

- Carry a trash bag on your bike and pick up litter left by others.
- Pack out what you pack in.
- Practice minimum impact camping by using established sites and camping 200 feet from water resources and trails.
- Observe proper sanitary waste disposal or pack your waste out.
- Before and after a ride, wash your mountain bike and support vehicle to reduce the spread of invasive species.

2.8.3. Equestrians

“Tread Lightly on Land and Water” makes the following suggestions for a safe, fun horseback riding experience.

Travel Responsibly

- Stay on designated roads, trails, and other areas open to horse use.
- Ride single file to reduce trail damage.
- Don't cut switchbacks.
- Comply with all signs and respect barriers.
- Buddy up with two or three riders reducing vulnerability if you have an accident.
- Respect the rights of others:
- Be considerate of others on the road or trail.
- Be prepared to let other trail enthusiasts know what needs to be done to keep you, the horse, and other passersby safe when you meet on the trail.
- Remember many people are afraid of horses and may react unpredictably.
- Be alert and aware of the presence of other trail enthusiasts. If possible, pull to the side of the trail when you hear oncoming off-highway vehicles or bicycles.
- Leave gates as you find them. If crossing private property, be sure to ask permission from the landowner(s).
- Keep the noise down.
- Be especially cautious around hikers, bikes, and motorized vehicles

Educate Yourself

- Obtain a map of your destination and determine which areas are open to horses.
- Make a realistic plan and stick to it. Always tell someone of your travel plans.
- Check the weather forecast for your destination. Plan clothing, equipment, and supplies accordingly.
- Carry a compass or a GPS unit and know how to use it.
- Carry water and emergency supplies even on short trips.
- Keep groups small and carry lightweight gear to reduce the number of animals needed.
- Pre-plan camp locations that provide plenty of room and the proper environment for confining animals.
- Take responsibility for your horse's education. Introduce it to vehicles and situations it may encounter on shared trails.

Avoid Sensitive Areas

- Avoid sensitive areas such as meadows, lakeshores, wetlands, streams and seasonal nesting or breeding areas. Stay on the trail.
- Do not disturb historical, archeological, or paleontological sites.
- Avoid "spooking" livestock and wildlife you encounter and keep your distance.
- Water animals in areas where stream banks and water access can withstand hard use and are downstream from campsites.

Do Your Part

- Model appropriate behavior.
- Leave the area better than you found it,
- Properly dispose waste;
- Minimize the use of fire;
- Avoid the spread of invasive species; and
- Restore degraded areas.

2.8.4. Accessibility

All programs, services, and activities offered by a public entity must be accessible to persons with disabilities. Emerging trail design concepts are beginning to eliminate obstacles such as stairs and excessive linear grades, which often prohibit users with disabilities from enjoying trails. On March 15, 2011 the Department of Justice (DOJ) revised Federal guidelines that contain technical provisions for accessible trails allowing “other power-driven mobility devices” to be used by “individuals with mobility disabilities.” The State Parks Accessibility unit continually rehabilitates existing State Park trails, campsites, and restrooms to comply with the Americans with Disabilities Act (ADA).

2.8.5. Sharing Trails

Hiking, cycling and horseback riding are all popular ways of enjoying the outdoors and obtaining a high-quality recreation experience. Many trails are converting from one use to multi-use to address the needs of more user groups. The following guidelines could help increase user safety and user enjoyment. In general:

- Know the park rules – if bikes or horses are not permitted, don’t use the trail.
- Know the rules of right of way (bikes yield to horses and hikers; hikers yield to horses).
- Make yourself available for communication (easy with the music)

2.8.6. User Groups

Placing trails into class categories creates a management system to objectively assign standards and priorities that are consistent with the primary function, environmental sensitivity, the relationship to developed facilities and visitor use.

Class I – Includes accessible, equestrian and bike, interpretive, and hiking uses. Gravel, turnpikes, puncheons or other drainage structures are required in areas of trail trenching, trampling, multiple trails or saturated trail beds, for resource protection and visitor safety. The trail bed is 36-48” wide; trail clearing will be 8’ high and wide (4’ feet from trail center), equestrian trails will be 10’ high; brushing limits will be 8’ high, equestrian trail 10’ high; trail structures will have a 48” tread width and a minimum 40” tread width between handrails and posts, equestrian bridges will have a 52” minimum tread width between handrails; ‘all access’ trail tread will be designed to accommodate wheelchairs and be a minimum of 5’ wide for two wheelchairs to pass one another.

Class II – Includes hiking trails providing access into regions away from developed visitor facilities, native material is used from the trail tread; drainage structures such as turnpikes or puncheons are only installed over wetlands; trail bed is a minimum of 24” wide and trail tread will vary from 18-24” depending on surrounding terrain. Trail clearing is the same as for Class I trails.

Class III – Includes lightly used hiking trails; native materials is used for trail tread; drainage structures are only installed as a mitigation measure; trail bed is a minimum of 18” wide and trail tread is 12-18” wide depending on surrounding terrain. Trail clearing will be 8 feet high by 6 feet wide.

Class IV – Special use and access trails; tread bed and tread work is minimal to provide safe footing; designed to avoid all need for structures and drainage controls; trail clearing limits are minimal for passage.

2.8.7. Trail Tread

Normally, native soil used to construct the trail base is adequate to carry foot trail traffic. Imported tread surfacing can be used on heavy use trails, in wet areas, across rock slides, equestrian trails and accessibility trails. The depth and width of surfacing material is determined on a case by case basis depending on the quality of the native material.

Tread Maintenance consists of keeping the tread surface serviceable and consists of:

- Restoration of uniform outsloped, insloped or crowned surfaces
- Restoration of original width
- Maintenance of backslope
- Filling of ruts and holes in the tread
- Restoration of sections damaged by slides, uproots, and washouts
- Removal of loose rocks
- Restoration of fill approaches
- Restoration of crown to turnpike with fine gravel or mineral soil

2.8.8. Trail Grade and Alignment

All land areas have an inherent and variable ability to sustain recreational use without suffering damage to soils, vegetation or water. This ability can be relatively low, especially in mountainous areas and forests with steep slopes and abundant water runoff.

As a general rule, the trail should not be steeper than 10%; grades of 1-7% are ideal. Some grade must be provided to adjust to drainage needs. Grade should undulate gently to provide natural drainage and to eliminate monotonous stretches, level stretches and long steep grades that tire users.

The ideal alignment will “fit” the trail to the ground, follow the contours of the land and offer the user views from the trail. When a switchback is necessary, it should use a topographic feature as a turning point so it does not appear to be ‘carved out of the hillside’.

2.8.9. Trail Drainage

Drainage control on a trail relates to two primary types of water control, surface and subsurface water. Surface water is from the rain or snowmelt, that before the trail was constructed, flowed in a sheet along the natural ground surface, but is now cutoff and is channeled into the trail. If allowed to accumulate, this water will erode the trail surface.

Subsurface water, one of the most troublesome drainage problems, is best handled by trail relocation. Alternate solutions are to lower the water table, or to construct a puncheon, culvert or French drains.

The unchecked flow of water from rain or snowmelt has the highest ability to damage a trail. During heavy snowmelt or rain, a large amount of water is present at the surface; some water is absorbed directly into the soil, but when the soil is saturated the water that isn't absorbed flow freely along the surface as sheet flow until it collects in small channels or streams.

Problems occur when the trail interrupts the natural drainage process and the trail becomes the stream channel. Trails in flat, low-lying, wet terrain as well as mountain bogs with highly organic, wet soils, are plagued by destruction of plants and surface horizons. Wet, slippery, muddy locations develop quickly on these soils causing water puddling on the trail tread and park visitors to use the side of the tread causing soil breakdown and trail widening.

The following techniques can be used to divert water, stabilize damaged soils and allow trailside plant life to recover. The correct method to use depends on terrain features, volume of water involved and soil characteristics.

- Clear the stream channel up and down stream of logs, sticks, silt or other debris to decrease water flow or widening of the stream bed and crossing the trail.
- Maintain the outslope by grading the trail so that the outside edge is lower than the inside edge to allow sheet flow to follow its natural course across the trail and downslope.
- Install drain dips (an exaggerated outslope that ends in a shallow trough) when runoff water is in excess of what a normal outslope design can accommodate.
- Install water bars (a physical structure across the trail that turns and directs water to the downhill side of a trail).
- Install/Clean a parallel ditch – excavate a depression parallel to the trail tread wide enough to carry the anticipated volume of water and maintain a ditch bank slope of 1:1; maintain a plant-free ditch.
- Install/Clean Culverts – when surface flows or underground springs are intercepted by a trail, a culvert can be placed perpendicular to the trail to redirect water to the downhill side of the trail.
- Install/Clean turnpikes (hardened trail tread raised above the ground through boggy, wet, or muddy areas) – water is collected and channeled by parallel ditches to culverts that carry the flow under the turnpike.
- Construct a rock causeway (an elevated section of trail contained by rock through permanent or seasonally wet areas) as inconspicuously as possible, as close to the minimum height and width needed to bridge the problem.
- Install a drainage lens to solve the low volume flows of springs or seeps that bisect a trail.

2.8.10. Detailed Project Description

Class I trails include accessible, equestrian, bike, interpretive, and hiking uses. Generally, these trails contain spur trails, gravel, turnpikes and puncheons or other drainage structures for resource protection and visitor safety.

Bill's Trail is currently used by equestrians and hikers only. More recently mountain biking interest groups have petitioned to open Bill's Trail to biking as well. DPR proposes to change the 'use' of Bill's Trail to allow mountain biking in addition to hiking and horseback riding making the trail consistent with the Department's policy to construct multiple use trails. In order to convert the trail to Class I that would allow mountain biking, DPR must "catch up" with the deferred maintenance that has narrowed the trail, reduced drainage function, allowed exotic species to flourish and reduced user safety.

Bill's Trail has a constructed width of 48", the standard for multi-use trails in State Parks and continues nearly four (4) miles between the trail head in Devil's Gulch and the junction with the Barnabe Fire Road at 1,160-foot elevation. DPR staff completed a Trail Use Change Survey and prepared a trail log (Appendix D) identifying needed repairs, soil types, and features. The following summarizes the proposed work:

Trail Work

- Brush the trail from top of cut bank to top of fill slope to maintain constructed trail width and original brushed line of sight;
- Improve trail out-sloping and remove any developing outer edge (berm) trail tread to original design width averaging 48" (from top hinge of fillslope to bottom hinge of cut bank or back slope) to maintain drainage. Trail bench work will be limited to maximum of 6" in depth; ground disturbance will stay within the existing profile (top of cut bank to bottom of fill slope);
- Remove debris collecting on the inside hinge to maintain trail width and remove loose debris;

Bridge Repair/Drainage

- Replace wood-armored ephemeral stream crossings with rock armored crossings, as needed;
- Install armored rock crossings at all ephemeral drainages and micro drainages to harden the trail tread. Specific work to include:
- Manually excavate up to 18" of trail tread (in the ephemeral drainage) and backfill with large, flat-topped rock to provide a stable crossing;
- Place rock in the ephemeral stream channel gradient;
- Repair bridges as needed; no work would occur lower than existing bridge components within the bed and/or stream channel. Specific work to include:
- Excavate bridge approaches (and abutments as necessary) outward to first substantive vegetation and backfill with gravel;
- Install gravel surfacing to provide a stable tread surface at bridge approaches;
- Resource Management;
- Remove non-native eucalyptus trees identified by a DPR-approved Environmental Scientist to improve the stand management and encourage naturally occurring tree species.

- Where eucalyptus would be removed at least 75 square feet of basal area per acre (any tree species) would be retained on the slope;
- Logs hoisted to the trail would be suspended to minimize ground impacts;

User Safety

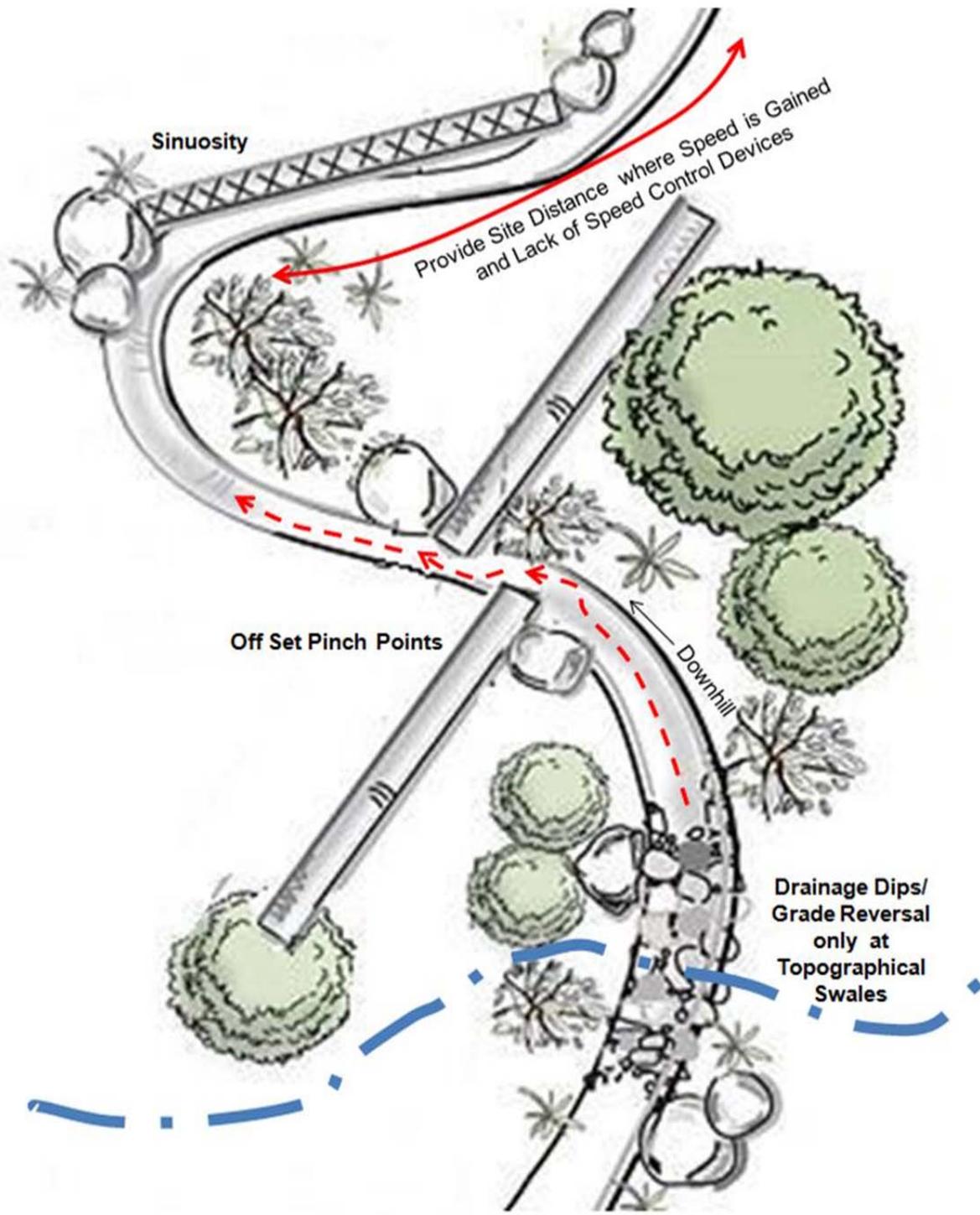
- Construct pinch points with two, 18" diameter or larger logs (from existing downed trees on site or imported as needed) protruding onto the trail from each side creating the need to travel an 'S' path to negotiate the path through the logs. Pinch points will be placed in approximately 100 locations along Bill's Trail to reduce bicycle speed and increase the 'line of sight' at curves, improving user safety. Where appropriate, rocks could be used in place of eucalyptus logs (See Figure 2:4 through Figure 2:8);
- Install signage to inform user groups how to have a safe and fun trail experience without conflict;
- Repair, replace or install split rail fencing along trail as needed for safety, resource protection, and shortcut prevention;

Gravesite Fire Road

- Improve and rehabilitate limited sections of road as needed per California State Park guidelines (Brian R. Merrill, 2003)
- Ditchouts and rolling dips will be armored with aggregate at and near the outlet to reduce erosion. Aggregate would transitionally increase in size toward the outlet end.

No work will be performed on Barnabe Fire Road and is not a part of this project.

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**Speed Control
Pinch Point and Sinuosity Design**

Drawing Adapted from IMBA

Figure 2:4 Typical Pinch Point Diagram

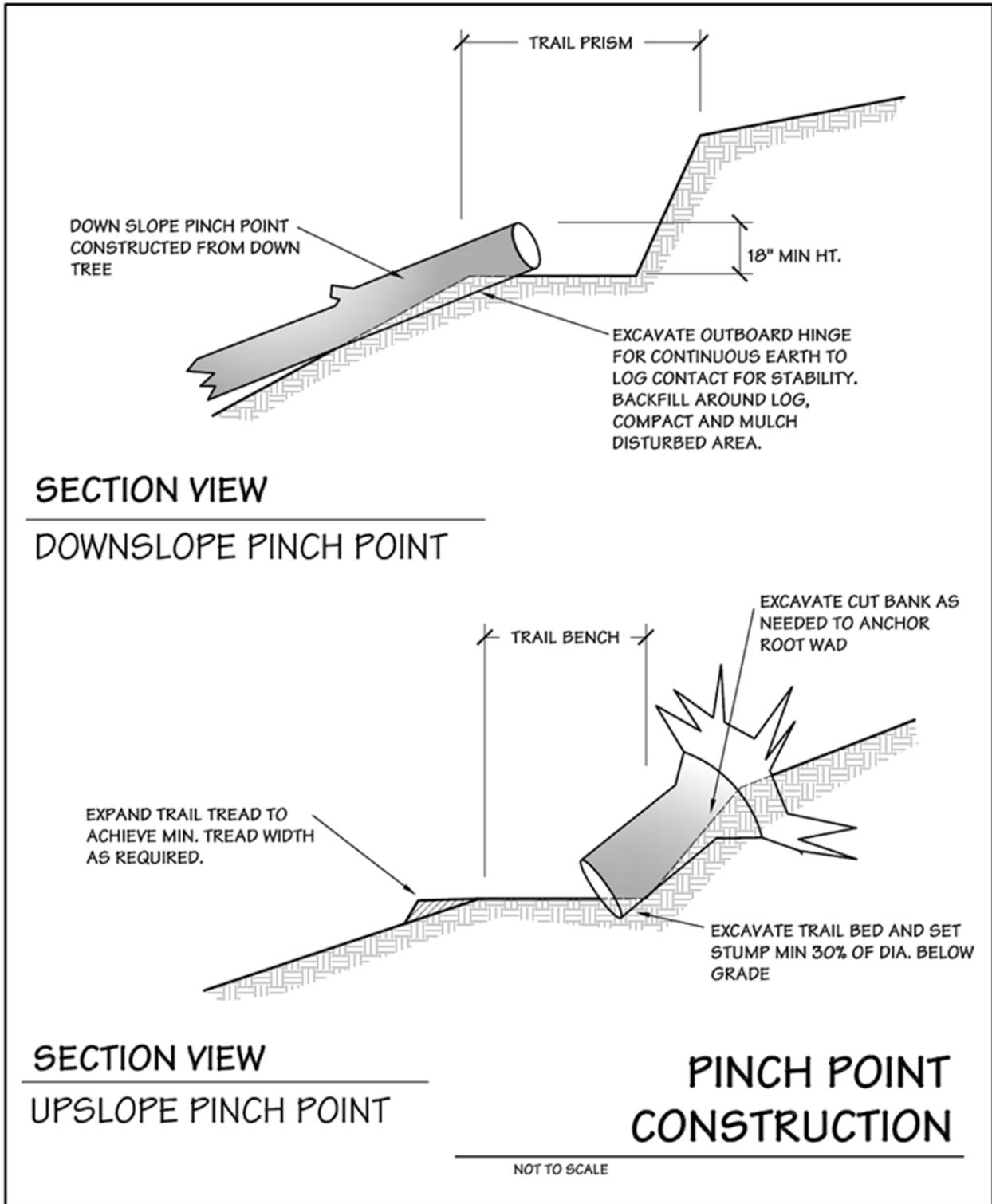


Figure 2:5 Pinch Point Profile View

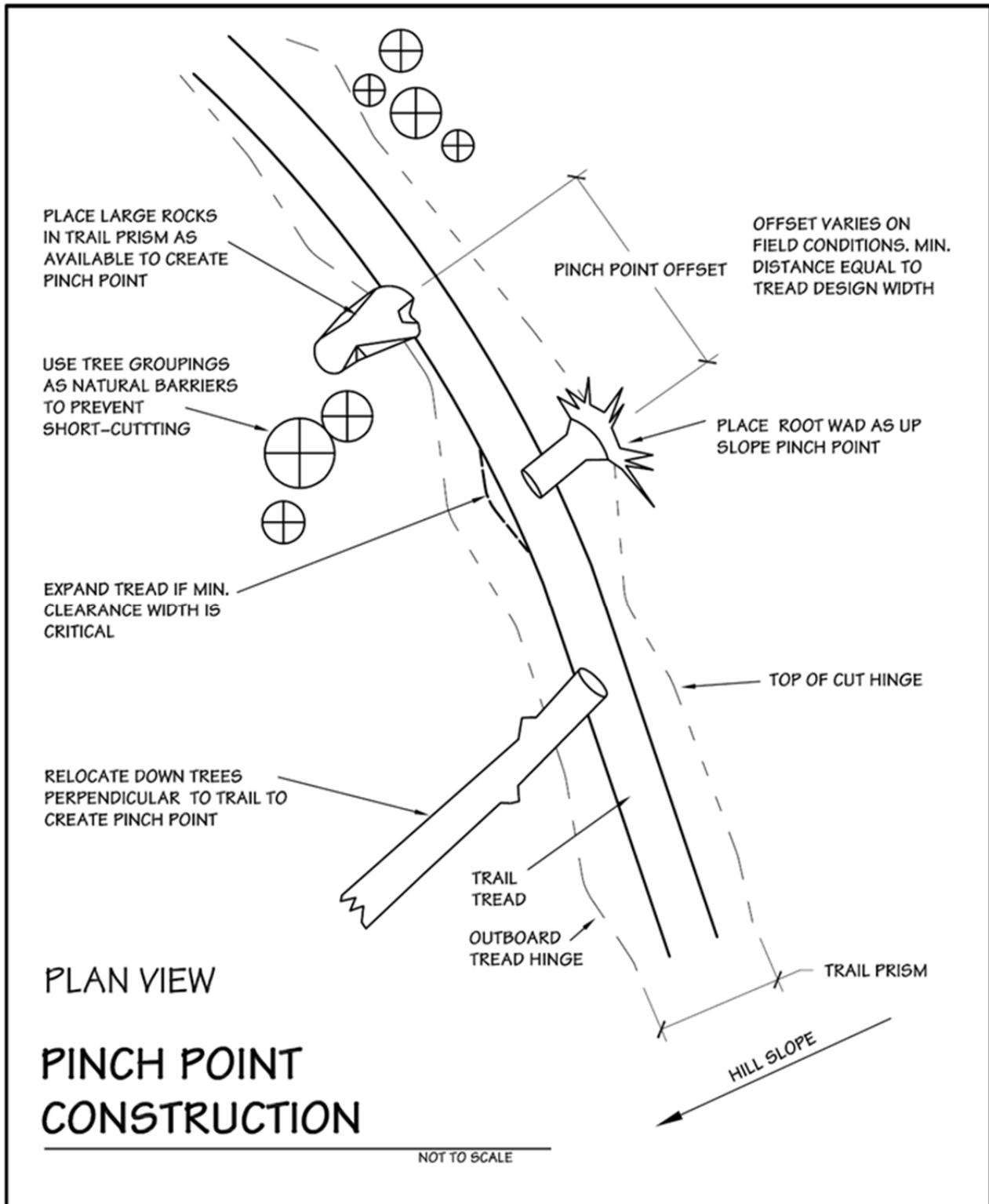


Figure 2:6 Pinch Point Plan View



Figure 2:7 Pinch Point on Trail



Figure 2:8 Pinch Point with Rider on Trail

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2.8.11. Project Implementation

Work would generally occur Monday through Friday, during daylight hours. Weekend or holiday work could be implemented to accelerate the construction schedule or address emergencies or unforeseen circumstances.

The ground upslope and down slope of the average 48" trail edge is steep and does not allow off road staging areas or simple equipment turn around. On Bill's Trail (and Gravesite Fire Road north of Deadmans Gulch) work crews would have to plan carefully to bring equipment in, stage and turn along the trail, particularly where the trail narrows. Due to site constraints, work in these areas would require the use of specialized equipment including mechanized wheelbarrows, hand operated mechanized compactors and assorted hand tools. The open space adjacent to the Horse Camp would be used as a staging area for work on Bill's Trail.

Because of the generally wider profile, work on Gravesite Fire Road allows a greater variety of construction equipment options. In addition to the equipment noted above, work on the road could also employ a Bobcat®, backhoe, a dump truck, grader, and larger dozer and transport vehicles. Numerous open areas along Gravesite Fire Road can serve as staging areas for this project component. Most equipment would be transported to the site and remain until the associated work is completed. Transport vehicles for material or equipment, delivery trucks, and crew vehicles would also be present intermittently at the site.

The trail and road will be closed during construction and remain closed for one year following completion of construction to allow the trail to season. Additionally, Bill's Trail will be closed seasonally during periods of saturated and softened soils to maximize sustainability, minimize trail maintenance, and support resource protection by limiting potential rain generated sediment transport.

2.8.12. Regulatory Requirements, Permits, and Approvals

Activities that might affect natural or cultural resources, traffic, and air or water quality could be subject to review and approval by local, state, and/or federal responsible/trustee agencies. Consultations, permits, and/or approvals could be required from the following agencies and organizations:

- United States Army Corps of Engineers (USACOE)
- U.S. Fish and Wildlife Service (USFWS)
- State Water Resources Control Board (SWRCB)
- California Department of Fish and Game (CDFG)
- San Francisco Regional Water Quality Control Board (SFWQCB)

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3.0 ALTERNATIVES TO THE PROPOSED PROJECT

The California Environmental Quality Act (CEQA) requires that an EIR describe a reasonable range of alternatives to the Project, or to the Project's location, which could feasibly attain most of the basic project objectives, but avoid or substantially lessen any of the potentially significant project-related effects. The EIR's alternative section is also required to evaluate the comparative merits of the alternatives. DPR, as the lead agency, is responsible for selecting a range of project alternatives for analysis and is required to publicly disclose its reasoning for selecting the discussed alternatives. The EIR should also identify any alternatives that were considered by the lead agency, but were rejected as infeasible during the scoping process, and briefly explain the reasons underlying the determination (Title 14, California Code of Regulations (14 CCR) §15126.6(a, c)). Further, if the lead agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion and should include the reasons in the EIR (14 CCR §15126.6 (f)(2)).

3.1. Project Objectives

To be considered a feasible alternative, an alternative must meet most of the project's objectives (14 CCR § 15126.6 (a)). Through this project, DPR intends to meet the departmental policy to provide a multiuse trail, provide additional opportunities for mountain bikers, reduce the threat of illegal trail use, and the potential for illegal trail development in other parts of the park. In addition, this project reduces pressure on DPR by user groups to create use-specific new trails in pristine areas. The project furthers the DPR mission by creating a high-quality recreation opportunity while preserving the State's extraordinary biological diversity and protecting natural resources.

3.2. Alternatives

This section identifies and provides analysis of the "no project" alternative for the proposed project, including a discussion of potential environmental impacts that could result if the proposed project is not implemented. Those alternatives deemed infeasible will also be discussed.

3.2.1. Alternative 1: No Project

The California Environmental Quality Act requires an evaluation of the specific "no project" alternative and its impact [CEQA Guidelines Section 15126.6(e)(1)]. The "no project" alternative describes the existing conditions, as well as the physical conditions that are likely to occur in the future if the project (the proposed plan) is not approved. The purpose of describing and analyzing a no project alternative is to allow decision-makers to compare the impacts of approving the proposed project with the expected impacts of not approving the project.

The No Project Alternative assumes that the proposed Trail Change in Use Project (Project) would not be implemented. The existing conditions on Gravesite Fire Road

would remain and sedimentation would continue into Deadmans Gulch resulting in impacts to Coho habitat in Lagunitas Creek. However, the environmental benefits under the No Project Alternative include elimination of the short-term construction-related sediment transport and both Bill's Trail and Gravesite Fire Road would remain open under normal conditions.

This alternative; however fails to, to reduce pressure on DPR by user groups to create use-specific new trails in pristine areas, reduce the threat of illegal trail use, illegal trail development in other parts of the park nor does it further departmental policy to provide multiuse trails. In addition, the No Project Alternative ignores the DPR mission to create a high-quality recreation opportunity while preserving the State's extraordinary biological diversity and protect natural resources.

The No Project Alternative would not achieve the project objectives.

3.2.2. Alternatives Considered and Rejected as Infeasible

CEQA defines 'feasible' as ...capable of being accomplished in a manner, within a reasonable period of time, taking into account economic, environmental, social, and technological factors. In evaluating alternatives to the Project, DPR considered and rejected as infeasible the following alternatives:

3.2.2.1. Bill's Trail Maintenance Only

Under this alternative, only Bill's Trail would be maintained back to its original profile for hiking and equestrian use. Gravesite Fire Road would remain in its existing condition. Speed reduction techniques (e.g. pinch points), would not be constructed on Bill's Trail under a maintenance alternative; continuing to deny mountain bike use on this trail. This alternative would provide benefits by improving the trail back to its original profile and meet the recommendations of the Regional Water Quality Control Board (RWQCB).

Maintenance only to Bill's Trail would ignore the erosion and sedimentation issues along Gravesite Fire Road, continuing to impact Devil's and Deadmans Gulch and in turn to steelhead and Coho salmon habitat in Lagunitas Creek. This alternative would not provide a multiuse trail or the segment needed to complete a mountain bike loop trail. Further, it does not provide additional opportunities for mountain bikers, reduce the threat of illegal trail use, reduce the potential for illegal trail development in other parts of the park nor does it reduce the pressure on DPR to create use-specific new trails in pristine areas. Finally, it would not protect the State's natural resources. Therefore, the Maintenance Alternative would not meet the objectives of this project.

3.2.2.2. Bill's Trail and Gravesite Fire Road Maintenance

Under this alternative, Bill's Trail would be maintained back to its original profile for hiking and equestrian use. Gravesite Fire Road would be realigned where necessary and rehabilitated per California State Park guidelines. Similar to the Maintenance Only alternative, speed reduction techniques (e.g. pinch points), would not be constructed on Bill's Trail and mountain biking would continue to be excluded on this trail. This alternative would provide benefits by improving Bill's Trail and Gravesite Fire Road and meet the recommendations of the Regional Water Quality Control Board (RWQCB).

This alternative differs from the preferred alternative only in that mountain biking would continue to be excluded from Bill's Trail.

This alternative would not provide the segment needed to complete a mountain bike loop trail, provide additional opportunities for mountain bikers, reduce the threat of illegal trail use, reduce the potential for illegal trail development in other parts of the park nor does it reduce the pressure on DPR to create use-specific new trails in pristine areas. This would not meet the objectives of this project.

3.2.2.3. Exclude Equestrian Use

Under this alternative, Bill's Trail would be improved and maintained to a Class II trail standard for hikers only. Gravesite Fire road would be improved as proposed under the Preferred Alternative allowing continued use by equestrians and mountain bikers. Benefits provided under this alternative include a reduced footprint on Bill's Trail, reduced maintenance requirements/costs and reduced user conflicts.

Excluding equestrian's use of Bill's Trail would eliminate an existing tenured use of a trail they have used for over 10 years; the horse camp would remain for equestrians using the existing fire roads. This alternative would remove a segment of the existing equestrian loop trail. Although it preserves the State's extraordinary biological diversity and protects natural resources, it would not meet the multiuse trail objective of this project.

3.2.2.4. Close and Rehabilitate Bill's Trail

Under this alternative, the trail would be closed to all uses and rehabilitated. Gravesite Fire Road between Barnabe Fire Road and Deadmans Gulch would be improved to eliminate sedimentation while continuing to provide maintenance access to the gravesite and water well. Like Bill's Trail, Gravesite Road between Devil's Gulch and Deadmans Gulch would be closed and rehabilitated to its natural condition. Rehabilitating the project area to native conditions and eliminating all user-created erosion and sedimentation impacts, would be the best for the environment.

Rehabilitating the trail to native conditions would encounter short-term impacts from trail rehabilitation work as constructed drainage elements, bridges, fences and access' are removed. In addition, this alternative removes an existing loop trail for hikers and equestrians. Although this alternative preserves and enhances the State's extraordinary biological diversity and protects natural resources, it does not provide a multiuse trail, provide additional opportunities for mountain bikers, reduce the threat of illegal trail use, reduce the potential for illegal trail development in other parts of the park nor does it reduce the pressure on DPR to create use-specific new trails in pristine areas. It does not meet the Project objectives.

3.2.3. Environmentally Superior Alternative

CEQA Section 15126.6(e)(2) requires that an EIR identify the environmentally superior alternative. Additionally, if the environmentally superior alternative is the "No Project Alternative", the EIR must also identify an environmentally superior alternative from the remaining alternatives (other than the proposed Project). The environmentally superior

alternative for this Project would be one that meets the objectives of the Project, while reducing or eliminating environmental impacts to the greatest degree.

The environmentally superior alternative would construct a trail appropriate for multi-use (equestrians, mountain bikers, and hikers) with the least environmental damage while eliminating erosion and sedimentation into Devil's and Deadmans Gulches.

3.2.4. Findings

The alternatives presented in this EIR are the only feasible options reasonably available to accomplish the project objectives.

4.0 ENVIRONMENTAL ANALYSIS

This section contains an analysis of the environmental effects and potential adverse impacts resulting from the implementation of the proposed project, as identified during initial project planning. Each subsection contains an environmental setting (description of the baseline conditions) as it relates to the specific topic; identifies and determines the significance of potential environmental impacts (Impact Statements); and specifies conditions and mitigation measures, where appropriate, to reduce potential impacts to the lowest level feasible. The environmental setting describes the physical environmental conditions in the vicinity of the project, as they existed at the time the Notice of Preparation was published (SCH#XX, filed March 30, 2011). [CEQA Guidelines §15125(a)]

4.1. Aesthetics / Visual Resources

This section describes existing local and regional conditions and the potential impacts of the proposed project on aesthetics and visual resources, along with project requirements and/or mitigation measures proposed to ensure or reduce the significance of potential impacts.

4.1.1. Existing Conditions

The following is a discussion of the existing visual quality of the project area and surrounding region.

Regional Visual Environment

The project area is located in SPTSP which falls within the West Marin Planning Area. Located west of the more developed areas of San Rafael, Fairfax and San Anselmo, this planning area consists of open space and agricultural lands interspersed with smaller towns like Lagunitas and San Geronimo. Sir Francis Drake Boulevard, the main road into and out of the park, meanders through following Lagunitas Creek. Connecting Highway 101 to Highway 1 at Olema the road is the major east-west corridor through the area; however, the road is not a designated scenic highway (LSA Associates, Inc, 2010) (Marin County Community Development Agency, 2007).

While the park facilities break up the seemingly undisturbed landscape, the dominant visual character of the area is undeveloped open space with landforms that consist of steep rolling hills contrasted by redwood groves, coastal scrub and open grasslands. Stairstep Falls, an attraction in the park, is accessed from a spur trail along Bill's Trail but is not visible from the trail. Part of the beauty of the area is the extent of



Figure 4:1 Stairstep Falls

the untouched land. The adjacent area is primarily rural. A few residences are nestled in areas on adjacent ridges and to the northeast but the remainder of the park is surrounded by the Golden Gate National Recreation Area. Very little development can be seen in the immediate area. Beyond the few houses visible only in the distance, the best views are seen from the top of Barnabe Peak. Outstanding views from the summit include the adjacent open lands to the south, east, and west. Looking northwest from the summit one can see the majestic peak of Black Mountain (1280') about 4.5 miles distant. To the west is Mt. Wittenburg (1160') towering over Bear Valley. Portions of the park, including Gravesite Fire Road are within the viewshed of travelers along Sir Francis Drake Boulevard. Other sections of the trail may be seen from nearby residents. While this part of the trail is visible from the road, it is also adjacent to the existing developed campground.

Project Area Visual Environment

A description of the visual information (landform and water, vegetation and manmade development) within a project area, as well as its visual character and quality, serves as a baseline of existing conditions against which to measure the project's potential impacts. Visual impacts are considered from both the perspective of views from the project area and views of the project.

Like the regional environment, the project area landforms consist of mixed evergreen forests with pockets of old growth redwoods, steep sloped canyons, grass and chaparral covered hillsides and riparian corridors along Lagunitas Creek and its tributaries and steep-sloped canyons. Bill's Trail starts in Devil's Gulch, a short hike up the Cross Marin Trail and Sir Francis Drake Boulevard with limited views within the tree canopy at the base. Rock outcroppings are present in the vicinity of the project, but would not be affected by the project. Trees in the area include redwood, oak, tanoak, madrone, live oak, non-native eucalyptus, laurel and Douglas fir. California native wildflowers include buttercups, milkmaids, and Indian paintbrush.



access Bill's Trail.

Figure 4:2 Gravesite Fire Road

The park includes Barnabe Mountain, one of the best viewpoints in Marin County. Bill's Trail is the key path to the amazing views offered at the peak. Sir Francis Drake Highway meanders through the park along Lagunitas Creek.

Parking to access the trail occurs within the SPTSP campground. Currently, pull outs along Sir Francis Drake Boulevard are available for access but a proposed roadway improvement project may close them (LSA 2010). Visitors hike from within the park along a connecting trail to

On the trail, topography limits the

visual boundaries into and out of the project area until hikers reach the summit of Barnabe Peak (outside of the project area). Elevations along the trail range from 200 feet to approximately 1,160 feet at the top of the trail.

The quality of the surrounding landscape and visual environment are very high. Spectacular views of the distant peaks and fog strewn valleys can be seen from the top of the trail

Views Out:

As the trail winds up the hillside, views are primarily limited to the trees that surround it. Once hikers reach the top they are treated to views particularly of the adjacent open space lands to the south, east, and west.

Views in:

The trail cannot be seen from Sir Francis Drake Boulevard because it is masked by area vegetation. From within the campground, small stretches of the Gravesite Road section of the trail are visible through the trees. The predominant views in the area are from the top of Barnabe Peak towards the west.

Visitor Experience Conditions

Bill's Trail begins at a bridge crossing over Devil's Gulch within SPTSP. Once on the trail, it begins climbing up the hillside away from the gulch under the cool shade of the riparian/mixed evergreen vegetation.

As the trail climbs, the environment changes to a warmer, drier scrub habitat with open grasslands and lower growing vegetation and little shade. Along the approximately 4 mile route the vegetation changes back and forth between an open scrub habitat and a shady evergreen canopy. The existing Bill's Trail is in relatively good condition although sloughing and vegetation growth has narrowed the trail to a single track in some locations.

As hikers begin their peripatetic journeys they are treated to breathtaking views of



Figure 4:3 Maintenance Work on Gravesite Fire Road along Devil's Gulch

Once out of the valley, the road passes briefly through open scrub habitat before descending back down into heavy riparian/mixed evergreen canopy as it passes

verdant meadows and majestic redwoods with the sounds of Stairstep Falls or simply the peaceful quiet of the wind whispering through the trees. The trail culminates at approximately 1600-foot elevation with sweeping views of Tomales Bay.

Gravesite Fire Road also starts at the bridge over Devil's Gulch and closely parallels the stream for approximately 600 feet as it makes its climb out of the valley. The road has had recent maintenance work performed in

attempts to reduce sediment transport into Devil's Gulch (see Figure 4:3).

through Deadmans Gulch. It is primarily within this area where Gravesite Fire Road has some unresolved erosion problems that affect visitor experience.

4.1.2. Regulatory Setting

Sir Francis Drake Boulevard is not designated an American National Scenic Byway under the National Scenic Byways Program of the Federal Highway Administration and it is not an eligible California Scenic Highway under the Caltrans Scenic Highway Program. The Guidelines for the Official Designation of Scenic Highways ([Caltrans, nd](#)) state that the scenic corridors (defined as the area of land generally adjacent to and visible from the highway) of officially designated state scenic highways are subject to protection, including regulation of land use, site planning, advertising, earthmoving, landscaping, and design and appearance of structures and equipment.

4.1.3. Thresholds of Significance

The following thresholds have been prepared based on the CEQA Guidelines Section 15064.5 and Appendix G. The Project would have a significant impact on Aesthetics and the Visual Resources if it would:

- AES 1: Have a substantial adverse effect on a scenic vista;
- AES 2: Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway;
- AES 3: Substantially degrade the existing visual character or quality of the site and its surroundings;
- AES 4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

4.1.4. Environmental Impacts, Project Requirements and Mitigation Measures

Methodology

Views of the project area and views of the surrounding area from the project area are evaluated on their relative degree of vividness, intactness, and unity, as modified by the “visual sensitivity” of the viewer. Viewer sensitivity is based on the visibility of resources in the landscape, the proximity of viewers to the visual resource, the frequency and duration of viewing, the number of viewers, and the type and expectations of individuals and viewer groups. The discussion identifies the project’s potential impacts on visual resources and measures to avoid, reduce, or mitigate the intensity and duration of those impacts.

The potential for change in visitor experience was evaluated by identifying projected increases or decreases in recreational trail use on the proposed Bill’s Trail loop and determining whether these projected changes would affect the desired visitor experience and result in greater safety concerns.

The following thresholds for evaluating impacts on visual resources and visitor experience were defined:

Negligible: The visual quality of the landscape would not be affected or the effects would be at or below the level of detection, would be short-term, and the changes would be so slight that they would not be of any measurable or perceptible consequence to the visitor experience. Visitors would not be affected or changes in visitor use and/or experience would also be below or at the level of detection and any effects would be short-term.

Minor: Effects to the visual quality of the landscape would be detectable, although the effects would be short-term, localized, and would be small and of little consequence to the visitor experience. Changes in visitor use and/or experience would be detectable although the changes would be slight and short-term.

Moderate: Effects to the visual quality of the landscape would be readily detectable, long-term and localized, with consequences at the regional level. Changes in visitor use and/or experience would be readily apparent and likely long-term. The visitor would be aware of the effects associated with the actions. Mitigation measures, if needed to offset adverse effects, would be extensive and likely successful.

Major: Effects to the visual quality of the landscape would be obvious, long-term, and would have substantial consequences to the visitor experience in the region. Changes in visitor use and/or experience would be readily apparent, severely adverse or exceptionally beneficial and have important long-term consequences. Extensive mitigation measures would be needed to offset any adverse effects and their success would not be guaranteed.

Impact Statement AES 1: Construction activities associated with the proposed project will have no adverse effect on a scenic vista.

During construction, and until vegetation is established on the disturbed soil created by the project, the scenic vista, which includes the project site, would be affected. This would be a short-term effect that would last through the growing season following construction, a time when the trail would be closed to all users. The proposed work would not hinder accessibility to any of the park's scenic areas and no new structures will be constructed during this project. Construction activities may have a limited temporary impact on the scenic view from the trail, but obstructions would be extremely limited and exposure of brief duration.



Figure 4:4 Erosion on Gravesite Fire Road south of Deadmans Gulch

Level of Significance Before Mitigation:	Less than Significant
Mitigation:	None

Impact Statement AES 2: Construction activities associated with the proposed project could substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.

The project is not located within the viewshed of a State Scenic Highway; however, scenic vistas are also defined as singular vantage points that offer unobstructed views of valued viewsheds. The proposed project is located near or within the viewshed of a scenic vista. The viewshed and visible components of the landscape within that viewshed, including the underlying landform and overlaying land cover, establish the visual environment for the scenic vista.

Level of Significance Before Mitigation:	Less than Significant
Mitigation:	None

Impact Statement AES 3: Construction activities associated with the proposed project could potentially degrade the existing visual character or quality of the site and its surroundings.

The proposed project on Bill's Trail would have minimal impact on the visitor experience based on the visual character of the site. However, the trail surface would be improved, increasing safety and ease of travel on the trail with a more level surface when the project is complete. While there will be several pinch points to slow bike traffic, generally, lines-of-sight along the trail would be improved with the brush removal to provide optimal trail width. The repaired surface and improved drainage patterns would provide a stable, consistent trail tread of safe width.

Auditory experiences would remain unchanged after the construction is complete. The sounds of a natural environment would still be available to visitors. With the exception of the removal of some non-native Eucalyptus trees, vegetation would be restored to natural conditions. The removal of the trees will improve the habitat for native vegetation species. Spectacular views of the hills and surrounding grasslands would remain intact.

The long-term impact on visitor experience would be local, beneficial and moderate. Short-term impacts on visitor experience would be local, temporary, and minor during the construction period.

Construction Activities

Project implementation would temporarily disturb the visitor experience by altering the visual resources in the area immediately affected by the work being performed. Construction equipment and personnel, staging areas and stored materials and stockpiles could be visible to motorists, trail users and campers over the period of construction. Although adverse, the effects of construction activities on visual resources would be short-term, temporary and minor. Integration of Project Requirement HYDRO 1, use of Best Management Practices, will ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation:	Less than Significant
Mitigation:	None

4.1.5. Effects Considered No Impact or Less than Significant without Project Requirements

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

- Impact Statement AES 4: Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area: All construction work for the proposed project would be limited to daylight hours, eliminating the need for night-time work lights. No permanent new light sources would be introduced into the landscape. Neither construction nor operation of the trail would require or create lighting conditions that would adversely affect day or nighttime views. The project would have no effect on natural darkness.

4.1.6. Findings

Implementation of the Bill's Trail Project would have no impact from new permanent light sources introduced into the environment. With the integration of Project Requirements, temporary impacts to the scenic vista, scenic resources, and the visual character of the area would be less than significant.

4.2. Air Quality

This section describes existing local and regional conditions and the potential impacts of the proposed project on air quality, along with pertinent air quality standards and regulations, and Project Requirements and/or mitigations proposed to reduce the significance of potential impacts.

4.2.1. Existing Conditions

The following provides a discussion of the incremental and cumulative effect the proposed project could have on the air quality in the vicinity of the project site and within the San Francisco Air Basin and Bay Area Air Quality Management District.

Climate

Marin County is bounded on the west by the Pacific Ocean, on the east by San Pablo Bay, on the south by the Golden Gate and on the north by the Petaluma Gap. The eastern portion of the County contains small, sheltered valleys which act like a series of miniature air basins.

Marin County has a wedge shape with the southeastern section of the County located closer to the ocean than the northeastern portion. In southern Marin County, the distance from the ocean is short and the elevations are lower, resulting in higher incidence of maritime air in that area. Wind speeds are highest along the west coast of Marin, averaging about 8 to 10 miles per hour. The complex terrain in central Marin creates sufficient friction to slow the air flow. In portions of San Rafael, the average annual winds speeds are approximately 5 mph. The prevailing wind directions throughout Marin County are generally from the northwest.

The eastside of Marin County has warmer weather than the western side because of the greater distance from the ocean and because the hills that separate eastern Marin from western Marin can block the flow of marine air. The temperatures of the cities next to the Bay are moderated by the cooling effect of the Bay in the summer and the warming effect of the Bay in the winter. San Rafael experiences average maximum summer temperatures in the low-80s and average minimum winter temperatures in the low-40s. Inland towns experience average maximum temperatures that are two degrees cooler in the winter and two degrees warmer in the summer.

Air Basin

California is divided into 15 Air Basins to better manage air pollution. Air Basin boundaries were decided by grouping similar geographic features together. Some air basins really are like a basin, with valleys surrounded by mountains. Political boundaries, such as counties, were also important. While air pollution can move freely within an air basin, it can also sometimes move from one basin to another basin. The San Francisco Air Basin includes: part of Sonoma County, part of Napa County, and all of Marin, Contra Costa, Alameda, Santa Clara, San Mateo, and San Francisco County.

Air Quality Standards

Ambient air quality standards (AAQS) were established to set the maximum amount of pollutants that can be in the air without harming even the most sensitive individuals. Individuals or groups who are especially reactive to criteria pollutants are considered sensitive receptors and include children, the elderly, individuals susceptible to respiratory distress, and those who are acutely or chronically ill. Air pollutants have the ability to affect the health of the population, damage agricultural crops, and diminish visibility (Cal EPA Air Resources Board, 2011). The National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) identify six common air pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ & PM_{2.5}), and sulfur dioxide (SO₂). The California Air Resources Board (CARB) have identified other air pollutants that have standards for hydrogen sulfide (H₂S), sulfates (SO₄), vinyl chloride (VC), and visibility reducing particles (VRPs).

Designations for air quality differ between the National and State standards (see **Table 4.2.1**). Under the Clean Air Act (USEPA, nd), the designations for air pollution are defined. "Attainment" is the designation given when an area meets the AAQS for a pollutant. "Non-attainment" is the designation given when an area does not meet (or contributes to ambient air quality nearby that does not meet) the AAQS. "Unclassified" refers to an area that cannot be classified by the amount of available data for the AAQS.

At the State level, some of the designation definitions vary slightly. The designation of "Attainment" is given to a site where the State standard for the pollutant was not violated during a three year period. "Non-attainment" refers to an area where at least one violation of the State standard occurred during the three year period. "Non-attainment / transitional" refers to an area of non-attainment that is close to attaining the State standard for compliance.

Table 4.2.1 Marin County Attainment Designations

Pollutant	State Levels*	National Levels**
Ozone (O ₃) - 1 hour	Non-Attainment	_____
Ozone (O ₃) - 8 hour	_____	Non-Attainment
Carbon Monoxide (CO)	Attainment	Unclassified/Attainment
Nitrogen Dioxide (NO ₂)	Attainment	Unclassified/Attainment
Sulfur Dioxide (SO ₂)	Attainment	Attainment
Particulate Matter (PM ₁₀)	Non-Attainment	Unclassified
Particulate Matter (PM _{2.5})	Non-Attainment	Non-Attainment
Sulfates	Attainment	
Lead (Pb)	Attainment	
Hydrogen Sulfate	Unclassified	
Visibility-Reducing Particles (VRP)	Unclassified	

* 2010 State Area Designations effective on March 25, 2010

** National Area Designations current as of September 2010

Sources: California Air Resources Board, USEPA, NSAQMD

Description of Pollutants

The following air pollutants were selected for AAQS because research indicates exposure can have harmful effects on health and the environment. The descriptions include information regarding sources and effects of air pollutants recognized by the (EPA, nd). These pollutants impact individuals at differing rates dependent on susceptibility, concentrations, and the frequency of exposure. These health effects include increased respiratory disease, lung damage, headaches, chest pain, cancer, neurological or reproductive disorders, and in extreme situations even premature death.

NAAQS and CAAQS Common Air Pollutants

Carbon Monoxide

Carbon Monoxide (CO) is a colorless, odorless gas emitted by mobile and stationary sources as a result of incomplete combustion. Motor vehicle emissions contribute about 56 percent of all CO emissions nationwide, with an additional 22 percent from non-road engines (such as construction equipment and boats) (EPA 2007). Other sources of CO emissions include industrial processes (such as metals processing and chemical manufacturing), residential indoor and outdoor activities (including wood burning, gas stoves, cigarette smoke, and space heaters), and natural sources such as forest fires. The highest levels of CO in the outside air typically occur during the colder months of the year when inversion conditions are more frequent (EPA 2007). The air pollution becomes trapped near the ground beneath a layer of warm air.

Health risks associated with CO exposure range from person to person and by the concentration and length of the exposure. At lower levels of exposure, symptoms experienced include headaches, dizziness, disorientation, nausea, and fatigue. Higher exposure reduces delivery of oxygen to organs and tissue throughout the body. For

individuals suffering from heart disease, exposure can be serious causing chest pains. Those who breathe in a high level of CO repeatedly can develop vision problems and reduced brain function, slowing down work and the ability to learn. In extreme cases CO can be fatal and cause death.

Lead

Lead is a metal found naturally as a relatively soft yet resistant metal. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources ([EPA, nd](#)). Since the elimination of lead additives in motor vehicles, the major source for lead emissions today is from industrial plants processing metal ([Cal EPA, 2010](#)). The highest levels of lead in air are generally found near lead smelters. Other stationary sources are waste incinerators, utilities, and lead-acid battery manufacturers ([EPA, nd](#)).

Exposure to lead occurs from breathing or eating it in food, water, soil, or dust. Even in small amounts, exposure to lead is unhealthy because lead accumulates within the body to harmful levels. Lead can adversely affect the nervous, reproductive, digestive, immune, and circulatory systems. High levels of exposure could lead to osteoporosis, mental retardation, and heart disease. Infants and young children are especially sensitive to even low levels of lead.

Nitrogen Oxides

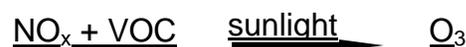
A by-product of fuel combustion, nitrogen oxides (NO_x) is the generic term for a family of highly reactive gases. NO_x in combination with various compounds causes a variety of environmental impacts including ground-level ozone (smog), acid rain, reduced water quality, and reduced visibility. Many of the nitrogen oxides are colorless and odorless. However, one common pollutant, nitrogen dioxide (NO₂) along with particles in the air can often be seen as a reddish-brown layer over many urban areas ([EPA, nd](#)). Fuels burned at high temperatures, during combustion processes for motor vehicles, electric utilities, and other industrial, commercial, and residential sources, result in the formation of nitrogen oxides. NO_x can also be formed naturally.

As an acute irritant, NO_x raises health concerns related to the respiratory system. Continual exposure to NO_x can damage lung tissue and cause increased respiratory infection ([Illingworth & Rodkin, Inc., Updated 2005](#)). Higher levels of exposure could cause emphysema, bronchitis, and aggravate heart disease.

Ozone

Ozone occurs within two levels of the atmosphere. The “good” ozone occurs naturally within the stratosphere approximately 10 to 30 miles above the earth’s surface. At that level, ozone protects life on earth from the sun’s harmful ultraviolet rays. The “bad” ozone occurs in the troposphere, which extends from the earth’s surface to approximately ten miles above ground level ([EPA, nd](#)).

Ozone is gas composed of three oxygen atoms that are a result of a chemical reaction at ground level. The reaction consists of nitrogen oxides (NO_x) combining with volatile organic compounds (VOC) in the presence of sunlight.



Within the troposphere, sources of VOC and NO_x are from motor vehicle exhaust, industrial emissions, gasoline vapors, chemical solvents, and natural sources. Ground-level ozone is the primary constituent of smog. Ozone concentrations tend to be higher when temperatures are high and days are long during spring, summer and fall months. As a result, it is known as a summertime air pollutant. Many urban areas tend to have high levels of "bad" ozone, but even rural areas are also subject to increased ozone levels because wind carries ozone and pollutants that form it hundreds of miles away from their original sources ([EPA, nd](#)).

Health effects associated with exposure to ozone include chest pain, coughing, sore throat, and congestion. With exposure to high levels of ozone, sensitive receptors are susceptible to reduced lung function.

Particulate Matter

Particulate matter (PM) consists of tiny particles of dry solid fragments, small liquid droplets, or solid particles with liquid coatings. The particles vary in shape, size, and chemical composition, and can be made of different materials such as metals, soot, soil, and dust (Cal EPA 2007). Particulate matter that is 10 microns or less in diameter (PM₁₀) is considered small enough to be inhaled and penetrate the lungs. Even smaller than PM₁₀ are fine particles measuring 2.5 microns or less in diameter (PM_{2.5}). Fine particles (PM_{2.5}) are the major cause of reduced visibility (haze) in parts of the United States ([EPA, nd](#)).

Directly emitted particulate matter, known as primary particles, are from sources that include combustion, motor vehicles, field burning, factories, construction sites, and road dust. Others form in complicated reactions in the atmosphere of chemicals such as sulfur dioxides and nitrogen oxides that are emitted from power plants, industries and automobiles. These particles, known as secondary particles, make up most of the fine particle pollution across the country ([EPA, nd](#)).

Due to the size of particulate matter, inhalation can carry the smaller particles into the lungs and even through transfer into the bloodstream. Made up of different chemical components particulate matter can cause lung and heart related health problems.

Sulfur Dioxide

Sulfur dioxide (SO₂) is an extremely reactive, colorless, gaseous compound of sulfur and oxygen. SO₂ is formed when sulfur containing fuel is burned by locomotives, ships, off-road diesel equipment, petroleum refineries, or metal production (Cal EPA 2007a). Sulfur dioxide is also produced through natural causes including geologic vents and hot springs. These gases dissolve easily in water creating acid rain or fog. Over 65% of SO₂ released to the air, or more than 13 million tons per year, comes from electric utilities, especially those that burn coal ([EPA, nd](#)).

SO₂ causes a wide variety of health and environmental impacts because of the way it reacts with other substances in the air. Heart and lung disease can occur due to exposure to particularly sensitive groups including people with asthma who are active outdoors, children, and the elderly ([EPA, nd](#)).

CAAQS Additional Air Pollutants

Hydrogen Sulfide

Hydrogen sulfide (H₂S) is a colorless gas identifiable by its odor of rotten eggs. It is produced during bacterial anaerobic decomposition of substances containing organic sulfur (Cal EPA 2007). In nature, hydrogen sulfide can be found around hot springs, and geothermic sources. It is also produced through industrial processes such as oil production. At high levels it can be fatal because hydrogen sulfide prevents the uptake of oxygen by the blood. H₂S is regulated by the CARB to eliminate exposure to disagreeable odors because the human nose detects the smell at low levels.

Sulfates

Sulfates (SO₄) are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and / or hydrogen ions (Cal EPA, nd). In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to sulfur dioxide (SO₂) during the combustion process and subsequently converted to sulfate compounds in the atmosphere (Cal EPA, nd). Sulfates tend to be acidic which can harm ecosystems and damage materials and property. Exposure to high levels of sulfates can cause health risks including a decrease in breathing function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease (Cal EPA, nd).

Vinyl Chloride

Vinyl chloride (chloroethene) is a colorless gas with a mild, sweet odor. It is used in the production of vinyl products and polyvinyl chloride (PVC) plastic (Cal EPA, 2009). Once these vinyl products are disposed of in local landfills, sewage plants, or hazardous waste sites they break down emitting vinyl chloride. Health risks associated with short-term exposure to high levels include dizziness, drowsiness, and headaches. Long-term exposure through inhalation can cause liver damage and cancer (Cal EPA, 2009).

Visibility-Reducing Particles (VRPs)

Visibility-reducing particles are made up of suspended particulate matter, which is a complex mixture of tiny particles that consists of dry solid fragments, small droplets of liquid or solid cores with liquid coatings. These particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, dust, and salt (Cal EPA, 2009).

Air Monitoring

Pollutant monitoring results for the years 2003 to 2007 (see Table 4.2.2) at the San Rafael ambient air quality monitoring station (the closest monitoring station to the project site) indicate that air quality in the project area has generally been good. As indicated in the monitoring results, one violation of the State PM₁₀ standard and one violation of the federal PM_{2.5} standard was recorded during the 3-year period. State 1-hour O₃ and federal 8-hour O₃ standards have not been exceeded at this monitoring station in the last three years. CO, SO₂, and nitrogen dioxide (NO₂) standards were not exceeded in this area during the three-year period.

Sensitive Receptors

A sensitive receptor is a person in the population who is particularly susceptible to health effects resulting from exposure to an air contaminant, when compared to the population at large. These include the elderly, children, and those with compromised immune systems, asthma, or severe allergies.

Table 4.2.2 Local Air Quality Levels

Pollutant	California Standard	Federal Primary Standard	Year	Maximum Concentration	Days (Samples) State/Federal Std. Exceeded
Ozone (O ₃)	for 1 hour 0.09 ppm NA	NA	2003	0.087 ppm	0/NA
			2004	0.091 ppm	0/NA
			2005	0.081 ppm	0/NA
			2006	0.089 ppm	0/NA
			2007	0.072 ppm	0/NA
Ozone (O ₃) for 8 hour	0.07 ppm	0.08 ppm	2003	0.068 ppm	0/0
			2004	0.063 ppm	0/0
			2005	0.060 ppm	0/0
			2006	0.058 ppm	0/0
			2007	0.058 ppm	0/0
Carbon Monoxide (CO)	9.0 ppm (8 hour)	9.0 ppm (8 hour)	2003	3.80 ppm	0/0
			2004	3.20 ppm	0/0
			2005	3.00 ppm	0/0
			2006	2.60 ppm	0/0
			2007	NM	0/0
Nitrogen Dioxide (NO ₂)	0.18 ppm (1 hour)	0.053 ppm annual average	2003	0.070 ppm	0/NM
			2004	0.060 ppm	0/NM
			2005	0.054 ppm	0/NM
			2006	0.054 ppm	0/NM
			2007	NM	0/NM
Particulate Matter (PM ₁₀) ³	50 µg/m ³ (24 hours)	150 µg/m ³ (24 hours)	2003	40.5 µg/m ³	0/0
			2004	52.3 µg/m ³	1/0
			2005	39.1 µg/m ³	0/0
			2006	68.2 µg/m ³	1/0
			2007	55.6 µg/m ³	0/0
Fine Particulate Matter (PM _{2.5}) ^{3,4}	No separate state standard	35 µg/m ³ (24 hours)	2003	NM	NM /NM
			2004	NM	NM /NM
			2005	NM	NM /NM
			2006	NM	NM /NM
			2007	NM	NM/NM
Sulfur Dioxide (SO ₂)	0.25 ppm (1 hour)	0.14 ppm for 24 hours or 0.03 ppm annual arithmetic mean	2003	NM	NM /NM
			2004	NM	NM /NM
			2005	NM	NM /NM
			2006	NM	NM /NM
			2007	NM	NM/NM

Source: Aerometric Data Analysis and Measurement System (ADAM), summaries from 2003 to 2007, <http://www.arb.ca.gov/adam>.

ppm = parts per million; PM₁₀ = particulate matter 10 microns in diameter or less; NM = not measured; µg/m³ = micrograms per cubic meter; PM_{2.5} = particulate matter 2.5 microns in diameter or less; NA = not applicable.

1. All measurements were taken at San Rafael Monitoring Station, at 534 4th Street, San Rafael CA 94901.
2. Maximum concentrations are measured over the same period as the California standard.
3. PM₁₀ exceedances are based on state thresholds established prior to amendments adopted on June 20, 2002.
4. PM₁₀ and PM_{2.5} exceedances are derived from the number of samples exceeded, not days.

Regulatory Setting

Federal Air Quality Regulations

The Federal Clean Air Act (CAA) was originally written in 1963 as a means to provide funding for air quality research. A subsequent CAA was written in 1970 to enable nationwide responses for air pollution. After an amendment in 1990, the CAA was expanded to cover the impacts of air pollution and empower the U.S. EPA to implement and enforce stronger air pollution regulations. The CAA has two standards: to protect public health and public welfare.

The U.S. EPA is a regulatory agency charged with setting the NAAQS, creating minimum National emission limits for pollution sources (i.e. utilities and steel mills), and establishing regulations. Together these functions reduce the population's exposure to air pollutants.

State Air Quality Regulations

This 1988 California Clean Air Act (CCAA) was adopted by the State to implement statewide air pollution controls regulated by the California Air Resources Board (CARB) a section of the California Environmental Protection Agency (Cal EPA). This board set more stringent air pollution laws than are approved by the U.S. EPA. The CAAQS, regulated by the state, also include air pollutants that may cause serious long term effects such as sulfates (S), lead (Pb), hydrogen sulfide (H₂S), and visibility reducing particles (VRPs).

Samuel P. Taylor State Park General Plan

DPR has not completed a General Plan for SPTSP ; however, the management approach for any unit of the State Park System, including SPTSP, is based on unit classification statutes specified in the California Public Resources Code (PRC) § 5019.50 through 5019.74. The statutes set forth the primary purpose of each classified unit, identify in general what types of facilities and uses could be permitted, and provide direction on how unit resources would be managed. The purpose of a State Park is to preserve outstanding resource values, species, and significant examples of California's ecological regions; each State Park would be managed as a composite whole to restore, protect, and maintain its native environmental complexes; improvements undertaken within a State Park would serve to make areas within the park unit available for public enjoyment and education in a manner consistent with resource preservation; and improvements could include recreational facilities as long as no major modification of land, forests, or waters occurs (PRC § 5019.53).

Local regulations

Bay Area Air Quality Management District (BAAQMD)

The BAAQMD is the agency primarily responsible for regulating air pollution emissions from stationary sources (e.g., factories) and indirect sources (e.g., traffic associated with new development), as well as for monitoring ambient pollutant concentrations. BAAQMD's jurisdiction encompasses seven Bay Area counties—Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara and Napa—and portions of Solano and Sonoma counties.

Marin County General Plan

DPR is exempt from local regulations, including general plans, specific plans and zoning ordinances (California Constitution Article XI, Section 7), although the project must comply with applicable state and federal rules and regulations governing local regulations applicable to impacts located outside Park boundaries (i.e. air quality and noise).

4.2.2. Thresholds of Significance

The following thresholds have been prepared based on the State CEQA Guidelines (Appendix G) and Section 15065 of the State CEQA Guidelines. The Project would have a significant impact* on Air Quality if it would:

- AIR 1: Conflict with or obstruct implementation of the applicable air quality plan or regulation.
- AIR 2: Violate any air quality standard or contribute substantially to an existing or projected air quality violation.
- AIR 3: Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state AAQS (including releasing emissions which exceed quantitative thresholds for ozone precursors).
- AIR 4: Expose sensitive receptors (e.g., children, the elderly, and individuals with compromised respiratory or immune systems) to substantial pollutant concentrations.
- AIR 5: Create objectionable odors affecting a substantial number of people.

*Where available, the significance criteria established by the applicable air quality management or air pollution control district will be relied upon to make these determinations.

4.2.3. Environmental Impacts, Project Requirements, and Mitigation Measures

Impact Statement Air 2: Would construction activities associated with the proposed project would violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Air Quality Standard/Air Quality Violation

Emissions during project implementation would not include air contaminants at levels that would, by themselves, violate local, state, or federal ambient air quality standards. Emissions would not contribute to a substantial permanent or long-term increase in any air contaminant, but could still cause adverse air quality impacts. Construction would cause intermittent and temporary increases of fugitive dust (PM₁₀) and ozone precursors (i.e., volatile organic compounds [VOC] and nitrogen oxides [NO_x]). These air quality impacts would be limited to the segment of Bill's Trail or Gravesite Fire Road where construction occurs. This would vary from day to day, location along the road/trail, type of work occurring, and the weather.

Ozone precursors (chemicals, which contribute to the creation of ozone) from project vehicles would increase in the general vicinity of the site. Project and worker vehicles would range from 5-20 daily, with 1-2 trips per vehicle. Most heavy equipment would remain on the site for the duration of the work. Suppliers would drop off equipment and

materials and leave the same day, with an average of 1-3 deliveries per day. During project implementation, there is a projected possibility of an additional 43 trips per day by delivery and worker vehicles. Based on these figures, maximum project traffic would only increase total traffic volume, and vehicle emissions, in the vicinity of the construction site by approximately five percent. This increase would constitute a less than significant impact at the site and a negligible impact on the air quality in the BAAQMD.

Construction equipment powered by diesel would also emit air pollutants during project implementation. Diesel exhaust emits nitrogen oxides (NO_x) (another component of ozone) and particulate matter (diesel PM). Diesel PM has been identified by CARB as a toxic air contaminant with chronic and carcinogenic risks to public health. A significance threshold for diesel PM has not been established. Emissions can vary widely, depending on the length of time each piece of equipment would be operated, condition of the equipment's engine and exhaust, weather, and type of operation.

Steep grades, dry summer conditions, travel and work along the unpaved trail and roads could result in short term increases of fugitive dust (PM₁₀) during trail and road improvements. In addition to increased PM₁₀ along the trail and road, the movement of vehicles in and out of the project area could move soil onto Sir Francis Drake Boulevard. Once on the paved road, continual traffic and off shore breezes could transfer the soil to airborne PM.

Due to the limited size of this project, it is expected that the project's operational emissions would not exceed the BAAQMD's Thresholds for Significant Contribution to regional air pollution (VOC, NO_x, and PM₁₀).

Increased emissions of particulate matter and ozone related to activities proposed as part of this project could contribute to existing non-attainment conditions and interfere with achieving the projected attainment standards. However, construction related emissions would be short-term and temporary in nature, local air quality conditions would return to existing conditions at the end of the project. Integration of Project Requirement AIR 2, limiting the quantity, type, and duration of equipment used during project implementation, would ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation:	Less than significant
Mitigation Measure:	None

Impact Statement AIR 3: Construction activities associated with the proposed project could result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state AAQS (including releasing emissions which exceed quantitative thresholds for ozone precursors)

Particulate Matter Fugitive Dust Emissions

DPR and its contractors would limit the emission and/or airborne transport of fugitive dust in implementing the measures outlined in the (BAAQMD, 1999). Integration of Project Requirement AIR 3 will ensure fugitive dust emission impacts remain at a less than significant level.

Level of Significance Before Mitigation:	Less than significant
Mitigation Measure:	None

4.2.4. Effects Considered No Impact or Less than Significant without Project Requirements

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

- Impact Statement AIR 1: Conflict with or obstruct implementation of the applicable air quality plan or regulation: Proposed work will not conflict or obstruct the implementation of any applicable air quality management plan (AQMP) for Marin County.
- Impact Statement AIR 4: Expose sensitive receptors (e.g., children, the elderly, and individuals with compromised respiratory or immune systems) to substantial pollutant concentrations: Sensitive receptors would have the ability to avoid the Samuel P. Taylor SP or visit other areas of the Park free of potential air pollutants. Although the project site is currently open to the public; access would be restricted during construction to protect public health and safety. Area residences are sufficiently distant from proposed construction activities to be safe from serious exposure. Facilities that provide care for sensitive receptors (such as schools, hospitals) are not within a mile of the project site.
- Impact Statement AIR 5: Create objectionable odors affecting a substantial number of people: Construction-related activities and emissions would result in a short-term generation of odors, including diesel exhaust, and fuel vapors. These odors could be considered objectionable by some Park visitors and employees. However, construction activities would be short-term; odorous emissions would dissipate rapidly in the air, with increased distance from the source; and visitor exposure to these odors would be extremely limited.

4.2.5. Findings

For air quality evaluated as part of this environmental document, the potential exists for the release of air pollutants that could result in a temporary significant risk to the public and the environment. However, the implementation of this project would only impact air quality for a short period of time during construction. Integration of Project Requirements would reduce air quality impacts to a less than significant level.

4.3. Biological Resources

This section provides information on biological resources that occur or could potentially occur within the proposed project site, or could be impacted by the Trail Improvement Project activities at SPTSP. This includes specific information on the biological resources and potential impacts to these resources from trail improvement construction activities.

4.3.1. Existing Conditions

The following is a discussion of the existing vegetation and wildlife habitats and species that are potentially found in the vicinity of the project area and surrounding region.

4.3.1.1. Vegetation and Wildlife Habitat

Vegetation

Vegetation within the project area is comprised of six vegetation types as defined in Sawyer et al (2009), which conforms to the National Vegetation Classification Standard adopted by the federal government (USGS 2010).

- Mediterranean California Naturalized Annual and Perennial Grassland Group
- *Baccharis pilularis* Shrubland Alliance
- *Umbellularia californica* Forest Alliance
- *Pseudotsuga menziesii* Forest Alliance
- *Eucalyptus globulus* Semi-Natural Woodland Stands
- *Alnus rhombifolia* Forest Alliance

The Mediterranean California Naturalized Annual and Perennial Grassland Group consists of several alliances (equivalent to plant communities) dominated by non-native grass species. This vegetation type best characterizes the diverse mixture of grassland types bordering most of the Barnabe Fire Road, a portion of the Gravesite Fire Road, and two small areas on the upper portion of Bill's Trail. Commonly encountered species include non-native slender wild oat (*Avena barbata*), soft chess (*Bromus hordeaceus*), ripgut grass (*Bromus diandrus*), Mediterranean barley (*Hordeum marinum ssp. gusseanum*), rattlesnake grass (*Briza maxima*), English plantain (*Plantago lanceolata*), scarlet pimpernel (*Anagallis arvensis*), annual Italian ryegrass (*Lolium multiflorum*), dogtail grass (*Cynosurus echinatus*), narrowleaf cottonrose (*Logfia gallica*), sheep sorrel (*Rumex acetosella*), and hairy cat's ear (*Hypochaeris radicata*); native species include winecup clarkia (*Clarkia purpurea ssp. quadrivulnera*), California poppy (*Eschscholzia californica*), wild blue rye (*Elymus glaucus*), purple needlegrass (*Nasella pulchra*), California brome (*Bromus carinatus*), bracken fern (*Pteridium aquilinum var. pubescens*), and harvest brodiaea (*Brodiaea elegans ssp. elegans*). Native purple needlegrass, the most abundant of the remaining native bunchgrasses in this area, occurs in greatest numbers in locations adjacent to road sides.

Patchy stands of *Baccharis pilularis* Shrubland Alliance vegetation dominated by coyote brush (*Baccharis pilularis*) interspersed with grasslands adjacent to the Barnabe Fire Road. Other commonly encountered species include California blackberry (*Rubus ursinus*), bush monkey flower (*Mimulus aurantiacus*), California coffeeberry (*Frangula californica ssp. californica*), poison oak (*Toxicodendron diversilobum*), California sagebrush (*Artemisia californica*), cow parsnip (*Heracleum maximum*), and shrubby specimens of California bay laurel (*Umbellularia californica*).

Umbellularia californica Forest Alliance comprises the dominant vegetation type along most of the length of Bill's Trail. California bay laurel dominates the canopy of this vegetation, which supports significant numbers of Douglas-fir (*Pseudotsuga menziesii*) and California hazelnut (*Corylus cornuta var. californica*) in the canopy and sub-canopy, respectively. Small, scattered stands of California nutmeg (*Torreya californica*) are distributed discontinuously along portions of Bill's Trail. Commonly encountered

species in the shrub and herbaceous layer include bracken fern, western sword fern (*Polystichum munitum*), California blackberry, poison oak, California maidenhair fern (*Adiantum jordanii*), five-finger fern (*Adiantum aleuticum*), wood rose (*Rosa gymnocarpa*), fringe cups (*Tellima grandiflora*), Pacific sanicle (*Sanicula crassicaulis*), coastal wood fern (*Dryopteris arguta*), California coffeeberry, and blue forget-me-not (*Myosotis latifolia*).

Pseudotsuga menziesii Forest Alliance integrates with *Umbellularia californica* Forest Alliance in lower elevation sections of Bill's Trail and the Gravesite Fire Road. Douglas-fir dominates the canopy of the *Pseudotsuga menziesii* Forest Alliance, which supports the same complement of shrub and herbaceous species as the preceding vegetation type. Although often co-dominant with Douglas-fir in other park locations, tanoak (*Lithocarpus densiflorus*) is largely absent from this vegetation type within the project area.

A patch of *Eucalyptus globulus* Semi-Natural Woodland Stands vegetation type occurs near the beginning of Bill's Trail. Dominated by non-native blue gum eucalyptus (*Eucalyptus globulus*), this vegetation type shares the same assemblage of shrub and herbaceous species as the surrounding *Pseudotsuga menziesii* and *Umbellularia californica* Forest Alliance types described above. One key difference is blue gum typically inhibits the establishment of a dense understory.

A narrow strip of riparian vegetation best characterized as *Alnus rhombifolia* Forest Alliance borders Devil's Gulch. White alder (*Alnus rhombifolia*) co-dominates with arroyo willow (*Salix lasiolepis*). Other common species include big-leaf maple (*Acer macrophyllum*), California buckeye (*Aesculus californica*), creek dogwood (*Cornus sericea* var. *sericea*), California hazel (*Corylus cornuta* var. *californica*), Oregon ash (*Fraxinus latifolia*), thimbleberry (*Rubus parviflorus*), California blackberry (*Rubus ursinus*), Sitka willow (*Salix sitchensis*), blue elderberry (*Sambucus mexicana*), California bay, western sword fern, and coastal wood fern. *Pseudotsuga menziesii* and *Umbellularia californica* Forest Alliance types enclose and overtop the shorter riparian canopy. A few scattered coast redwoods (*Sequoia sempervirens*) inhabit sites adjacent to Devil's Gulch, including an estimated 10 foot diameter at breast height (dbh) tree near the beginning of Bill's Trail.

Sudden Oak Death

Discovered in 1995, Sudden Oak Death (SOD) is caused by the pathogen *Phytophthora ramorum*, has infected and killed thousands of tanoak, coast live oak (*Quercus agrifolia*), Shreve oak (*Quercus parvula* var. *shrevei*), and California black oak (*Quercus kelloggii*) trees in coastal forests from Humboldt County to Monterey County. This water mold also infects California bay laurel, Pacific madrone (*Arbutus menziesii*), California buckeye, coast redwood, Douglas-fir, big-leaf maple, hairy honeysuckle (*Lonicera hispidula* var. *vacillans*), California coffeeberry, toyon (*Heteromeles arbutifolia*), California rose bay (*Rhododendron macrophyllum*), manzanita species (*Arctostaphylos* spp.), and California huckleberry (*Vaccinium ovatum*).

SOD is transported to new areas when infected plants or infested soil is moved. *Phytophthora ramorum* thrives in wet or moist climates with cool temperatures; these organisms and their spores can be found in soil and water as well as plant material.

The risk of SOD spread is greatest in muddy areas and during rainy weather where spore-producing hosts are present. Many of the tanoaks in the park and surrounding locations have been affected by SOD, resulting in numerous dead and dying trees.

Marin County is one of 14 California counties to have confirmed SOD findings and is under State and federal quarantine regulations. Quarantined areas are subject to specific regulations regarding the movement and use of susceptible plants. County Agricultural Commissioners' enforce both State and federal regulations.

Wildlife Habitat

Wildlife habitat types described below are based upon vegetation characteristics. For this project these can be grouped into three categories: Herbaceous Dominated Habitats, Shrub Dominated Habitats, and Tree Dominated Habitats. Within each of the three categories, habitat types are defined based upon the California Wildlife Habitat Relationship Database (CWHR) habitat classification system (CDFG 2010a, Mayer and Laudenslayer 1988). Each CWHR habitat type corresponds to a vegetation type described in the Vegetation section above; however the CWHR habitat and corresponding vegetation type are not necessarily equivalent. For example, the CWHR's Coastal Scrub corresponds to *Baccharis pilularis* Shrubland Alliance, which is not equivalent because the CWHR type is more broadly defined and can include numerous plant species that do not occur in the vegetation type. While the vegetation section identifies assemblages of plant species, wildlife habitat types focus on component habitat elements (e.g. environmental diversity, food items) that are capable of sustaining and supporting both common and special status wildlife species.

Herbaceous Dominated Habitats

- **Mediterranean California Naturalized Annual and Perennial Grassland Group** (corresponds to Annual Grassland and Perennial Grassland) – These habitat types consists of open grasslands composed primarily of non-native grass and forb species that provide foraging and/or breeding habitat for various species of lizards, snakes, raptors, songbirds, and mammals (LSA 2010, Mayer and Laudenslayer 1988). Typical wildlife species inhabiting annual grasslands in Marin County include western fence lizard (*Sceloporus occidentalis*), common garter snake (*Thamnophis sirtalis*), gopher snake (*Pituophis catenifer*), racer (*Coluber constrictor*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), western meadowlark (*Sturnella neglecta*), savanna sparrow (*Passerculus sandwichensis*), western bluebird (*Sialia mexicana*) California ground squirrel (*Spermophilus beecheyi*), Botta's pocket gophers (*Thomomys bottae*), coyote (*Canis latrans*), and mule deer (*Odocoileus hemionus*).

Shrub Dominated Habitats

- ***Baccharis pilularis* Shrubland Alliance** (corresponds to Coastal Scrub) – This habitat type consists of a dense to moderately dense and continuous cover of a tall overstory shrub layer with a short, perennial herb/sub-shrub understory (LSA 2010). Like the grassland habitats Coastal Scrub occurs on drier sites than Forest Dominated Habitats. It provides foraging, perching and nesting sites for some birds and cover for small mammals and reptiles. Species common to this

habitat include western fence lizard, California quail (*Callipepla californica*), western scrub-jay (*Aphelocoma californica*), California towhee (*Pipilo crissalis*), American goldfinch (*Carduelis tristis*), chestnut-backed chickadee (*Poecile rufescens*), black-tailed jackrabbit (*Lepus californicus*), and brush rabbit (*Sylvilagus bachmani*).

Tree Dominated Habitats

- ***Umbellularia californica* Forest Alliance** (corresponds to Coastal Oak Woodland) – This habitat type consists of closed to mostly closed tree canopies with a sparse to moderately dense shrub layer and a well-developed herbaceous layer (LSA 2010). Coastal Oak Woodland provides habitat for a variety of wildlife species, including western fence lizard, California quail, wild turkey (*Meleagris gallopavo*), western scrub jay (*Aphelocoma californica*), white-crowned sparrow (*Zonotrichia leucophrys*), white-throated sparrow (*Zonotrichia albicollis*), golden-crowned sparrow (*Zonotrichia atricapilla*), California towhee, mourning dove (*Zenaida macroura*), Stellar’s jay (*Cyanocitta stelleri*), red-tailed hawk, common raven (*Corvus corax*), western gray squirrel (*Sciurus griseus*), and black-tailed deer (*Odocoileus columbianus*).
- ***Pseudotsuga menziesii* Forest Alliance** (corresponds to Douglas-fir) – This habitat type is similar to the preceding type, but with a taller canopy and a typically closed tree canopy. The moist environment supports a well-developed herbaceous layer and a sparse to moderately dense shrub layer (LSA 2010), creating an environment suitable for many amphibians and reptiles such as ensatina (*Ensatina eschscholtzii*), California slender salamander (*Batrachoseps attenuatus*), western fence lizard, rubber boa (*Charina bottae*), and ring-necked snake (*Diadophis punctatus*). Other wildlife species commonly found in this habitat type include Stellar’s jay, California quail, pileated woodpecker (*Dryocopus pileatus*), and golden-crowned sparrow (*Zonotrichia atricapilla*), winter wren (*Troglodytes troglodytes*), and the federally Threatened northern spotted owl (*Strix occidentalis caurina*).
- ***Eucalyptus globulus* Semi-Natural Woodland Stands** (corresponds to Eucalyptus) – This habitat type is dominated by non-native eucalyptus, which provides roosts, perches, and nest sites for bird species, especially raptors (Mayer and Laudenslayer 1988). Typically the canopy of Eucalyptus habitat is closed and the shrub and herbaceous layers are sparse and not well-developed. Although very limited in extent within the project area, it can provide habitat for American crow (*Corvus brachyrhynchos*), common raven, barn owl (*Tyto alba*), red-tailed hawk, and red-shouldered hawk (*Buteo lineatus*).
- ***Alnus rhombifolia* Forest Alliance** (corresponds to Montane Riparian) – This streamside habitat type consists of a narrow strip of broadleaved tree dominated vegetation with a closed canopy. It has an exceptionally high habitat value, providing water, forage, breeding areas, migration and dispersal corridors, and thermal cover for numerous common as well as special status wildlife species (LSA 2010, Mayer and Laudenslayer 1988). Within the project area this habitat is limited to the riparian strip along Devil’s Gulch at the beginning of Bill’s Trail.

- Devil's Gulch supports known populations of federally Threatened steelhead (*Oncorhynchus mykiss*) and federally Endangered Coho salmon (*Oncorhynchus kisutch*). Amphibians and reptiles potentially occurring or known to occur in Devil's Gulch include foothill yellow legged frog (*Rana boylei*), California giant salamander (*Dicamptodon ensatus*), Pacific treefrog (*Pseudacris regilla*), California newt (*Taricha torosa*), and several species of garter snake. Bird species commonly found in this habitat type include mallard (*Anas platyrhynchos*), great blue heron (*Ardea herodias*), house wren (*Troglodytes aedon*), mourning dove, Pacific-slope flycatcher (*Empidonax difficilis*), warbling vireo (*Vireo gilvus*), barn swallow (*Hirundo rustica*), black phoebe (*Sayornis nigricans*), belted kingfisher (*Ceryle alcyon*), Swainson's thrush (*Catharus ustulatus*), American dipper (*Cinclus mexicanus*), and black-headed grosbeak (*Pheucticus melanocephalus*). Mammal species that may be found in this habitat type include northern raccoon (*Procyon lotor*), Virginia opossum (*Didelphis virginianus*), mule deer, coyote, bobcat (*Lynx rufus*), and mountain lion (*Puma concolor*).

Wetlands, Riparian Zones, and Waters of the U.S.

The U.S. Army Corps of Engineers (USACE) defines wetlands as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The majority of USACE-jurisdictional wetlands meet three wetland delineation criteria: (1) hydrophytic vegetation, (2) hydric soil types, and (3) wetland hydrology. No USACE-jurisdictional wetlands occur within the project area.

The term "waters of the U.S." applies to the jurisdictional limits of the authority of the US Army Corps of Engineers to regulate navigable waters under Section 404 of the federal Clean Water Act. Navigable waters are defined in Section 502(7) of the Act as "waters of the United States, including the territorial seas." By definition, navigable waters include all wetlands and tributaries to "waters of the United States." Under Section 404 of the Act, the USACE has authority to regulate the discharge of dredged or fill material into navigable waters. The authority for the USACE to regulate navigable waters is also provided under Section 10 of the Rivers and Harbors Act of 1899. Under this statute, the USACE regulates excavation or filling operations or the alteration or modification of the course, location, condition, or capacity of any navigable water of the United States.

For purposes of Section 404 of the Clean Water Act, the lateral limits of USACE-jurisdiction over non-tidal water bodies (e.g. streams) extend to the ordinary high water mark (OHWM), in the absence of wetlands (USACE 2005). The proposed project would include construction activities within the OHWM of three perennial streams and three intermittent streams; hence these streams are subject to Section 404 regulation by the USACE.

The State Water Resources Control Board regulates the alteration of any federal water body, including the streams identified above, through Section 401 of the Clean Water Act. The appropriate Regional Water Quality Control Board(s) certify that water quality

of the affected water body is not subject to unacceptable environmental impacts through provisions of the 401 certification program (SWRCB 2010).

Pursuant to Section 1600 of the Fish and Game Code the California Department of Fish and Game (CDFG) regulates any work occurring in or near a river, stream, or lake that flows at least intermittently through a bed or channel. Construction activities proposed for the six stream channels identified above are subject to the jurisdictional authority of the CDFG.

4.3.2. Special Status Biological Resources

Special status biological resources include plants and animals that have been afforded special recognition by federal, state, or local resource agencies and organizations. Also included are habitats that are of relatively limited distribution or are of particular value to wildlife.

For the purposes of this EIR, special-status species are defined as plants and animals that are legally protected under the federal Endangered Species Act (ESA), the California Endangered Species Act (CESA) or other laws, or that are otherwise considered sensitive by federal, state, or local resource conservation agencies and organizations. Specifically, this includes species listed as state and/or federally Threatened, Endangered, or Rare; those considered as candidates for listing; species identified by USFWS and /or CDFG as Species of Special Concern (SSC); wildlife identified by CDFG as Fully Protected (FP) or Protected (P); and plants considered by the CNPS to be rare, threatened, or endangered (i.e., plants on CNPS lists 1 and 2). Special-status species that are not federally protected or state listed as threatened, endangered, or rare do not receive protection under ESA or CESA; however, impacts to these species could still be considered significant under CEQA if it determined to be rare or endangered by the lead agency [CEQA Guidelines §15380(b)].

A species can be considered:

- “Endangered” when its survival and reproduction in the wild are in immediate jeopardy from one or more causes, including loss of habitat, change in habitat, overexploitation, predation, competition, disease, or other factors.
- “Rare” when either:
 - the species is not presently threatened with extinction, but is existing in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens; or
 - the species is likely to become endangered within the foreseeable future throughout all or a significant portion of its range and may be considered “threatened” as that term is used in the Federal Endangered Species Act.

Special-Status Plants

Identification of the special status plant species that are known or that could potentially occur within or near the project area are based on 2010 surveys conducted by DPR biologists and a review of existing information from the following sources: the CNPS (Inventory of Rare and Endangered Plants of California, 6th edition, electronic version,

2010), the California Natural Diversity Data Base (CNDDDB) (CDFG 2010c), and the USFWS list of federally listed species for Marin County (USFWS 2010a).

The CNPS¹ identifies 72 special status species for the San Geronimo 7.5-minute U. S. Geological Survey (USGS) quadrangle and adjacent San Rafael, Bolinas, Novato, Inverness, Petaluma River, Petaluma, Point Reyes NE, and Double Point quadrangles (see Table B-2, Appendix B). Occurrences of 64 special status plant species appear in the CNDDDB for these quads, all of which are reported by the CNPS. The USFWS identifies 12 federally listed species for Marin County, four of which do not appear on the CNPS or CNDDDB lists for the aforementioned quads. Special status species identified above and their relevant listing status and pertinent biological information are presented in Table B-1 contained in Appendix B.

Of the 76 species listed in Table 4.3.1, 57 of these have no potential to occur in or near the project area based on the absence of suitable habitat or soils substrates, including all of the species with federal listing status. Habitat types not found in the project area include coastal dunes, vernal pools, coastal bluff scrub, closed cone coniferous forest and mesic meadows; substrates types absent from the project area include serpentine derived soils, adobe clay, and sand. For example, short-leaved evax (*Hesperevax sparsiflora* var. *brevifolia*) is limited to sandy areas in coastal bluff scrub or coastal dunes, which are habitats that do not exist within the project area.

Suitable habitat is available within or adjacent to the project area for 19 special status plant species. The CNDDDB reports an occurrence of the shrub western leatherwood (*Dirca occidentalis*) in Devil's Gulch; no other occurrences of special status plants species have been reported the CNDDDB for the project area.

Multiple field surveys for special status plants were conducted by a qualified biologist in May and June of 2010. These surveys were timed to coincide with plant blooming periods and 2010 plant phenology and conform to the botanical survey protocols established by the CDFG (2009). Surveys consisted of visual inspection of the vegetation bordering Bill's Trail and Gravesite Fire Road within the Area of Potential Effect (APE), which could extend up to several feet from the center point of the existing trail/road. No special status plant species were detected during these surveys.

Sensitive Natural Plant Communities

Sensitive natural plant communities are especially diverse, regionally uncommon, or of special concern to local, state and federal agencies. Elimination or substantial degradation of these communities would constitute a significant impact under CEQA.

Although considered common enough not to be of concern by the CDFG, *Alnus rhombifolia* and *Pseudotsuga menziesii* Forest Alliances provide valuable habitat for special status wildlife species and are identified in this document as sensitive natural

¹ California Native Plant Society (CNPS) Lists: List 1A = presumed extinct in California; List 1B = rare or endangered in California and elsewhere; List 2 = rare or endangered in California, more common elsewhere; List 3 = need more information; List 4 = plants of limited distribution. New threat code extensions are: .1 = seriously endangered in California; .2 = fairly endangered in California; and .3 = not very endangered in California.

plant communities. The *Alnus rhombifolia* Forest Alliance, which encompasses Devil's Gulch, provides habitat for known populations of the federally Threatened steelhead and federally Endangered Coho salmon. Habitat for federally Threatened northern spotted owl is furnished by the *Pseudotsuga menziesii* Forest Alliance.

Special-Status Wildlife

A list of 76 special status wildlife species with the potential to occur in SPTSP or on surrounding lands was generated from the USFWS list of federally listed species for Marin County and the CNDDDB (CDFG 2010c). These species are identified in Table 4.3.1. Species with the potential to occur in or near the project area are discussed below.

INVERTEBRATES

Marin blind harvestman (*Calicina diminua*) – Arachnid species of the genus *Calicina* occur in mesic habitats under medium to large undisturbed rocks that are in contact with the soil (CDFG 2010d). They are not present in locations where soils are saturated or periodically inundated. The CNDDDB identifies Marin blind harvestman as critically imperiled and at very high risk of extinction. The only reported occurrence of this species is from specimens collected between 1968 and 1986 under serpentine rocks on a grassy hillside along San Marin Drive in Novato, California (CDFG 2010c). The probability of occurrence in the project area is very low since suitable rock habitat is extremely scarce.

Robust walker (*Pomatiopsis binneyi*) – Information regarding this snail species is very limited and like the preceding species, is identified as critically imperiled and at very high risk of extinction by the CNDDDB. It is found in aquatic habitats and has been reported to occur in springs at Potrero Meadows on Marin Water District land and at a non-specific location identified as Bolinas (Perez et al. 2004, CDFG 2010c). Based on existing information, no suitable habitat for this species occurs in the project area.

California freshwater shrimp (*Syncaris pacifica*) – This federally and state Endangered species occurs only in 23 stream segments within Sonoma, Napa and Marin Counties (Martin et al. 2009, USFWS 2007). The California freshwater shrimp is the State's only native, stream-dwelling shrimp (CDFG 2010e). Individuals are generally less than 3 inches in length and are found in reaches that are structurally diverse with undercut banks, exposed roots, overhanging woody debris, or overhanging vegetation. It is known to inhabit Lagunitas Creek, but has not been reported to inhabit Devil's Gulch (CDFG 2010c, USFWS 2007). Suitable riparian habitat could occur in Devil's Gulch.

Marin hesperian (*Vespericola marinensis*) – Various shell populations of the Marin Hesperian, a terrestrial snail, have been identified throughout the Point Reyes Peninsula and surrounding region, primarily near or adjacent to the coast (Conchologists of America, Inc. 2010). Reported habitat preferences include the underside of logs and bark. The CNDDDB identifies Marin hesperian as imperiled to vulnerable and at high to moderate risk of extinction. The closest reported occurrence

is about 1.4 road miles west of Lagunitas (CDFG 2010c). Suitable habitat for Marin Hesperian could occur in the project area.

FISH

Tomales roach (*Lavinia symmetricus*) – This California Species of Special Concern (SSC) fish species occupies a variety of habitat types from cool headwater streams to warm water lower reaches of streams (Moyle 2002). Tomales roach occurs in streams that empty into Tomales Bay, including Lagunitas Creek, where it inhabits gravel, sand, and bedrock substrates under canopies ranging from redwood to white alder/ Oregon ash/California bay laurel (CDFG 2010c). Suitable habitat for Tomales Roach occurs in Devil's Gulch.

Steelhead - Central California Coast DPS (distinct population segment) (*Oncorhynchus mykiss*) – This unique fish species consist of two forms; rainbow trout stays in freshwater for their entire life cycle; whereas, the steelhead, , migrates to the ocean and returns to spawn in its natal stream. Steelhead is federally listed as Threatened (NOAA 2010a). The migration from freshwater streams into a marine environment and then returning to the streams of their birth in order to mate is known as anadromy.

Juvenile steelhead can spend up to seven years in freshwater streams before migrating to estuarine areas as smolts, then into the Pacific Ocean to feed and mature (NOAA 2010a). Steelhead can then remain in the ocean for up to three years before returning to spawn in freshwater. Unlike some other anadromous fish, steelhead can spawn more than once.

Lagunitas Creek and its tributary, Devil's Gulch, support populations of steelhead (CDFG 2010c, MMWD 2010). Both of these streams have been federally designated as critical habitat for central California coast DPS steelhead by NOAA's National Marine Fisheries Service (NOAA 2010b).

Coho salmon - Central California Coast ESU (evolutionarily significant unit) (*Oncorhynchus kisutch*) – This anadromous fish species is federally listed as Endangered (NOAA 2010c). Coho salmon spend the first half of their life cycle maturing and feeding in freshwater streams; the remainder of the life cycle is spent foraging in estuarine and marine waters of the Pacific Ocean. Adults return to their stream of origin to spawn and die, usually at three years of age.

Lagunitas Creek and its tributary Devil's Gulch support populations of central California Coast Coho salmon (CDFG 2010c, MMWD 2010). Both of these streams have been federally designated as critical habitat for central California coast ESU Coho salmon by NOAA's National Marine Fisheries Service (NOAA 2010d).

AMPHIBIANS

Foothill yellow-legged frog (*Rana boylei*) – This SSC requires shallow, flowing water in small to moderate-sized streams with at least some cobble-sized substrate (Jennings and Hayes 1994). Foothill yellow-legged frogs are usually found in or near water. The CNDDDB records an occurrence of foothill yellow-legged frog in Devil's Gulch.

California red-legged frog (*Rana draytonii*) – This federally listed Threatened and SSC is the largest native frog in the western United States (USFWS 2002). Adult red-legged frog habitat consists of aquatic, riparian, and upland areas; they often use vegetation around deep pools with slow moving water, cattails, and overhanging vegetation. In colder areas, they can hibernate in burrows during the winter. They remain active during the summer if access to permanent water is available. Some frogs remain at or close to their breeding sites year round, while others disperse to non-breeding habitat. There is no breeding habitat for California red-legged frog in SPTSP; however, potentially suitable non-breeding terrestrial habitat occurs in the park unit and the project area.

REPTILES

Northwestern pond turtle (*Actinemys marmorata marmorata*) - Northwestern pond turtle is a SSC that inhabits still or slow moving aquatic habitats with submerged or emergent vegetation, requires open basking areas and sandy or loose soil sites to lay eggs (Jennings and Hayes 1994; Stebbins 2003). Mating usually occurs in April and May and females then lay eggs in upland nest locations. Nests must have sufficient internal humidity for eggs to develop and hatch properly (Jennings and Hayes 1994). Suitable nesting habitat for northwestern pond turtle is not present within the project area.

BIRDS

All raptor species and their nests are protected under Fish and Game Code §3503.5. Migratory, non-game native bird species are protected under the Migratory Bird Treaty Act (MBTA), described on Page 80. These protections prohibit the take (including disturbances which would cause abandonment of active nests containing eggs and/or young) of all birds and their active nests.

Raptors

The project area contains potential foraging and/or nesting habitat for the following raptor species:

Cooper's hawk (*Accipiter cooperi*) and **Sharp-shinned hawk (*Accipiter striatus*)** – These medium-sized hawks are similar in general appearance; both are listed as SSC by the CDFG. Their diet primarily consists of small to medium-sized birds and small mammals; both utilize a quick burst of speed to capture their prey (The Peregrine Fund 2010). Cooper's Hawks inhabit dense canopied evergreen and deciduous forests or riparian zones, establishing stick nests in large trees on more level ground. Sharp-shinned hawks inhabit a wide range of habitats, including riparian areas and coniferous forests. Both species build stick nests in dense stands of trees.

Northern harrier (*Circus cyaneus*) – This SSC is larger than the *Accipiter* hawks and prefers more open habitat such as grasslands (The Peregrine Fund 2010). Northern harriers prey on mammals, birds, reptiles, insects, and carrion by using a low, slow flight over the ground, then plunging on to their prey. They nest on or near the ground in dense grass, shrubs, or other vegetation.

White-tailed kite (*Elanus leucurus*) – This Fully Protected species is similar in size to Cooper’s Hawk, but like the northern harrier prefers open habitat types such as grasslands (The Peregrine Fund 2010). White-tailed kites prey on small mammals such as mice and voles, but will occasionally hunt birds, reptiles, and amphibians. Their characteristic hunting behavior consists of soaring, flapping, or hovering flight, then swooping down onto their prey. They build stick nests in the forks of trees or shrubs.

Merlin (*Falco columbarius*) – Merlins inhabit forests and grasslands, hunting small to medium birds, but also preying on bats, insects, and small rodents (The Peregrine Fund 2010). This falcon species usually catches prey in the air after swooping from a perch or while flying low over the ground. Merlins utilize abandoned stick nests from crows, magpies, and hawks or nest on cliff ledges and in natural cavities.

Peregrine falcon (*Falco peregrinus anatum*) – This state Endangered species lives in a wide variety of habitats, usually near water (The Peregrine Fund 2010). Its primary prey consists of other birds such as starlings, pigeons, blackbirds, jays, shorebirds, and waterfowl. Prey is typically captured in the air after a fast pursuit, often a rapid dive to catch the prey. Nests are established on rocky ledges near water. There is no suitable nesting habitat for peregrine falcons in or adjacent to the project area, although foraging habitat is available.

Northern spotted owl (*Strix occidentalis caurina*) – Northern spotted owl is a federally threatened and SSC that typically inhabits mature coniferous forests containing the structural characteristics required for nesting, roosting, and foraging (USFWS 2010b). These characteristics include a multi-layered, multi-species canopy with moderate to high canopy closure. This owl hunts mainly at night by swooping down from a higher perch and preying primarily on small mammals like flying squirrels, wood rats, mice, voles, some birds, reptiles, amphibians, and insects. Nests typically consist of cavities, old stick nests, or clumps of debris located in trees, on cliffs or ledges, or inside caves.

Northern spotted owls are known to nest in the park unit.

Migratory birds

Vaux’s swift (*Chaetura vauxi*) – This SSC is a summer resident of northern California and prefers redwood and Douglas-fir habitats. Nest sites are found in large hollow trees and snags, especially tall, burned-out stubs (Shuford and Gardali 2008, Zeiner et. al. 1990a). The Douglas-fir habitat in the project area provides suitable breeding habitat for this species.

Yellow warbler (*Dendroica petechia brewsteri*) – Yellow warbler is a migratory SSC that usually breeds in summer in riparian deciduous habitats, such as cottonwoods, willows, alders, and other small trees and shrubs typical of low open-canopy riparian woodland (Shuford and Gardali 2008, Zeiner et. al. 1990a). Potentially suitable breeding habitat occurs in Devil’s Gulch.

Purple martin (*Progne subis*) – This SSC is an uncommon summer resident of wooded, low-elevation habitats throughout the state, including Douglas-fir and redwood (Shuford and Gardali 2008, Zeiner et. al. 1990a). Aerial insects are a primary food source; Devil’s Gulch provides potentially suitable habitat for this species.

MAMMALS

Bat Species

Pallid bat (*Antrozous pallidus*); **western red bat** (*Lasiurus blossevillii*); **silver-haired bat** (*Lasionycteris noctivagans*); **long-eared myotis** (*Myotis evotis*) **Yuma myotis** (*Myotis yumanensis*) – Pallid bat and western red bat are listed as SSC by the CDFG; the other three species have no listing status, but are considered species of interest by Regulatory agencies. Preferred habitat includes tree cavities, the underside of bridges, and rock crevices (Organization for Bat Conservation 2010, Zeiner et. al. 1990b). Suitable roosting and/or breeding habitat are potentially available within the project area for these bat species.

Point Reyes mountain beaver (*Aplodontia rufa phaea*) – This SSC is only known to occur in western Marin County (NPS 2010). This species was historically collected in Lagunitas Creek just south of the park (CDFG 2010c). However, during a survey conducted during 1979-83, the closest populations of Point Reyes mountain beaver were located on the Point Reyes Peninsula, and none were found in Lagunitas Creek near the park (Steele, 1989). Although suitable habitat exists within the project area, the Point Reyes mountain beaver is unlikely to occur this distance from the Point Reyes Peninsula.

American badger (*Taxidea taxus*) – This SSC occurs primarily in grasslands, parklands, farms, and other treeless areas with friable soil (i.e. breaks or crumbles easily) and a supply of rodent prey (USFS 2010). American badger could occur in the park unit; however, no suitable denning habitat is available.

4.3.3. Regulatory Setting

The project area includes biological resources that are protected and/or regulated by state and federal laws, regulations, and policies. This section discusses potential impacts and permit requirements associated with “waters of the U.S.”, sensitive natural plant communities, and species currently listed or proposed for listing as threatened or endangered under the State or Federal Endangered Species Acts, as well as special-status plant and wildlife species not currently listed or proposed for listing. Prior to implementation, it would be necessary for the proposed project to be in compliance with these laws, regulations, and policies.

Applicable Federal laws and regulations pertaining to plants, wildlife, and wetlands/waters of the U.S. include the following:

- Federal Endangered Species Act
- Migratory Bird Treaty Act
- Bald and Golden Eagle Protection Act
- Clean Water Act

Federal Endangered Species Act (ESA)

The primary federal law protecting threatened and endangered species is the Federal ESA (16 United States Code Section 1531, et seq. and 50 CFR Part 402). The ESA and its amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. The USFWS has regulatory authority over projects that may result in take of a federally listed species. Section 3 of

the ESA defines take as “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct.” Under federal regulation, take is further defined to include habitat modification or degradation where it results in death or injury to wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. If incidental take is a possibility, then a Biological Opinion is prepared for take of listed species under Section 7 of the ESA. An incidental take permit can be authorized by the USFWS.

Migratory Bird Treaty Act and Bald and Golden Eagle Protection Act

The Migratory Bird Treaty Act (MBTA) establishes a Federal prohibition to pursue, capture, kill, possess, sell or purchase, transport, or export any migratory bird or any part, nest, or egg of any such bird (16 U.S.C 703). This Act was established in 1918 to try to end the commercial trade in birds and their feathers that were severely impacting populations of many native bird species. A list of migratory birds protected under this Act is provided in Title 50 of the Code of Federal Regulations, Section 10.13. The Bald and Golden Eagle Protection Act prohibits any form of take, possession, or commerce in bald or golden eagles, including disturbance.

Clean Water Act (CWA)

The federal Clean Water Act (CWA) was established in 1972 to maintain the chemical, physical, and biological integrity of the nation’s waters [Federal Water Pollution Control Act/Clean Water Act, 33 U.S.C. 1251, §101(a), 2002]. It was also intended to provide a mechanism for regulating discharges of pollutants into the waters of the U.S and gave the USEPA authority to implement pollution control programs, such as setting wastewater standards for industry and water quality standards for all contaminants in surface waters.

Section 400 *et seq.* of the Clean Water Act applies to permits and licenses required for activities that may impact the nation’s surface water (waters of the U.S.). Activities that might result in any discharge into navigable waters are covered under CWA Section 401.

The California State Water Resources Control Board (SWRCB) and Regional Water Quality Control Board’s (RWQCB) enforce the federal Clean Water Act, including administration of the National Pollutant Discharge Elimination System (NPDES) permits for various discharges into waters of the U.S. (CWA §402). The new NPDES Stormwater Phase II requires implementation of BMPs to maintain water quality control of runoff from (post-construction) operations, in addition to construction-related discharge protections. A Notice of Intent (NOI) is filed with the SWRCB when a project is subject to an NPDES permit and a Stormwater Pollution Prevention Plan (SWPPP) must be approved prior to the start of work.

Waters of the U.S. are also subject to Section 404 of the CWA. Section 404 establishes a requirement to obtain a permit prior to any activity that involves any discharge of dredged or fill material into the waters of the U.S., including wetlands. In general, if the fill to be placed into waters of the U.S. is limited to an area of no more than 0.2 ha (0.5 ac), such fill can be approved through the USACE Nationwide Permit (NWP) Program.

USACE districts use NWP's to authorize categories of activities with minimal effects on the aquatic environment.

Applicable State laws and regulations pertaining to plants and wildlife include the following:

- California Environmental Quality Act
- California Endangered Species Act
- California Native Plant Society
- Sections 1601 to 1603 of the Fish and Game Code
- Sections 1900 to 1913 of the Fish and Game Code
- Sections 4150 and 4152 of the Fish and Game Code
- Section 3503.5 of the Fish and Game Code

California Environmental Quality Act

CEQA Guidelines Section 15380: Although Threatened and Endangered species are protected by specific federal and State statutes, *CEQA Guidelines* Section 15380(b) provides that a species not listed on the federal or State list of protected species may be considered Rare or Endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after the definition in the federal Endangered Species Act and the section of the California Fish and Game Code dealing with Rare or Endangered species. Section 15380 (b) was included in the guidelines primarily to deal with situations in which a public agency is reviewing a project that may have a significant effect on a species that has not yet been listed by either the USFWS or CDFG. Thus, CEQA provides a lead agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

California Endangered Species Act

The California Endangered Species Act (CESA) emphasized early consultation to avoid potential impacts to rare, threatened, and endangered species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats (California Fish and Game Code, Section 2050, et seq.). The CDFG is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits take of any species determined to be an endangered or threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." It does not include "harm" or "harass" as provided under the federal ESA. CESA allows for take incidental to otherwise lawful activities; for these actions an incidental take permit is issued by CDFG. For projects requiring a Biological Opinion under Section 7 of the ESA, CDFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

California Native Plant Society

The California Native Plant Society (CNPS), a non-governmental conservation organization, has developed lists of plants of special concern in California. A CNPS List 1A plant is a species, subspecies, or variety that is considered to be extinct. A List 1B plant is considered Rare, Threatened, or Endangered in California and elsewhere. A

List 2 plant is considered Rare, Threatened, or Endangered in California but is more common elsewhere. A List 3 plant is a species for which CNPS lacks necessary information to determine if it should be assigned to a list or not. A List 4 plant has a limited distribution in California. All of the plant species on List 1 and List 2 meet the requirements of Section 1901, Chapter 10 (Native Plant Protection Act) or Sections 2062 and 2067 (California Endangered Species Act) of the CDFG Code, and are eligible for State listing. Therefore, plants appearing on Lists 1 or 2 are considered to meet CEQA's Section 15380 criteria.

California Department of Fish and Game

California Department of Fish and Game Code: The following sections of the CDFG Code apply to the proposed project:

- *California Fully Protected and Protected Species.* California fully protected and protected species may not be taken or possessed without a permit from the Fish and Game Commission and/or the CDFG. These take permits do not allow "incidental take," except in limited circumstances, and are more restrictive than the take allowed under Section 2081 for the California Endangered Species Act. Information on fully protected species can be found in the Fish and Game Code (birds at Section 3511, mammals at Section 4700, reptiles and amphibians at Section 5050, and fish at Section 5515). Information on protected (as opposed to fully protected) amphibians can be found in Chapter 5, Section 41; protected (as opposed to fully protected) reptiles at Chapter 5, Section 42.
- *California Fish and Game Code Sections 3503, 3503.5, and 3513.* The CDFG Code (cited sections) protects the nests and eggs of birds, including raptors (Falconiformes and Strigiformes) and the migratory bird species protected under the Migratory Bird Treaty Act.
- *California Fish and Game Code Section 1600.* The CDFG also administers the issuance of Streambed Alteration Agreements under the CDFG Code Section 1600. Streambed Alteration Agreements are required any time project activities would substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated as such by CDFG.
- *The Native Plant Protection Act (NPPA) of 1977 (Fish and Game Code Section 1900-1913)* directed the CDFG to carry out the Legislature's intent to "preserve, protect, and enhance rare and endangered plants in this State." The NPPA gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protected endangered and rare plants from take.

4.3.4. Thresholds of Significance

The following thresholds have been prepared based on Appendix G and Section 15065 of the State CEQA Guidelines. The Project would have a significant impact on biological resources if it would:

- BIO 1: 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?

- BIO 2: 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?
- BIO 3: Have a substantial adverse effect on federally protected wetlands, as defined by §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?
- BIO 4: 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?
- BIO 5: Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
- BIO 6: Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans.

4.3.5. Methodology

All sensitive species and their habitats were evaluated for potential impacts from this project. DPR staff collected and reviewed existing available data to determine the proximity of sensitive plants, animals, and their habitats to the project area. Staff conducted a query of the California Department of Fish and Game's Natural Diversity Database (CNDDDB 2010c) for the San Geronimo and all adjacent 7.5-minute USGS quadrangles. These included: San Rafael, Bolinas, Inverness, Point Reyes NE, Novato, Petaluma River, Petaluma, and Double Point. An official U. S. Fish and Wildlife Service (USFWS) species list for Marin County was also reviewed. A list of special-status plant species potentially occurring in the area were derived from the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants of California (CNPS 2010) for the USGS quadrangles identified above.

Information on special-status species was obtained through discussions with California Department of Parks and Recreation (DPR) biologists, literature review, and on-site reconnaissance-level surveys. Multiple visits by DPR biologists were conducted to: survey and map for special status plants and to assess potential habitat for special status wildlife species.

4.3.6. Environmental Impacts, Project Requirements, and Mitigation Measures

Impact Statement BIO 1 (Wildlife Species): Would Construction activities associated with the proposed project have a potential adverse effect, either directly or through habitat modification, on any species identified as a sensitive, candidate, or special status species in local or regional plans, policies, or regulations, or by the CDFG or the USFWS?

Marin blind harvestman

This arachnid species is reported to occur in mesic habitat under medium to large sized rocks. Although unlikely to occur within the project area, there is limited habitat for this species in moist, rocky project locations. Project activities could potentially impact this species. Integration of **Project Specific Requirement BIO-1.1**, Marin blind harvestman, into design plans will ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation: Less than significant.
Mitigation Required: None

Marin hesperian

Suitable terrestrial habitat for this snail species exists within the project area, which includes the underside of logs and bark. Project activities could potentially impact this species; however; integration of **Project Specific Requirement BIO-1.2**, Marin hesperian, into design plans will ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation: Less than significant.
Mitigation Required: None

California freshwater shrimp, Tomales roach, steelhead, Coho salmon, foothill yellow-legged frog

The federally and State Endangered California freshwater shrimp is a species that is known to inhabit Lagunitas Creek; potentially suitable habitat occurs in Devil's Gulch. The Tomales roach is a CDFG listed SSC freshwater fish species that is known to occur in the park unit and could inhabit Devil's Gulch. Both the federally Threatened steelhead (Central California Coast DPS) and federally and State Endangered Coho salmon (Central California Coast ESU) are known to occur in Devil's Gulch. Foothill yellow-legged frog is a SSC that has been reported in Devil's Gulch; there is a potential for this species to occur in the project area.

Although no project activities would directly impact habitat for these species, the absence of erosion control measures could potentially release sediment and construction materials into Devil's Gulch. However, integration of **Standard Project Requirement HYDRO-1**, Best Management Practices to Control Erosion and Sedimentation, into design plans would ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation: Less than significant.
Mitigation Required: None

California red-legged frog

There is no breeding habitat for California red-legged frog in SPTSP; however, potentially suitable non-breeding terrestrial habitat occurs in the project area. Potential impacts could occur if an individual moves from breeding habitat outside of the park unit and enters the project area. Integration of **Standard Project Requirement BIO-1.3**, California Red-legged Frog, into design plans would ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation: Less than significant.
Mitigation Required: None

Northern spotted owl

Suitable nesting habitat for the federally threatened and CDFG listed SSC northern spotted owl occurs within portions of the project area. No trees with the required nesting characteristics (see Special status wildlife species above) would be removed for this project; however, breeding spotted owls could be disturbed by noise from construction activities. Integration of **Standard Project Requirement BIO-1.4, Northern Spotted Owl**, into design plans would ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation:	Less than significant.
Mitigation Required:	None

Other Raptor Species and Migratory Birds

Sensitive raptor species such as northern harrier, Cooper's hawk, sharp-shinned hawk, merlin, white-tailed kite, and the State Endangered Peregrine falcon could be present and nesting in or near the project area. Raptors and their nests are protected under the Fish and Game Code (Section 3503.5).

Sensitive migratory bird species such as the CDFG listed SSC purple martin, Vaux's swift, and yellow warbler could be present and nesting in or near the project area. Migratory non-game native bird species are protected under the federal Migratory Bird Treaty Act.

Breeding raptors and migratory birds could be disturbed by noise and/or visual disturbances from construction activities. Integration of **Standard Project Requirement BIO-1.5, Nesting Raptors and Migratory Birds**, into design plans would ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation:	Less than significant.
Mitigation Required:	None

Bat species

The project area is within the potential range of two bat species of special concern; tree-roosting bat species, including pallid bat and western red bat, and three considered species of interest; silver-haired bat, long-eared myotis, and Yuma myotis. No trees would be removed during the bat maternity season; however, project activities with excessive noise could impact bats in or near the project area. Integration of **Standard Project Requirement BIO-1.6, Bat Species**, into design plans would ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation:	Less than significant.
Mitigation Required:	None

Impact Statement BIO 2: Would construction activities associated with the proposed project have a potential adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the CDFG or the USFWS.

Sensitive Natural Plant Communities

Alnus rhombifolia and *Pseudotsuga menziesii* Forest Alliances are considered sensitive natural plant communities because they provide valuable habitat for special status wildlife species. Project activities such as grading trail surfaces could create significant impacts to these communities by severing tree roots. Maintenance including periodic vegetation removal along Bill's Trail is a baseline condition. All proposed work along Bill's Trail will be performed within the existing trail profile; therefore vegetation removal as part of this project would be considered no impact. Some vegetation removal could occur along Gravesite Fire Road; however integration of **Standard Project Requirement BIO-2.1**, Sensitive Natural Plant Communities, into design plans would ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation:	Less than significant.
Mitigation Required:	None

Sudden Oak Death

Sudden Oak Death, as described in Section 4.3.1.1 Vegetation and Wildlife Habitat, is known to occur in SPTSP. Many of the tanoaks in the park and surrounding locations have been affected by Sudden Oak Death (SOD), resulting in numerous dead and dying trees. Within the project area this is limited to forested areas in the central and upper portions of the Road and a few isolated stands of tanoaks and live oaks along the lower portion of the road. Integration of **Standard Project Requirement BIO 2.2**, Sudden Oak Death BMPs, into design plans would ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation:	Less than significant.
Mitigation Required:	None

Impact Statement BIO 3: Could construction activities associated with the proposed project have a potential adverse effect on federally protected wetlands as defined by the Clean Water Act (Section 404), including, but not limited to marsh, vernal pool, coastal, etc., through direct removal, filling, sedimentation, hydrological interruption, or other means?

Wetlands, Riparian Zones, and Waters of the U.S.

The proposed project would include construction activities that include the placement of fill material within the ordinary high water mark of three perennial streams and three intermittent streams that are jurisdictional "waters of the United States", as defined in Section 404 of the federal Clean Water Act. These streams are subject to Section 404 regulation by the U.S. Army Corps of Engineers (USACE). Integration of **Standard Project Requirement BIO 3**, Wetlands, Riparian Zones, and Waters of the U.S., would ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation:	Less than significant.
Mitigation Required:	None

4.3.7. Effects Considered No Impact or Less than Significant without Project Requirements

No Impact and Less Than Significant impact determinations are based on the CEQA Guidelines Section 15064.5 and Table B-2 of Appendix B.

Impact Statement BIO 1 (Plant Species): Construction activities associated with the proposed project would have a potential adverse effect, either directly or through habitat modification, on any species identified as a sensitive, candidate, or special status species in local or regional plans, policies, or regulations, or by the CDFG or the USFWS.

Suitable habitat is available within or adjacent to the project area for 19 special status plant species. The CNDDDB reports an occurrence of the shrub western leatherwood in Devil's Gulch; no other occurrences of special status plants species have been reported for the project area. Surveys for special status plants within the project area were conducted during 2010 to coincide with plant blooming periods. No special status plants were located in or adjacent to the project area; therefore, no impact.

Impact Statement BIO 5: Construction activities associate with the proposed project could conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

The proposed project would occur on State Park lands and is not subject to any city or county policies or ordinances; therefore, no impact.

Impact Statement BIO 6: Construction activities associate with the proposed project could conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plans.

The proposed project would not 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 Habitat Conservation Plans (HCP) or Natural Community Conservation Plans (NCCP) are underway or approved which address the project area; therefore, no impact.

4.3.8. Findings

The proposed project could result in potentially significant impacts, as described above, to the biological resources within the project area, which encompasses Bill's Trail and portions of Gravesite Fire Road in SPTSP. However, with integration of project requirements biological impacts would ensure impacts remain at a less than significant level.

4.4. Greenhouse Gas Emissions and Climate Change

Global climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other significant changes in climate (such as precipitation or wind) that last for an extended period of time. In contrast to the Air

Quality Section that discusses local air issues, this section includes specific information on greenhouse gas emissions and climate change on a global scale as well as the local actions and decisions that incrementally contribute to increased greenhouse gas emissions leading to climate change.

Some gases in the atmosphere affect the Earth's heat balance by absorbing infrared radiation. Accumulation of greenhouse gases (GHGs) can prevent the escape of heat from the Earth in a similar manner as glass prevents heat escape from a greenhouse. This phenomenon is termed the "greenhouse effect" and it serves to maintain a habitable climate.

A detrimental effect can occur when concentrations of GHGs exceed the normal concentrations in the atmosphere. GHGs, such as carbon dioxide, methane, water vapor, nitrous oxide, ozone, hydro-fluorocarbons, per-fluorocarbons, and sulfur hexafluoride are believed to be most responsible for the greenhouse effect contributing to climate change. Of these GHGs, carbon dioxide (CO₂) and methane are emitted in the greatest quantities by humans. Emissions of CO₂ are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. There is international scientific consensus that human-caused increases in GHGs has and will continue to contribute to climate change (IPCC, 2007).

Unlike criteria air pollutants and toxic air contaminants (TAC) that are pollutants of local or regional concern, GHGs are global pollutants. Pollutants with localized air quality effects have relatively short atmospheric lifetimes, about a day, while GHGs have relatively long atmospheric lifetimes, 1 year to several thousand years – long enough to be dispersed around the globe. The lifetime of any specific GHG is dependent on multiple variables and cannot be pinpointed. Scientists understand that more CO₂ is emitted into the atmosphere that is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO₂ emissions: approximately 54% is sequestered through ocean uptake, uptake by northern hemispheres forest regrowth, and other terrestrial sinks within a year; the remaining 46% is stored in the atmosphere (Seinfeld and Pandis, 1998)

The rising temperatures resulting from GHGs has the potential to alter the climate, resulting in impacts such as loss in snow pack, sea level rise, increased drought years, extreme heat days, high ozone days, and large forest fires (CARB, 2006c).

4.4.1. Existing Conditions

Unlike criteria air pollutants and toxic air contaminants (see Section 4.3.2 Air Quality) that are pollutants of local or regional concern, GHGs are global pollutants. Some GHGs such as carbon dioxide occur naturally and are emitted to the atmosphere through natural processes and through human activities. Naturally occurring greenhouse gasses include water vapor, carbon dioxide, methane, nitrous oxide, and ozone.

- *Water Vapor* - Water Vapor is the most abundant greenhouse gas in the atmosphere. Changes in its concentration are considered a result of climate feedback loops rather than a direct result of human activities. The feedback loop that involves water is critically important to projecting future climate change.

Feedback Loop

As the temperature of the atmosphere rises more water is evaporated from the earth. Warm air increases the absolute humidity leading to more water vapor in the atmosphere absorbing thermal energy radiated from the earth. This is referred to as a 'positive feedback loop'.

Scientific uncertainty exists in defining the extent and importance of this feedback loop. As water vapor increases in the atmosphere, it eventually condenses into clouds at increasing amounts reflecting incoming solar radiation and allowing less energy to heat the Earth's surface.

- *Nitrous Oxide* - Nitrous oxide (N₂O) is produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests. Concentrations of nitrous oxide began to rise at the beginning of the industrial revolution and is understood to be produced by reactions that occur in fertilizer containing nitrogen. Increasing use of these fertilizers has been made over the last century (NOAA).
- *Ozone* – Ozone (O₃) is a gas present in both the upper stratosphere, where it shields the Earth from harmful levels of ultraviolet radiation, and at lower concentrations in the troposphere, the air closest to the Earth's surface, where it forms through chemical reactions between pollutants from vehicles, factories, fossil fuels combustion, evaporation of paints and many other sources. Key Pollutants involved in ozone formation are hydrocarbon and nitrous oxide gases (CARB). Sunlight and hot weather cause the ground-level ozone to form in harmful concentrations and is the main component of anthropogenic photochemical "smog." (USEPA).

Other greenhouse gases (e.g., fluorinated gases) are created and emitted solely through human activities.

- *Fluorinated Gases*: Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic, powerful greenhouse gases that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting substances (i.e., CFCs, HCFCs, and halons). These gases are typically emitted in smaller quantities, but because they are potent greenhouse gases, they are sometimes referred to as High Global Warming Potential gases ("High GWP gases") (USEPA).
- *Carbon Dioxide* - Carbon dioxide enters the atmosphere through burning fossil fuels (oil, natural gas, and coal), solid waste, trees, wood products, and as a result of other chemical reactions (e.g., manufacture of cement).
- *Methane* – Anthropogenic sources of methane are emitted during the production and transport of coal, natural gas, and oil. Methane emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.

According to the County of Marin Countywide Plan (2007) nearly 3 million tons of CO₂ are emitted in the county annually. Vehicle traffic accounts for 50 percent of the total

emissions and energy use by buildings (residential, commercial and industrial combined) account for 44 percent.

4.4.2. Regulatory Setting

Various statewide and local initiatives to reduce the state's GHG emissions contribution have raised awareness that although the various contributors to and consequences of global climate change are not fully understood, there is a potential for severe adverse environmental, social, and economic effects in the long run.

Background

Over a decade ago, most countries joined an international treaty, the United Nations Framework Convention on Climate Change (UNFCCC), to begin to consider what can be done to reduce global warming and to cope with the physical and socioeconomic effects of climate change. More recently, a number of nations have ratified an amendment to the treaty: the Kyoto Protocol. The goal of the Kyoto Protocol is to achieve overall emissions reduction targets for six GHGs regulated under the Protocol (CO₂, CH₄, N₂O, HFCs, PFC, and SF₆) by 2012. As of November 2009, over 180 countries have ratified the Kyoto Protocol. Industrialized and developing nations have different requirements for GHG reductions. Each nation must reduce GHG emissions by a certain percentage below 1990 levels (e.g., 8 percent reduction for the European Union, 6 percent reduction for Japan). The average reduction target for nations participating in the Kyoto Protocol is approximately 5 percent below 1990 levels. The United States has not ratified the Kyoto Protocol.

In February 2002, the United States government announced a comprehensive strategy to reduce the GHG intensity²¹⁰ of the American economy by 18 percent over the 10-year period from 2002 to 2012. This strategy has three basic components: (1) slowing the growth of emissions, (2) strengthening science, technology and institutions, and (3) enhancing international cooperation.²⁰¹¹ The federal multi-agency programs for Climate Change Science and Climate Change Technology were established to investigate natural and human-induced changes in the Earth's global environmental system; to monitor, understand, and predict global change; to provide a sound scientific basis for national and international decision-making and to accelerate the development and deployment of key technologies to reduce GHG emissions. The U.S. EPA plays a role within the Climate Change Science Program by evaluating the potential consequences of climate variability and the effects on air quality, water quality, ecosystems, and human health in the United States.

Applicable Federal Regulations

Currently there are no adopted federal regulations to control global climate change or GHG emissions. However, recent court cases may change the voluntary approach to address global climate change and GHG emissions. On April 2, 2007, the United States Supreme Court ruled that the U.S. EPA has the authority to regulate CO₂ emissions under the federal Clean Air Act (CAA). The U.S. EPA is currently undertaking the rulemaking process that would establish GHG emissions from vehicles. On September 15, 2009, U.S. EPA and the Department of Transportation's National Highway Safety Administration proposed a national program that would reduce GHG emissions and

improve fuel economy for new cars and trucks sold in the United States. (U.S. EPA, 2011)

Applicable State Regulations

Executive Order S-03-05

Executive Order S-3-05 was signed by Governor Schwarzenegger in 2005 and proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total greenhouse gas emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020 and to 80% below the 1990 level by 2050.

Assembly Bill 32, the California Global Warming Solutions Act of 2006

Governor Schwarzenegger signed AB 32, the California Global Warming Solutions Act of 2006 in September 2006. AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2012. This reduction would be accomplished through an enforceable statewide cap on GHG emissions that would be phased in starting in 2012. To effectively implement the cap, AB 32 directs the Air Resources Board to develop and implement regulations to reduce statewide GHG emissions from stationary sources. AB 32 also includes guidance to institute emission reductions in an economically efficient manner and conditions to ensure that businesses and consumers are not unfairly affected by the reductions.

Senate Bill 97

Senate Bill (SB) 97, signed August 2007, acknowledges that climate change is a prominent environmental issue that requires analysis is under CEQA. This bill directs the California Office of Planning and Research to prepare, develop, and transmit to the Resources Agency guidelines for the feasible mitigation of GHG emission or the effects of GHG emissions, as required by CEQA by July 1, 2009. The Resources Agency is required to certify or adopt those guidelines by January 1, 2010. On April 13, 2009, OPR submitted to the Secretary of the Resources Agency its proposed amendments to the State CEQA Guidelines for GHG emissions. These proposed CEQA Guidelines amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of greenhouse gas emissions in draft CEQA documents. The adopted amendments to the State CEQA Guidelines include; provisions for determining significance of GHG emissions, mitigating significant GHG impacts, streamlining of CEQA analysis of GHG impacts, and additional questions in the Appendix G checklist.

California Air Resources Board

CARB has developed the Climate Change Scoping Plan (Scoping Plan) California's roadmap to reach the GHG reduction goals required in AB 32. The Scoping Plan has several strategies and recommended measures to reduce GHG emissions. One of these measures states that approximately one-fifth of the electricity consumed in

California is associated with water delivery, treatment, and use. GHG emissions can be reduced if California can move, treat, and use water more efficiently (CARB 2008).

Samuel P. Taylor State Park General Plan

DPR has not completed a General Plan for SPTSP ; however, the management approach for any unit of the State Park System, including SPTSP, is based on unit classification statutes specified in the California Public Resources Code (PRC) § 5019.50 through 5019.74. The statutes set forth the primary purpose of each classified unit, identify in general what types of facilities and uses could be permitted, and provide direction on how unit resources would be managed. The purpose of a State Park is to preserve outstanding resource values, species, and significant examples of California's ecological regions; each State Park would be managed as a composite whole to restore, protect, and maintain its native environmental complexes; improvements undertaken within a State Park would serve to make areas within the park unit available for public enjoyment and education in a manner consistent with resource preservation; and improvements could include recreational facilities as long as no major modification of land, forests, or waters occurs (PRC § 5019.53).

Cool Parks Initiative

The California Department of Parks and Recreation (DPR) has developed a "Cool Parks" initiative to address climate change within the State Park system. Cool Parks proposes that State Parks itself as well as resources under its care adapt to the environmental changes resulting from climate change. In order to fulfill the Cool Parks initiative, State Parks is dedicated to using alternative energy sources, low emission vehicles, recycling and reusing supplies and materials, and educating staff and visitors on climate change (DPR 2008).

DPR has proposed to measure its energy consumption (kilowatt hours of electricity, gallons of gasoline, diesel, propane, etc. that can be converted into tons of carbon emission) in addition to the dollars spent on that energy. Those numbers would be reported to the California Climate Action Registry and used to measure and reduce GHG emissions within the State Park System (DPR 2007).

Regional Regulations

The Bay Area Air Quality Management District Guidelines include Thresholds of Significance for Greenhouse Gases at the Project level for operational-related GHG emissions. The District does not have an adopted Threshold of Significance for construction-related GHG emissions. The Guidelines direct Lead Agencies who are preparing CEQA documents to quantify and disclose GHG emissions that would occur during construction, make a determination on the significance of these construction-generated GHG emission impacts in relation to meeting AB 32 GHG reduction goals, as required by the Public Resources Code, Section 21082.2. They also encouraged agencies to incorporate best management practices to reduce GHG emissions during construction.

4.4.3. Thresholds of Significance

The following thresholds have been prepared based on the CEQA Guidelines Section 15064.5 and Appendix G. The Project would have a significant impact on Climate Change / Greenhouse Gases if it would:

- GHG 1: Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.
- GHG 2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The quantity of GHGs that it takes to ultimately result in climate change is not known; no single project alone would measurably contribute to a noticeable incremental change in the global average temperature or to global, local, or micro climate. From a CEQA perspective, GHG impacts to global climate change are inherently cumulative.

For land use development projects, the BAAQMD threshold is compliance with a qualified GHG Reduction Strategy ; or annual emissions less than 1,100 metric tons per year (MT/yr) of CO₂e; or 4.6 MT CO₂3/SP/yr (residents + employees). Land use development projects include residential, commercial, industrial, and public land uses and facilities.

For stationary-source projects, the BAAQMD threshold is 10,000 metric tons per year (MT/yr) of CO₂e. Stationary-source projects include land uses that would accommodate processes and equipment that emit GHG emissions and would require an Air District permit to operate.

If annual emissions of operational-related GHGs exceed these levels, the proposed project would result in a cumulatively considerable contribution of GHG emissions and a cumulatively significant impact to global climate change.

4.4.4. Environmental Impacts, Project Requirements, and Mitigation Measures

Impact Statement GHG 1: Generate greenhouse gas emissions, either directly or indirectly that could have a significant impact on the environment?

Samuel P. Taylor SP approximates the “city park” Land Use Type identified by the BAAQMD, the City Park Land Use Type screening level criteria was applied to the Bill’s Trail project to determine if the project would have to be subjected to a detailed air quality assessment. The comparison between the City Park Land Use Type screening criteria and the Bill’s Trail project are as shown in **Table 4.4.1** below:

Table 4.4.1 Operational Criteria			
	Pollutant Screening	Operational GHG	Construction-Related
Land Use Type	Size	Screening Size	Screening Size
BAAQMD City Park	2613 acres (ROG)	600 acres	67 acres (PM 10)
Bills Trail Project – Samuel P. Taylor SP	6 acres	6 acres	6 acres

Because the project does not exceed any BAAQMD screening level criteria categories for a city park, a detailed air quality assessment of the project's air pollutant emissions is not required. The project does not include any stationary sources.

The Trail Change in Use Project construction period will last approximately 3 months. Equipment used in construction, including one excavator (estimated total use time of 40 hours), one dozer crawler (estimated total use time 40 hours), one vibratory compactor (estimated use time 1 hr per day), one chainsaw (estimated total use time 15 hours), one light pickup, one dump truck, one crew van, grader, large dozer and 3 tracked toters (estimated use time 6 hours/day each) could contribute to a temporary increase in CO₂ and N₂O levels, both components of GHG. **Standard Project Requirement AIR 1** would require all construction related equipment engines to be maintained in proper tune (according to manufacturer's specifications), and in compliance with all state and federal requirements. This requirement is designed to reduce construction-related emissions of CO₂ and N₂O.

The transportation sector is the largest contributing element of GHG emissions. As Samuel P. Taylor SP currently has trails open to biking, hiking and equestrians, there is no anticipated increase in visitation as a result of this project; therefore vehicle trips to and from the park are not expected to vary from existing levels.

Level of Significance Before Mitigation:	Less than Significant
Mitigation Measures:	None

4.4.5. Effects Considered No Impact or Less Than Significant Without Project Requirements

The following describes environmental effects that were determined to be less than significant without Project Requirements or no impact; therefore, they are not discussed in detail in the Draft EIR:

Impact Statement GHG 2: Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

The proposed project would not conflict with any applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions. While this proposed project involves the use of equipment and materials that can contribute to GHG levels as discussed above, integration of **Standard Project Requirement AQ 1** is adhering to the principle of the plans, policies and regulations to reduced GHG emissions.

4.4.6. Findings

The Trail Change in Use Project does not exceed BAAQMD screening level criteria for GHG; therefore quantification of project-related emissions is not necessary. The project is of short construction duration and releases of construction-related GHGs would only affect the environment for a short period of time. **Standard Project Requirement AQ 1** is integrated into the project description in order to maximize the reduction of emissions of internal combustion equipment during construction. The project is to improve an existing trail; no new facilities or stationary sources of GHG's are included in the project. Increases in visitation resulting from this project are not expected; therefore no

additional vehicle trips are anticipated. Impacts from project-related GHG's will be at insignificant levels.

4.5. Cultural Resources

This section includes specific information on the historical and archaeological resources in the project's area of potential effect (APE) and potential impacts to these resources.

4.5.1. Existing Conditions

SPTSP consists of approximately 2,685 acres located in the coastal hills of Marin County. The park is located 6.5 air miles west of the town of Fairfax and 2.5 air miles east of Olema. The rural community of Lagunitas sits on the east boundary of the park, while the town of Nicasio is just over the ridge to the northeast, 1.7 miles distant. Both Sir Francis Drake Boulevard and Lagunitas Creek bisect the park from southeast to northwest. The Cross-Marin Trail (see Recreation Section 4.8.3) parallels these features through the park.

The APE is in the northern half of the park, in the area drained by Devil's Gulch and Deadmans Gulch, a line around the two trail segments – Gravesite Fire Road and Bill's Trail -- encloses about 240 acres, but when considering the actual area of potential disturbance, approximately 52 acres is involved.

There are no known cultural resources within the 52 acre APE. However, there are recorded resources nearby.

Prehistory

Human habitation in the San Francisco Bay Area extends back 10,000 years. In all this time, cultural changes occurred in response to climatic and environmental changes. It was at about 8000 BC that the Pacific Ocean rose again to fill the valley that became the bay and eventually create the environment we know today. People who lived in the area had to adapt to these changes, using new technologies to wrest their living from the land. Archaeological evidence suggests different cultural responses to the conditions (Bickel 1978).

Breaks seen between the various culture periods suggest that they are the result of migrating waves of Penutian speakers possibly from the Great Basin. A changing environment, most likely the warming of the Great Basin and the drying of lakes, could have pushed the Penutian speakers and the culture markers associated with Emergent Period into Central California, as they gradually displaced native Hokan speakers of the Archaic Period. The increase in shore marshes and lagoons associated with sea-level rise provided the resources to support growth in populations (Moratto 1984: 219-223).

N. C. Nelson sampled middens all around the San Francisco Bay region, and developed an archaeological sequence for the North Bay Area (Nelson 1908; Moratto 1984: 233-234). In 1948 Beardsley expanded the Central California Taxonomic System (Table 4.5.1) (CCTS) to correlate Bay region sequences with those of the Delta, and Bennyhoff and Hughes (1987) further modified the time frames. In 1994, Frederickson synthesized the available data and adjusted the CCTS.

Period	Dates
Upper Emergent (Late Phase II)	1500 AD to 1800 AD
Lower Emergent (Late Phase I)	1000 AD to 1500 AD
Upper Archaic (Middle)	200 AD to 1000 AD
Upper Archaic (Transition)	500 BC to 300 AD
Middle Archaic (Early)	3000 BC to 500 BC
Lower Archaic	6000 BC to 3000 BC
Paleo-Indian	8000 BC to 6000 BC

These periods were likely defined by changes in both climate and technology. The following table (Table 4.5.2 from Stewart 2003:105) describes the characteristics of the hypothesized cultural periods.

Period Characteristics		
1800	Emergent Period Upper	Clam disk bead money economy appears. More and more goods moving farther and farther. Growth of local specializations re: production and exchange. Interpenetration of south and central exchange systems.
	Lower	Bow and arrow introduced, replace dart and atlatl; south coast maritime adaptation flowers. Territorial boundaries well established. Evidence of distinction in social status linked to wealth increasingly common. Regularized exchanges between groups continue with more material put into the network of exchanges.
1000 A.D.	Upper Archaic Period	Growth of sociopolitical complexity; development of status distinctions based on wealth. Shell beads gain importance, possibly indicators of both exchange and status. Emergence of group-oriented religious organizations; possible origins of Kuksu religious system and end of period. Greater complexity of exchange systems; evidence of regular, sustained exchanges between groups; territorial boundaries not firmly established.
500 B.C.	Middle Archaic Period	Climate more benign during this interval. Mortars and pestles and inferred acorn economy introduced. Hunting important. Diversification of economy; sedentism begins to develop; accompanied by population growth and expansion. Technological and environmental factors provide dominant themes. Changes in exchange or in social relations appear to have little impact.
3000	Lower Archaic Period	Ancient lakes dry up as a result of climatic changes; milling stones found in abundance; plant food emphasis, little hunting. Most artifacts manufactured of local materials; exchange similar to previous period. Little emphasis on wealth. Social unit remains the extended family.
6000 8000	Paleo-Indian Period	First demonstrated entry and spread of humans into California; lakeside sites with a probable but not clearly demonstrated hunting emphasis. No evidence of a developed milling technology although cultures with such technology may exist in state at this time depth. Exchange probably ad hoc on one-t-one basis. Social unit (the extended family) not heavily dependent on exchange; resources acquired by changing habitat.

Radiocarbon-dated finds between San Francisco Bay and Monterey Bay indicate that human beings were in the region as early as 8000 B.C. A Contra Costa County site (CA-CCO-308) situated near Walnut Creek was dated to 5000-2000 B.C. A new and distinctive culture of shore- and marsh-adapted people appeared after 2000 B.C. By the beginning of the Christian era, numerous villages were established throughout the San Francisco Bay region. David Fredrickson identified these settlements collectively as the "Berkeley Pattern," a variant of the "Windmill Pattern" from the interior valley and distinct from the late "Borax Lake Pattern" of the north coast ranges (Fredrickson 1973: 116-133).

Fredrickson's work in Contra Costa County, Gerow's excavation at University Village (CA-SMA-77), and Wallace and Lathrop's work at West Berkeley (CA-ALA-307) were the first indications of a Middle Archaic/Early Horizon component in the Bay Area. Several such sites have been excavated in Marin County. Two of the more important reports concerning this work are "Shelter Hill Archaeological Investigation at Mrn-14; Mill Valley, California" (Moratto, Riley and Wilson 1974) and "The Dead at Tiburon: Mortuary, Customs and Social Organization on Northern San Francisco Bay" (King 1970).

Closer to SPTSP, there has been extensive work on the Point Reyes Peninsula, originally initiated by Robert Heizer, University of California. While this work has established a culture sequence for West Marin, much of the focus at these sites was diverted by the discovery of 16th century artifacts, attributed to the visits of Sir Francis Drake and Sebastian Cermeño [see below] (Moratto 1983:234).

There was a dramatic increase in the number of sites occupied during the Emergent/Late Period, the components of which overlay those of the Archaic/Middle Period at a number of sites in Marin County (CA-MRN-158, CA-MRN-192 and CA-MRN-357). While the latter sites are all found along the bay-shore, Emergent/Late Period sites are found in many different niches.

Coast Miwok

The Coast Miwok territory centered in Marin and Sonoma counties. Barrett recognizes two distinct dialectic groups for the Coast Miwok, Western or Bodega and Southern or Marin groups. The Marin group is further divided into valley and coast. There was no overall tribal organization. Large villages had a non-hereditary headman but if settlements were grouped into meaningful, named clusters the clusters have not been recorded (Kelly 1978: 414).

The Coast Miwok territorial terrain was a mixture of part coast—low-lying, or with cliffs, and with extensive bays, lagoons, sloughs, and marshes—and part open valleys alternating with low hills. Vegetation ranged from salt-marsh plants to grasses, oaks, redwoods and pines. The acorn of the tanbark and valley oak was a vital subsistence item. Game included sea foods, deer and bear. The available resources allowed for an economy based on fishing, hunting and gathering with deer and crab available all year and other food seasonally. These foods included shellfish, surf fish, steelhead, salmon, birds, elk and rabbits (Kelly 1978: 415-416).

Large villages had substantial semi-subterranean circular sweat houses. In populous settlements, the so-called secret societies had a ceremonial chamber or dance house that was constructed in essentially the same way as the sweathouse. Dwellings were generally conical and grass covered. They were built on a frame of two forked, interlocking poles of willow or driftwood that were leaned with light, flexible poles lashed horizontally to the skeleton (Kelly 1978: 416).

Disk beads of clamshell were used as money. The shells were broken, roughly shaped and pierced using a pump drill prior to being strung. After they were strung, the beads were rubbed on a stone to refine the shape and give polish. Despite a substantial supply of clamshell currency, there is no indication of extensive trade with neighboring groups, though sometimes it was used to buy venison, obsidian and magnesite cylinders from the Pomo and yellow paint and obsidian from the Wappo. Most of the time, however, there seemed to be access agreements between the groups. The Coast Miwok traveled to Wappo country for medicinal plants and to South Pomo territory for turtles, willow, angelica and tobacco. In return, the Pomo visited the coast to fish and dig clams (Kelly 1978: 419).

A named village, Etcha-tamal, was located near the town of Nicasio, which reportedly was named for a Tamal Indian, Guequistabal, who was baptized as Nicasio (for Saint Nicausius) at Mission Dolores in 1802 (Millikin 1995).

Contact between Miwok and Europeans

The Marin Peninsula received two early visits from European seafarers. The first visit was reputedly by Sir Francis Drake in 1579, when he chose the leeward of Point Reyes as the site for repairing his ships and resting his crews. Drake's presence was cause for alarm to Spain. It became necessary for Spain to seek a safe port for the Manila ships on the California coast where they might recover their crews to join in combat with a potential attacker. They sent several expeditions along the west coast of the Americas to search out a refuge.

Sebastián Rodríguez Cermeño, while on one such voyage of discovery, reached the California coast near Trinidad Bay in early November 1592 and proceeded southward. A storm forced Cermeño to seek shelter under the lee of Point Reyes where he anchored in a bay that he named San Francisco (now known as Drake's Bay). Cermeño explored the Point Reyes area for several weeks; on November 30 a high wind battered his ship, the San Agustin, against the shore, ending any hopes for further exploration. Cermeño and his sailors left Drake's Bay in a longboat, leaving copious amounts of trade goods from Manila behind.

No further European visits to the area are known until after Mission Dolores was established in San Francisco in 1776. The Franciscan padres began reaching out to the natives of Marin by the late 1700s, and during the first decade of the 19th century were drawing neophytes from the northern reaches (Engelhardt 1897).

Tamal (Coast Miwok language): Over 170 neophytes baptized at Mission San Francisco between 1802 and 1810 were identified as Tamals. The word seems to have been used by some priests to indicate a tribe, by other priests as a general term for "northerners." Twentieth century Indian people of the Marin Peninsula remembered a village called

Etcha-tamal at Nicasio (Dietz [1976]). Most of the Tamal people who were baptized at Mission San Francisco from 1802 to 1803, and who came in to San Francisco with Habastos and Olemas, were probably from that area. However some people later baptized as Olema-Tamals, and other Tamals baptized in 1807-1809, may have come from areas farther north, on the east side of Tomales Bay. (Millikin 1995:255-256)

According to the Nicasio Historical Society website (www.nicasio.net):

With the closing of the mission at San Rafael in 1834, General Mariano Vallejo was appointed mission administrator. Governor Figueroa ordered Vallejo to compel the San Rafael Indians to take their choice of lands belonging to the mission. They chose Nicasio, and Vallejo set aside 80,000 acres to be their home and hunting grounds and supplied them with some of the cattle, sheep, horses, and implements from the mission stores...The Indians were soon placed under the care of Indian Agent Don Timoteo Murphy who took them to Nicasio. In spite of Murphy's concern for and protection of the Indians and a valiant effort to save their Tinicasio (the Anglo name for the Indians' rancheria and land in Nicasio) land grant in the courts, it was granted to others in 1844. Murphy resigned as Indian agent in 1851 demoralized that he could not save his Indian friends from neither the Mexican officials' corruption nor the greed of the newcomers seeking gold.

Despite the American and European incursion on their land, the Tamals persisted in the Nicasio area and managed to acquire 30 acres as a tribal holding. One of Isabel Kelly's informants, Maria Copa, was born at the rancheria (Kelly 1991).

History of Samuel P. Taylor State Park

Samuel Penfield Taylor was born on October 9, 1827 in New York State. After the news of the discovery of gold in California spread to the east coast, Taylor and a group of friends purchased a schooner in Boston and outfitted it for a trip around Cape Horn to California. Arriving in spring of 1850, Taylor was left behind in San Francisco to protect and care for the schooner, where he took advantage of several entrepreneurial opportunities. It was not until 1852 that he managed to make his way to the gold fields, but in less than a year there, he had accumulated over \$5,000 (Ammerman 1978:1, 13-14; Rothwell 1959:1).

In 1853, knowing of the importance of lumber to the growing city of San Francisco, Taylor and some partners purchased 960 acres of forest land in Marin County. Further exploration of the Marin County area led Taylor to the redwood forest and clear water of Daniels (formerly San Geronimo Creek; later Papermill, then Lagunitas) Creek. He was acquainted with paper mills on the east coast, and knew this to be an advantageous place to establish a paper mill (Ammerman 1978:11, 14, 17; Rothwell 1959:2).

The Property that he favored was part of land granted to Rafael Garcia, a former corporal in the Mexican army stationed at Mission San Rafael. In 1836, the Mexican government granted Garcia two square leagues of land, Rancho Tomales y Bolinas. After California was ceded to the United States, Garcia filed a claim to his land with the Public Land Commission, and was eventually granted a patent to this land in 1883. The patent legitimized Taylor's claim to 101 acres that Taylor and partner Victor B. Post purchased from Garcia in 1853. Before a year was out, Taylor had a whipsaw pit and road constructed in order to start construction of the first paper mill. He also started

construction of a dam to provide a steady source of water power for the mill. He had purchased the mill machinery on a trip to the east coast, when he also married Sara Washington Irving. In 1855 the machinery for the paper mill arrived in California and by the end of the year, the construction was complete. The mill commenced to produce newsprint, wrapping paper, and paper bags (Ammerman 1978:26; Rothwell 1959:3, 5-6). In addition to the mill buildings, Taylor constructed all the buildings and amenities necessary to meet the needs of the small community of people who ran the remotely located mill (Ammerman 1978:31-32).

Later, transportation was improved by the arrival of the North Pacific Coast Railroad, which ran parallel to the south bank of Lagunitas Creek and right past the paper mill. This led to the establishment of Taylorville, a recreational community, located in the same approximate area of the present campground.

Across the creek from the paper mill and about 400 yards into Devil's Gulch were a residence and barn for a dairy farm built in the late 1860s to provide for the community. This farm was operated by one of Taylor's sons, but prior to the senior Taylor's death the dairy ranch was leased to outside dairymen. A number of large eucalyptus trees along the creek in Devil's Gulch were likely planted by the Taylor family to provide shade and wind shelter at the dairy. About a mile further northwest up Devil's Gulch was another Taylor family farm containing chickens and fruit orchards.

Barnabe Peak, on the southeast corner of the Taylor property, was so named because one of the most cherished possessions of the Taylor children was an old white mule they named Barnabe. This mule had allegedly come to California with John C. Fremont's exploratory expedition. The Taylor children idolized and pampered the mule and a picture of Barnabe and the Taylor children can be seen in the SPTSP Museum. The mule was buried behind the Taylor residence and his grave even had a marble marker (Ammerman 1978:1978:65).

Taylor's mill and businesses continued to thrive until the financial panic of 1893 when Mr. and Mrs. Alexander Montgomery foreclosed on all of Taylor's 2,300 acres. The Taylors were overextended after financing expansion and improvements at the mill in 1892. In addition to their debts, the mill faced stiff competition from Oregon paper mills. In addition, President Cleveland had removed the import tariff on paper. Finally, the Taylor enterprises were supporting five families instead of just one.

Shortly after they foreclosed on Taylor's property, Mr. Montgomery died and his wife, Elizabeth, married Arthur Rogers, her deceased husband's attorney. In 1895, Joseph Brown attempted to revive the paper mill with Samuel P. Taylor acting as the Superintendent and Manager of the mill, yet the machinery was soon shut down for good. With the loss of the paper mill and the loss of the land came the loss of the tradition of recreation in the woods along Lagunitas Creek. Although the public still viewed the Taylor property as a place for recreation and camping, Elizabeth Rogers had all of the standing structures demolished in 1905. The mill buildings burned down in 1916, leaving only the foundations and scattered ephemera to mark the site.

In 1945, the State of California purchased these 2300 acres of land from Frank and Lucille Jones (Mrs. Rogers' niece) for \$39,747.94 and established SPTSP. In 1946,

development of the grounds for the park was started and construction of the maintenance and recreation facilities continued into the next year.

Previous Cultural Resource Studies At Samuel P. Taylor State Park

The entire State park property has never been systematically surveyed. However several cultural resource inventories have been conducted either within or near the park. The earliest work was in 1960 when San Francisco State College conducted surveys throughout Northern California State Parks (Holman et al 1960). Additional archaeological surveys were completed in 1978 (Foster), 1986 (Rivers; Rivers and Roland) and 1987 (Rivers). The latter work led to the most comprehensive survey of the unit. Three additional publications supplement the gaps in the history of SPTSP (Rothwell 1959; Ammerman 1978; DPR n.d.).

A hiatus of work occurred from 1987 until the present decade, when habitat enhancement (Cannon et al 2005; Koenig 2009), construction projects (Rich et al 2003; Losee 2006; Holm 2007; Wulzen and Aleman 2010), and scientific curiosity (Parkman 2009) contributed additional information. The present project area was recently inspected (Wulzen 2010) as part of this project.

The sum of recorded cultural resources within SPTSP is eighteen sites, fourteen of which contain evidence of historic activities. Only four sites reflect a prehistoric presence in the area, and all of these are relatively small scatters of flaked rock.

4.5.2. Regulatory Setting

California Environmental Quality Act (CEQA)

The California Environmental Quality Act (CEQA) requires projects that are approved or funded by state agencies to assess the effects of project work on historical resources. A Historic Resource is defined as any cultural resource determined eligible for listing or listed on the California Register of Historical Resources (CRHR). Historic Resources are also defined in the California Public Resources Code (PRC), Section 5020.1(j) as, but not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. California PRC 5020.1 also includes NRHP-listed or eligible Historic Properties as Historic Resources.

Additional CEQA Regulations for Inadvertent Discoveries of Human Remains and Funerary Objects: As defined by California State Health and Safety Code, Section 7050.5, and PRC 5097.98, the inadvertent discovery of human remains requires cessation of project work relative to the find until an assessment of the remains, including determination of origin and deposition, is completed by the County Coroner, in consultation with the NAHC and/or appropriate Tribal representative(s). In the event of inadvertent discoveries, an on-going program of Native American consultation provides an opportunity for such groups to participate in the identification, evaluation, and mitigation of impacts to human remains and funerary objects.

California Register of Historical Resources

The CRHR is a statewide list of Historic Resources with qualities assessed significant in the context of the state's heritage. The register is maintained by Office of Historic Preservation (OHP) and listings are managed in much the same way as described for the NRHP. Criteria for evaluating the historical significance of Historic Resources at the state level, including integrity, are also similar to NRHP requirements. As defined by PRC 5024.1(a), the CRHR functions as an authoritative guide that is intended to be used by state and local agencies to indicate types of cultural resources that require protection, to a prudent and feasible extent, from project-related substantial adverse changes.

Steps in Determining a Substantial Adverse Change to a Historic Resource:

California PRC 5020.1(q) defines a substantial adverse change as one in which the demolition, destruction, relocation, or alteration of a cultural resource is such that its historical significance is impaired. CEQA requires all state funded or approved projects, as well as those implemented by state agencies, that could result in impacts to Historic Resources to consider alternative plans and/ or measures for mitigation. As defined by PRC Title 14, Chapter 3, Section 15064.5, CEQA guidelines for determining if a proposed project would result in substantial adverse changes to Historic Resources is much the same as defined under federal regulations for Section 106 and entails the following actions:

- Identify cultural resources and previously documented Historic Resources/ Historic Properties in the proposed Area of Direct Impact (ADI) through a combination of background research, field survey, and consultation with appropriate Native American groups and other appropriate parties.
- Prepare a studied evaluation of the historical significance of cultural resources in the proposed ADI that determines the resource status as Historic Resources/ Historic Properties eligible for listing on Federal and state registers.
- Prepare a determination of project impacts to eligible and listed Historic Resources/ Historic Properties and implement alternative project plans and/ or measures for mitigating substantial adverse changes to such properties.

Executive Order W-26-92

As of June 30, 2007, DPR controls and administers 258 classified units and 20 major unclassified properties for a total of 278 areas, which collectively contain thousands of historic resources. Executive Order W-26-92 requires all state agencies, including DPR, in furtherance of the purposes and policies of the state's environmental protection laws and historic resource preservation laws, to the extent prudent and feasible within existing budget and personnel resources, to preserve and maintain the significant heritage (cultural and historical) resources of the state. Each state agency, including DPR, is directed to:

- Administer the cultural and historic properties under its control in a spirit of stewardship and trusteeship for future generations;
- Initiate measures necessary to direct its policies, plans, and programs in such a way that state-owned sites, structures, and objects of historical, architectural, or

archeological significance are preserved, restored, and maintained for the inspiration and benefit of the people;

- Ensure the protection of significant heritage resources are given full consideration in all of its land use and capital outlay decisions; and
- Institute procedures to ensure that state plans and programs that contribute to the preservation and enhancement of significant non-state owned heritage resources in consultation with OHP (Executive Order W-26-92 Section 1).

4.5.3. Thresholds of Significance

An impact to the cultural resources of the area would be considered potentially significant if implementation of the proposed project would result in any of the following:

- CULT 1: Cause a substantial adverse change in the significance of a historical resource, as defined in CEQA Guidelines §15064.5.
- CULT 2: Cause a substantial adverse change in the significance of an archaeological resource, pursuant to §15064.5.
- CULT 3: Disturb any human remains, including those interred outside of formal cemeteries.

4.5.4. Environmental Impacts, Project Requirements, and Mitigation Measures

Impact Statement CULT 2: Would project construction cause a substantial adverse change in the significance of an archaeological resource, pursuant to §15064.5?

Although archaeological sites have not been located in the project area, project activities to realign the creek, reduce erosion and improve drainage could unearth previously undocumented cultural resources. Integration of **Project Requirement CULT2**, previously undocumented resources, will ensure impacts remain at a less than significant level

Level of Significance Before Mitigation	Less than significant
Mitigation Measure:	None

Impact Statement CULT 3: Would project construction disturb any human remains, including those interred outside of formal cemeteries?

In many of California's historic townsites and rural communities discoveries have been made of non-Native American human bone including non-Anglo. Burials have not been documented or recorded in the proposed project area; however, there is always a potential of unanticipated discoveries of human bone. If any human remains or burial artifacts were identified, integration of **Standard Project Requirement CULT 3 - Human Remains Discovery** will ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation	Less than Significant
Mitigation Measure:	None

4.5.5. Effects Considered to be Less than Significant or No Impact Without Project Requirements

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

Impact Statement CULT 1: Would project construction cause a substantial adverse change in the significance of a historical resource, as defined in CEQA Guidelines 15064.5?

No historic resources exist within the APE; therefore no impact.

4.5.6. Findings

There are no significant cultural resources within the currently defined APE of this project. Seven nearby resources, all originally recorded by Fran Miller (1987) must be protected if the footprint of the project is expanded.

4.6. Geology and Soils

This section provides information regarding the geology and soils that occur within the proposed project site at SPTSP; identifies geologic hazards in the vicinity of the proposed project location, such as earthquake and landslide potential; and analyzes issues related to project activities, including potential exposure of people and property to geologic hazards, landform alteration, and erosion. This analysis is based on review of technical studies performed specifically for the project, published geologic information, and field reviews. Related issues, including hydrologically-based soil erosion and impacts to water quality, are also discussed in Section 4.7, Hydrology and Water Quality.

4.6.1. Existing Conditions

Regional and Site Geology

SPTSP is located within the California Coast Ranges. These are a generally northwest-trending chain of coastal mountains primarily formed from remnants of the Pacific tectonic plate that were scraped off and uplifted as it collided with and dove below the North American plate. Over millions of years, movement from ongoing tectonic plate collision, along with periodic changes of the ocean's level, has left behind the coastal mountains. The rocks comprising the local geology were scraped onto to the North American plate during the Cretaceous period, about 145 to 65 million years ago. Tectonic plate motion affecting the region changed to dominantly strike-slip (horizontal) during the early Miocene epoch (about 23 million years ago) and continues to the present. The boundary between the North American plate, which underlies SPTSP, and the Pacific plate is expressed by the strike-slip San Andreas fault, about 2.8 miles southwest from Bill's Trail.

Blake et al. (2000) map bedrock underlying the trail alignment and nearby slopes as the Nicasio Reservoir Terrane. This is one of a series of terranes mapped subparallel to the San Andreas Fault based on their structural and stratigraphic relationships. This late Jurassic to Cretaceous greenstone oceanic island complex formed about 20

degrees in latitude to the south, was accreted onto the continental margin and subsequently transported northward by strike-slip motion along the plate boundary. The greenstone bedrock includes mafic-rich intrusive basalt, massive basalt and pillow lava. Massive chert up to 100 feet thick or thinly bedded chert stratified with shale interbeds crops out locally; some of the chert beds form more resistant ridges in the vicinity of Barnabe Mountain. A silty sandstone is also exposed in trail cuts; though not reported by Blake et al. (2000) as a major component of the Nicasio Reservoir Terrane, sands may have been deposited within the volcanic island volcanic rocks and chert that define most of the unit.

Geologic structural data is lacking in the immediate site vicinity but sparse bedding attitudes within the Nicasio Reservoir Terrane generally strike northwest to north northwest and have very steep dips to the northeast and southwest; this is parallel to the overall northwesterly structural grain exhibited by the terranes and rocks northeast from the San Andreas Fault Zone. It is likely that the northwest trending ridges in the vicinity of the trail owe their expression to this structural grain and possibly the presence of more resistant chert beds at depth. Colluvium up to 20 feet thick was exposed in trail cutbanks and generally consisted of sandy silt with variable quantities of angular gravel and clasts to four inches in diameter.

Quaternary alluvium consisting of sand, silt and gravel derived from local bedrock, fluvial terraces and hillslope sources forms the channel bed of Devil's Gulch. Fluvial terraces were observed below Bill's Trail, on the left bank of the channel, about 100 to 400 feet from the trailhead; the trail segment from the trailhead to about 400 feet to the northeast is in the closest proximity to the channel.

Topography

Bill's Trail traverses generally northeasterly across a northwest facing slope that has average grades of about 35%, though side slopes to incised drainages generally are about 50% to 75% grade; near the most incised drainages slopes approach 100% grade. The lowermost trail segment crosses an inner gorge slope that averages about 60% to 75% grade along the main stem of Devil's Gulch. Northwest trending spur ridges emanate from a northeast trending ridge that helps define the upper southern limit of the Devil's Gulch watershed. Minor swales and two well-defined tributaries to Devil's Gulch occur between the northwest trending spur ridges. Flow was observed in the lowermost portions of these two tributary drainages in February 2011 but upper portions of the drainages were dry. Devil's Gulch trends southwesterly generally subparallel to the trail, and has a relatively low average gradient in the reach below the trail (about 0 to 2%, Stillwater Sciences 2007). The trail's elevation ranges from about 200 feet MSL at the trailhead at Devil's Gulch to about 1,200 feet, where Bill's Trail intersects the Barnabe Fire Road.

The Gravesite Fire Road links to Bill's Trail near Devil's Gulch and ascends across west-northwest and westerly facing slopes to an elevation of about 400 feet, where it meets with Barnabe Fire Road. Except near Devil's Gulch, where the slope ranges from about 60% to 75% grade, the Gravesite Fire Road generally crosses moderately gentle slopes of about 30% or less, though portions of the road are constructed down a ridge line.

Paleontological Resources

There are no known paleontologic resources within the project area.

Faults and Seismicity

Four active faults are mapped within 25 miles of Bill's Trail, the San Andreas, the Hayward-Rogers Creek, the San Gregorio and the Point Reyes Thrust fault. Other faults or fault zones in the vicinity, the West Napa, Green Valley, and Maacama-Garberville, are more distant, less active and/or less capable of producing strong groundshaking at the site than these four faults. Table 4.6.1 below shows the most significant historic or pre-historic seismic event associated with each fault, though Magnitude 5.6 and 5.7 earthquakes occurred on the Rogers Creek fault in 1969.

Fault	Approximate Distance from Site (miles)	Slip Rate mm/year	Maximum Credible Earthquake*	Historical Seismicity
San Andreas (North Coast)	2.8	24	8.0	1906
Hayward-Rogers Creek	15.4	9	7.3	1868
San Gregorio	18.9	5.5	7.5	Pre-historic 1270-1775
Pt. Reyes	8.7	0.3	6.9	No Data

Sources: Simpson et al. 1997; <http://pubs.usgs.gov/of/2008/1128/>;
http://www.consrv.ca.gov/cgs/rghm/psha/ofr9608/pages/b_faults1.aspx.

Groundshaking in the vicinity of the trail could be extremely strong, possibly violent, in the event of an earthquake on a nearby fault. Peak horizontal ground accelerations with a 2% probability over the next 50 years are modeled to be about 0.75g (gravity) (Petersen et al. 2008). As higher cuts along the trail have locally produced slough and slumps in the absence of strong historical ground shaking, they appear potentially vulnerable to instability in the event of a large earthquake on a nearby fault.

Soils and Erosion

The Dipsea-Barnabe very gravelly loam soil complex (50 to 75% slopes) underlies the entire slope traversed by Bill's Trail and the forested drainages that are near or cross the fire roads (Table 4.6.2). Dipsea soils comprise about 50%, Barnabe soils comprise about 20%, and minor soils comprise about 30% of the soil complex. Both the Dipsea and Barnabe soils are well drained and have rapid runoff. The erosion hazard for both is severe and the shrink-swell potential is low. Dipsea soils have a thickness of about 40 inches and predominate on north and east facing hillslopes and in moist drainages underlain by sandstone. Barnabe soils are about 20 inches thick and predominate on ridges and convex slopes underlain by sandstone and/or chert. Silt and clay comprise about 60% of the less than 2 millimeter fraction of the soil (also see Stillwater Sciences 2007, Appendix C-2). Though there is a large fine soil fraction the soil complex has good strength and only a slight rutting hazard rating, probably due to its relatively high gravel content (whole soil erosion ratings are lower than for the finer soil fraction).

The Cronkhite-Barnabe complex (15 to 30% slopes) underlies the Gravesite Fire Road southeast from the gravesite to its junction with Barnabe Fire Road. Cronkhite soils

comprise 50% and Barnabe soils comprise 30% of the complex. Barnabe soils are well drained and Cronkhite soils are moderately well drained. Both have a severe erosion hazard rating and Cronkhite soils have a high shrink-swell potential. Cronkhite soils are mostly clay loam, are about 45 inches thick to weathered bedrock while Barnabe soils are very gravelly loams about 16 inches thick to sandstone and/or chert. Both are found on sideslopes; Cronkhite soils are on convex slopes and Barnabe on concave hillslopes. Silt and clay comprise about 65% of the less than 2 millimeter fraction of the soil. Depth to hard bedrock is a limiting factor for roads in Barnabe soils.

The Felton variant-Soulajule complex (30% to 50% slopes) underlies a small segment of the Gravesite Fire Road in prairie soils north from Deadmans Gulch. The Felton variant comprises 50% and Soulajule soils 40%, of the complex. Both are well drained and have a severe erosion hazard rating. Soulajule soils have a moderate shrink-swell potential. The Felton variant is a loam to clay about 47 inches thick to weathered sandstone and shale. Soulajule soils are a clay loam to very gravelly clay about 28 inches thick underlain by weathered sandstone and shale. Both are found on sideslopes and concave hillslopes. Silt and clay comprise about 65% of the less than 2 millimeter fraction of the soil.

Map Unit Name & Number	Soil Permeability and Runoff	Erosion Hazard	Shrink/Swell Potential	Location
Dipsea-Barnabe very gravelly loams, 50 to 75% slopes (Unit number 120)	Well- drained; rapid runoff	Severe	Low	Dipsea = north and east-facing hillslopes, moist drainages Barnabe = ridge and convex hillslopes
Cronkhite-Barnabe Complex, 15 to 30 percent slopes (Unit number 116)	Barnabe = well- drained to Cronkhite = moderately well- drained	Severe	Cronkhite = high	Cronkhite= sideslopes and convex sideslopes Barnabe= sideslopes and concave hillslopes
Felton Variant- Soulajule Complex, 30 to 50% slopes (Unit number 125)	Well-drained	Severe	Soulajule = moderate	Felton = sideslopes and concave hillslopes Soulajule = sideslopes and concave hillslopes
Saurin-Bonnydoon Complex, 50 to 75% slopes (Unit number 164)	Saurin = Well drained Bonnydoon = Excessively well drained	Severe	Saurin = moderate	Saurin = sideslopes and concave hillslopes Bonnydoon = sideslopes and convex hillslopes

Data Sources: USDA_NRCS Web Soil Survey
<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx> (latitude 38.03, longitude -122.72);
 Clearwater Hydrology 2009

Stillwater Sciences (2007) calculated maximum bank erosion rates along the mainstem of Devil's Gulch at about 0.5 inch per year based on dendrochronological study of trees up to 62 years old on the creek banks. The study period covered the extreme hydrological event of the January 1982 storm. For the trail segments within 100 feet of

the trailhead to both Bill's Trail and the Gravesite Fire Road the trail bed is within about 2 to 3 feet of the uppermost mainstem banks. Assuming the average rate persists into the future, there is a low probability for fluvial undermining of the trail bed for the foreseeable future.

Clearwater Hydrology (CH) (2009) evaluated Bill's Trail for erosion and sediment yield that might result from conversion of the trails use to include bicyclists. Their report calculated that sediment yield associated with modification of the trail would increase sediment yield by about 34 percent over the lowermost 1700 feet of the trail, the trail segment in closest proximity to Devil's Gulch. In particular CH noted longer, steeper slopes with average grades of up to 11.7% in close proximity to very steep slopes along Devil's Gulch and trail approaches to stream crossings, as being of high concern. Specific concerns expressed by CH associated with the proposed project modification included: 1) an increase in sedimentation following construction due to disturbance of the trail bed; 2) an increase in sedimentation due to expansion of the width of the trail bed; 3) continued sloughing of the cutbank and the potential inability of the slough and/or trail edges to revegetate due to the concurrent uses by multiple user; and 4) rutting near stream crossings due to breaking by bicyclists during wet conditions.

Landslides and Sedimentation Sources

Nearly all of the slopes bearing Bill's Trail and the upper slopes of Deadmans Gulch are mapped as principal predicted debris flow sources. No debris slides were mapped on the Bill's Trail slope that may have resulted from the January 1982 storm that produced extensive debris flow failures in the San Francisco Bay Area though debris flows associated with this storm were noted on other slopes within the Devil's Gulch watershed and near the ridgeline between the Devil's Gulch and Deadmans Gulch watersheds. (Ellen et al. 1997). Rainfall contour mapping suggests that the Devil's Gulch watershed could receive in excess of 7 inches of rain in a 24 hour period (Wilson and Jayko, 1997), which in combination with sufficiently steep slopes and the soil types at the site, could contribute to debris flow initiation. Wentworth et al. (1997) classified the Bill's Trail slope as having few, if any large landslides though it could have scattered small landslides and questionable large landslides. Wentworth et al. mapped the slopes bearing the fire roads as mostly landslide, consisting of mapped landslides, having intervening areas typically narrower than 1500 feet, and narrow borders around landslides. This classification was defined by drawing envelopes around groups of mapped landslides.

Stillwater Sciences (2007) performed an extensive sediment source evaluation of the Middle Lagunitas Creek Watershed that encompassed the period from 1976 to 2006. Compiling work from earlier studies they reported an earlier sediment source study by Prunuske Chatham Inc. (PCI - 1988) showing a source about 1300 feet from the Bill's Trail trailhead at Devil's Gulch, though because of scale considerations it is not possible to confidently associate it with the trail. PCI (1988) also mapped sediment sources coincident with the descending limb of the Gravesite Fire Road upslope from Devil's Gulch. PCI (1997) also mapped two sediment sources in the Deadmans Gulch watershed that appear to be coincident with the Gravesite Fire Road alignment. Stillwater also reported mapping by Ellen and Wieczorek (1988) showing three

sediment sources upslope and two sources downslope (PCI 1988 and 1997) from the Gravesite Fire Road in the Deadmans Gulch watershed.

In 2006 Stillwater Sciences (2007) mapped sediment sources in the lower portions of the two most incised drainages that cross Bill's Trail; one of these sources classified as channel incision, produced about 77 tons of material and is in the general vicinity of the trail, but appears to be slightly upslope, assuming that Stillwater's traverse followed the trail. The 2006 Stillwater traverse did not record the source identified by PCI (1988) suggesting it was not associated with the trail. Stillwater Sciences also reported about 43 sediment sources on the slope opposite Bill's Trail and in the upper watershed (PCI 1988; 1997; Ellen and Wieczorek 1988) in addition to several sources they mapped in the mainstem of Devil's Gulch. Overall the Devil's Gulch watershed is a moderately high source of sediment in the Middle Lagunitas Creek watershed, owing to the presence of comparatively less stable Franciscan Melange Terrane in the upper watershed.

However, the specific slopes bearing Bill's Trail and Deadmans Gulch were assigned the lowest category for both fine (less than 25 tonnes/square kilometer) and total (less than 100 tonnes/square kilometer) sediment production within the Middle Lagunitas Creek Sediment Delivery Assessment Area.

Clearwater Hydrology (2009) reported sediment impoundments upchannel from the crib walls crossing ephemeral channels, consistent with some level of sediment delivery since the trail was constructed. They noted localized slump failures along some of the nearly vertical trail cuts; some of the cut bank failures were revegetated. CH also noted a prominent bench about 2000 feet from the trailhead and noted that this bench and other mid slope benches on steep slopes are typically associated with a landslide origin.

Examination of a single air photo image (2005 AMBAG Aerial Photos) and limited rapid reconnaissance mapping by Certified Engineering Geologist Patrick Vaughan along the immediate trail- fire road loop corridor revealed some areas of instability and high erosion potential that coincided with previously identified sediment sources. Vaughan confirmed the aggraded condition reported by CH (2009) upchannel from drainage structures in the uppermost tributary channels along Bill's Trail. At minor drainages some wood was exposed in the crossing fill. Cutbanks had some minor slough locally but generally were stable; two locations with more significant cutbank instability were noted along Bill's Trail. P. Dumont (pers. comm., 2011) reported that debris from many of the sloughing cutbanks had been removed since the Clearwater observations.

4.6.2. Regulatory Setting

Applicable Federal Regulations

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935 that establishes a national registry of natural landmarks and protects "outstanding examples of major geological features."

Clean Water Act

Section 402 The National Pollutant Discharge Elimination System (NPDES) regulations for discharges to navigable waters are administered in California by the State Water

Resources Control Board and the nine Regional Water Quality Control Boards. Under the Construction Storm Water NPDES Program, dischargers whose projects disturb one or more acres of soil are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 99-08-DWQ). The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must list Best Management Practices (BMPs) the discharger will use to protect storm water runoff and the placement of those BMPs. Additionally, the SWPPP must contain a visual monitoring program; a chemical monitoring program for "non-visible" pollutants to be implemented if there is a failure of BMPs; and a sediment monitoring plan if the site discharges directly to a water body listed on the 303(d) list for sediment.

Applicable State Regulations

Alquist Priolo Earthquake Fault Zone Act

The Alquist-Priolo Special Studies Zone Act was passed in 1972 to mitigate surface faulting hazards associated with structures intended for human occupancy. Passage of this law was a direct result of the 1971 San Fernando Earthquake, which caused extensive damage due to surface fault ruptures. In 1994, it was renamed the Alquist-Priolo Earthquake Fault Zoning Act (APEFZ Act). The primary purpose of the APEFZ Act is to mitigate the hazard of fault rupture by prohibiting the location of structures for human occupancy across the trace of an active fault. The APEFZ Act defines an active fault as one that has ruptured within the last 11,000 years. Many of these faults have documented surface displacement within historical records. According to the current APEFZ maps the project site does not lie within a Special Studies Zone.

Seismic Hazards Mapping Act:

Prompted by damaging earthquakes in northern and southern California, in 1990 the State Legislature passed the Seismic Hazards Mapping Act (SHMA). The Governor signed the Act, codified in the Public Resources Code as Division 2, Chapter 7.8 on April 1, 1991.

The purpose of the Act is to protect public safety from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and other hazards caused by earthquakes. The program and actions mandated by the Seismic Hazards Mapping Act closely resemble those of the Alquist-Priolo Earthquake Fault Zoning Act, which addresses only surface fault-rupture hazards.

The California Geological Survey (CGS) is the principal State agency charged with implementing the 1990 SHMA. Pursuant to the SHMA, the CGS is directed to provide local governments with seismic hazard zone maps that identify areas susceptible to amplified shaking, liquefaction, earthquake-induced landslides, and other ground failures.

Samuel P. Taylor State Park General Plan

DPR has not completed a General Plan for SPTSP ; however, the management approach for any unit of the State Park System, including SPTSP, is based on unit classification statutes specified in the California Public Resources Code (PRC) §

5019.50 through 5019.74. The statutes set forth the primary purpose of each classified unit, identify in general what types of facilities and uses could be permitted, and provide direction on how unit resources would be managed. The purpose of a State Park is to preserve outstanding resource values, species, and significant examples of California's ecological regions; each State Park would be managed as a composite whole to restore, protect, and maintain its native environmental complexes; improvements undertaken within a State Park would serve to make areas within the park unit available for public enjoyment and education in a manner consistent with resource preservation; and improvements could include recreational facilities as long as no major modification of land, forests, or waters occurs (PRC § 5019.53).

Local Regulations

Marin Countywide General Plan

DPR is exempt from local regulations, including general plans, specific plans and zoning ordinances (California Constitution Article XI, Section 7), although the project must comply with applicable state and federal rules such as the Coastal Act.

4.6.3. Thresholds of Significance

The following thresholds have been prepared based on the State CEQA Guidelines (Appendix G) and Section 15065 of the State CEQA Guidelines. The Project would have a significant impact on geologic resources if it will:

- GEO 1: Expose persons or property to potential substantial adverse effects from an earthquake, including the risk of loss, injury, or death due to fault rupture, ground shaking, liquefaction, or landslides;
- GEO 2: Result in substantial soil erosion or loss of topsoil;
- GEO 3: Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project; resulting in ground failures;
- GEO 4: Permit development on expansive soils;
- GEO 5: Permit the use of septic or alternative wastewater systems in areas where soils are incapable of supporting such systems; or
- GEO 6: Directly or indirectly destroy a unique paleontological resource or site, or a unique geologic feature.

4.6.4. Environmental Impacts, Project Requirements, and Mitigation Measures

The following impact analysis is based on an inventory of existing road/trail conditions, a summary of which are contained in Trail Observations (see Appendix D). Trail Observations were made by Patrick Vaughn during a field visit conducted in February 2011. The roads and trail were walked in a counterclockwise rotation starting at the trailhead to the Gravesite Fire Road, connecting with Barnabe Fire Road and concluding on Bill's Trail.

Trail measurements were taken in meters using a trail wheel with the overall length of the loop trail (including Barnabe Fire Road that is not part of the project) measured at 8510 meters (28,000ft). At various points along the trail, Vaughn noted the location of existing road and trail issues including, but not limited to, sediment sources, volunteer

trails and steep slopes. Recommendations to address the existing issues as well as potential short term construction impacts and long term operational impacts from trail use follow the impact statements below.

Impact Statement GEO 1: Construction activities associated with the proposed project could result in potential soil erosion or loss of topsoil

Level of Significance Before Mitigation	Less than significant
Mitigation Measure:	None

Construction and subsequent use of the trail has the potential to result in potential erosion and soil loss. Integration of standard project requirements discussed in Hydro 1, "Sediment Control and Pollution Prevention Plan", into design plans will reduce impacts to a less than significant level. Integration of **Specific Project Requirement GEO 1** will ensure impacts remain at a less than significant level.

Impact Statement GEO 2: The project could expose persons or property to potential substantial adverse effects from an earthquake, including the risk of loss, injury, or death due to fault rupture, ground shaking, liquefaction, or landslides:

In this seismically active area of California, strong shaking can be expected in the event of a seismic event. Strong ground shaking generated by an earthquake could cause landslide movement and other ground collapse or in steeper areas, especially during saturated conditions. This is an ongoing occurrence in this area and would not be increased due to the proposed project. The project area has a low potential for liquefaction, settlement, subsidence or lateral spreading due to a seismic event; however integration of **Specific Project Requirement GEO 2, Seismic Event**, will ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation	Less Than Significant
Mitigation Measure:	None

4.6.5. Effects Considered No Impact or Less Than Significant Without Project Requirements

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

- GEO 3: Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project; resulting in ground failures: The project entails improving existing trails creating no new cuts. Therefore, no impact would result.
- GEO 4: Permit development on expansive soils: No development is being proposed with this project. Therefore, no impact would result.
- GEO 5: Permit the use of septic or alternative wastewater systems in areas where soils are incapable of supporting such systems: No septic systems or alternative wastewater systems are proposed for the project. Therefore, no impact would result.

- GEO 6: Directly or indirectly destroy a unique paleontological resource or site, or a unique geologic feature: No unique paleontological or geologic features are found on the site. Therefore, no impact would result.

4.6.6. Findings

For geology and soils evaluated as part of this environmental document, the potential exists for significant degradation of the environment from erosion and sedimentation. However, with integration of project requirements Hydro 1 and Geo 1, the impacts on geology and soils would be considered less than significant.

4.7. Hazards and Hazardous Materials

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency. It is also considered hazardous by such an agency if materials or mixtures of materials are classified as corrosive, ignitable, reactive, or toxics. The health effects related to hazardous materials are dependent on the path of entry into the body, the dosage amount including concentration, frequency of exposure, and individual susceptibility.

4.7.1. Existing Conditions

SPTSP is 15 miles west of the City of San Rafael in Marin County, California. The Park unit is bordered by the Golden Gate National Recreation Area on the north, east, and south sides and on the west by a mixture of agriculture and residential areas.

Hazardous Materials

A review of the listed hazardous material release sites compiled pursuant to Government Code Section 65962.5 (Cortese List) indicates that there is one site, a leaking underground gasoline storage tank discovered and removed in 1986, is located within the Park (State Water 2010). The site is listed as SPTSP however, the Park is over 2600 acres and the contamination has been confined to the maintenance yard over half a mile away from the proposed project site. DPR is working with the San Francisco Regional Water Quality Control Board (SFRWQCB) on site remediation.

Airports

The Park Unit is not within an airport land use zone or within two miles of an airport. The Marin County Airport at Gness Field is located approximately 22 miles northeast of the Park Unit, in the City of Novato (Google Maps 2010). In addition, there are no known private airstrips in the vicinity of the Park Unit.

Schools

The closest school, Lagunitas Elementary is located approximately 3 miles to the southeast at the intersection of Lagunitas School Road and Sir Francis Drake Boulevard (Google Maps 2010).

Natural Hazard (Wildland Fire)

Wildland fire hazard areas exist over 85 percent of Marin County (Marin County 2007). These areas are caused by a combination of factors including rugged terrain, highly flammable vegetation, long summers, and human activity. The fire season extends approximately 5 to 6 months, from late spring through fall (EOP 1999). The Marin County Fire Department classifies the project vicinity as having a Moderate to High fire hazard rating (Marin County 2007). The closest fire station is the Marin County Fire Department out of City of Woodacre, approximately 4 miles from the Park (Google Maps 2010).

4.7.2. Regulatory Setting

Federal, State and Local Agencies have enacted laws and regulations governing environmental hazards and hazardous materials. Most of these laws are made at the Federal and State levels but are generally implemented and enforced by local agencies.

Applicable Federal Regulations

The U.S EPA is the lead agency responsible for enforcing federal laws and regulations pertaining to hazardous materials that affect public health and the environment. The major federal laws and regulations enforced by the U.S EPA include the Clean Water Act, Resource Conservation and Recovery Act (RCRA); Toxic Substances Control Act (TSCA); Comprehensive Environmental Response, compensation and Liability act (CERCLA); and Superfund Amendments and Reauthorization Act (SARA).

Applicable State Regulations

In California, the U.S. EPA has granted most enforcement authority of federal hazardous materials regulation to the Cal EPA. Under the authority of Cal EPA, the Department of Toxic Substances control (DTSC) or the San Francisco Bay Regional Water Quality Control Board is responsible for overseeing contaminated sites in the vicinity of the project area.

Cal EPA has also granted responsibilities to local agencies including Marin County for implementation and enforcement of hazardous material regulations under the Unified Program (Code of Federal Regulation, Chapter 49, part 172).

Hazardous Materials Sites

Known or suspected contaminated sites under DTSC or Water Board oversight are identified by Cal EPA pursuant to Government Code section 65962.5. The provisions of Government Code Section 65962.5 that are commonly referred to as the Cortese List, require the DTSC, the Water Board, the Department of Health Services, and the California Integrated Waste Management Board to submit information pertaining to sites associated with solid waste disposal, hazardous waste disposal and or hazardous materials release to the Secretary of Environmental Protection.

Wildland Fire Hazards

State policies regarding Wildland fire safety are administered by the Office of the State Fire Marshal and the California Department of Forestry and Fire Protection (CalFire). Marin County's primary fire protection is provided by the Marin County Fire Department that also services as a CalFire contract agency.

- Construction contractors are required to comply with the following requirements in the California Public Resource Code (PRC) during construction activities at any sites with forest, brush, or grass covered land;
- Earthmoving and portable equipment with internal combusting engines must be equipped with a spark arrestor to reduce the potential for igniting a Wildland fire (PRC Section 4442). Appropriate fire suppression equipment must be maintained during the highest fire danger period from April to December 1 (PRC section 4428);
- On days when a burning permit is required, flammable materials must be removed to a distance of 10 feet from any equipment that could produce a spark, fire, or flame, and the construction contractor must maintain the appropriate fire suppression equipment (PRC Section 4427);
- On days when a burning permit is required, portable tools powered by gasoline-fueled internal combustion engines must not be used within 25 feet of any flammable materials (PRC Section 4431).

Local Regulations

The Marin County Municipal Code established the Marin County Department of Public Works, Waste Management Division as the Certified Unified Program Agency (CUPA) in Marin County. CUPA responsibilities and requirement are codified in the Marin County Municipal Code Title 7 (Health and Sanitation), Chapters 7.80-7.83. As the CUPA, the Marin County Department of Public works, Waste Management division has responsibility for implementing all unified programs within its jurisdiction. Unified programs regulate: the preparation of hazardous materials business plans, hazardous waste generator, hazardous waste onsite treatment, underground storage tanks, and aboveground storage tanks. Emergency response, as coordinated with the State Office of Emergency Services is also included under the CUPA.

The Hazardous Materials Area Plan (Area Plan) describes the County's pre-incident planning and preparedness for hazardous materials releases. The Area Plan clarifies the roles and responsibilities of federal, state, and local agencies during a hazardous materials incident. It also describes the County's hazardous materials incident response program, training, communications, and post-incident recovery procedures (Marin Hazards Plan).

Marin County Sheriff's Office of Emergency Services (OES) coordinates emergency operations activities among all the various local jurisdictions and develops written guidelines for emergency preparedness, response, recovery, and mitigation to natural or manmade disasters. The OES services as the liaison between the state and all the local governmental political subdivision comprising Marin County. The OES has established a fully functional Emergency Operation Center from which centralized emergency management can be performed. The OES also maintains the Operational Area Emergency Operations Plan (EOP)

The EOP is the primary emergency planning and management document for the County and it describes strategies for sustaining and building on existing mitigation activities to ensure the future and safety of lives, preservation of property, and protection of the environment during a disaster. The EOP would be activated for a hazardous materials

incident when additional resources or extended response activities are needed (EOP 1999). The OES has also prepared the Marin County Operational Area Plan. The purpose of the plan is to meet the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-3900) and thereby maintain continued eligibility for certain hazard mitigation or disaster loss reduction programs from the Federal Emergency Management Agency.

4.7.3. Thresholds of Significance

A project would be considered to have a potentially significant adverse environmental impact relating to hazards and hazardous materials if it would:

- HAZ 1: Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- HAZ 2: Create a significant hazard to the public or the environment through reasonably foreseeable upset or accident conditions involving the release of hazardous materials into the environment.
- HAZ 3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.
- HAZ 4: 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 create a significant hazard to the public or the environment.
- HAZ 5: Locate the project 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; or within the vicinity of a private airstrip, in such a manner as to result in a safety hazard for people residing or working in the project area.
- HAZ 6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.
- HAZ 7: 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.

4.7.4. Environmental Impacts, Project Requirements and Mitigation Measures

Impact Statement HAZ 1 Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials

Impact Statement HAZ 2 Create a significant hazard to the public or the environment through reasonably foreseeable upset or accident conditions involving the release of hazardous materials into the environment

Construction activities would require the use of powered equipment that uses potentially hazardous materials such as fuels, oils, and solvents. These materials are generally contained within vessels engineered for safe storage. Large quantities of these materials would not be stored at or transported to the project area. Spills upsets, or other construction-related accidents could result in a release of fuel or other hazardous

substances into the environment. Integration of **Standard Project Requirement HAZ 1, Spill Prevention, and HAZ 2, Health and Safety** (see chapter 2, Project Description) will ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation:	Less than significant.
Mitigation Required:	None

Impact Statement HAZ 7: 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.

As stated above, areas within the Park are susceptible to wildland fires. Heavy equipment can get very hot with extended use; this equipment would sometimes be in close proximity to this vegetation. Improperly outfitted exhaust systems or friction between metal parts and/or rocks could generate sparks, resulting in a fire. Implementation of **Standard Project Requirement HAZ 7** (see Chapter 2, Project Description) will ensure impacts remain at a less than significant level.

Level of Significance Before Mitigation:	Less than significant.
Mitigation Required:	None

4.7.5. Effects Considered No Impact or Less Than Significant Without Project Requirements

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

Impact Statement HAZ 3: Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

Impact Statement HAZ 5: Locate the project 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; or within the vicinity of a private airstrip, in such a manner as to result in a safety hazard for people residing or working in the project area.

Schools and airports do not occur within the Park boundaries or within two miles of the proposed project site. Therefore the implementation of this project would not reach significant environmental thresholds regarding schools or airports.

Impact Statement HAZ 4: 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 create a significant hazard to the public or the environment.

The GEOTRACKER Database lists Samuel P. Taylor Park has having a leaking gasoline tank that was reported and stopped in 1986. As mentioned in the Environmental Setting the gasoline tank was located in the maintenance yard over half a mile from the proposed Bill's trail project site. The contamination has been confined to the maintenance yard and no part of the construction will disturb the contamination site. No impact.

Impact Statement HAZ 6: Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan

Sir Francis Drake Blvd is an east-west arterial road connecting the small towns of Lagunitas, San Geronimo, Woodacre, and the Park to Highways 101 and 1. The proposed project would take place entirely within the Park and would not impair the implementation or interfere with the Hazardous Materials Area Plan or the Operational Area Emergency Operations Plan.

4.7.6. Findings

For hazards and hazardous materials evaluated as part of this environmental document, the potential exists for an inadvertent release of fuel or other hazardous substances, resulting in a significant hazard to the public and the environment; ignition of a wildland fire, exposing people or structures to a significant risk of loss, injury, or death, as a direct or indirect result of project activities. However, integration of Standard Project Requirements into the project description eliminates or ensures impacts remain at a less than significant level.

4.8. Hydrology and Water Quality

This section describes the existing hydrology setting for the proposed Trail Change in Use Project, including runoff, drainage, flood hazards, and water quality, based on available information provided as part of published reports and a field visit conducted on February 7, 2011. The setting also includes the regulatory framework for the project.

This section also identifies and analyzes the Impacts that could result from construction of the proposed project, project requirements and mitigation measures to reduce significant constructed-related impacts. Finally, this section also identifies and analyzes the long-term operational impacts to hydrology and water quality that are common among the users as well as those impacts unique to each user.

4.8.1. Existing Conditions**Climate**

Marin County has a mild Mediterranean climate with long, dry, warm summers and cool, rainy winters. Rainfall averages from 30 to 61 inches per year. Annual rainfall within the Lagunitas Creek watershed, where the project is located, varies from 28 to 52 inches with an average of 32 inches (Marin County, 2004).

Watershed Description

SPTSP) is completely within the Lagunitas Creek watershed boundaries, which is the largest drainage into Tomales Bay. Draining an area of 103 square miles of west central Marin County, Lagunitas Creek flows about 25 miles from the headwaters on the north slope of Mount Tamalpais before discharging into Tomales Bay. Its major tributaries include San Geronimo Creek, Devil's Gulch, Cheda Creek, Nicasio Creek, and Olema Creek. At the southwestern edge of the watershed, Olema Creek flows in nearly a straight line through a rift valley along the San Andreas Fault zone. Two other streams

entirely within the SPTSP; Deadmans Gulch and Barnabe Creek, also flow directly into Lagunitas Creek (Prunuske Chatham, 2004).

Over half of the watershed is in public ownership. The upper part is owned and managed by the Marin Municipal Water District (MMWD) for water supply. Point Reyes National Seashore (PRNS) and Golden Gate National Recreation Area (GGNRA) manage extensive holdings north and west of SPTSP as well as in the Olema Creek and Bear Creek subdrainages (Prunuske Chatham, 2004).

The Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan, 2007), identifies the beneficial uses of Lagunitas Creek as cold freshwater habitat, fish migration, preservation of rare and endangered species, water contact recreation, noncontact water recreation, fish spawning, warm freshwater habitat, wildlife habitat, agricultural supply, and municipal and domestic supply. Tomales Bay has the same designated beneficial uses. Lagunitas Creek is protected habitat for Coho salmon, steelhead, and California freshwater shrimp, and is one of the most important coho salmon streams in California, supporting approximately 10 percent of the current population in the central California coast.

Beneficial uses of Devil's Gulch are cold freshwater habitat, fish migration, preservation of rare and endangered species, water contact recreation, noncontact water recreation, fish spawning, warm freshwater habitat, and wildlife habitat.

Runoff, Drainage

Bill's Trail is located along the north-northwestern side of Barnabe Mountain, just northeast of Lagunitas Creek between Devil's Gulch and Barnabe Creek. Northwest trending spur ridges emanate from a northeast trending ridge that helps define the upper southern limit of the Devil's Gulch watershed. Minor swales and two well defined tributaries to Devil's Gulch occur between the northwest trending spur ridges.

Deadmans Gulch is located in the southwest portion of the project area together with several other ephemeral tributaries to these drainages. Barnabe Creek, also tributary to Lagunitas Creek, flows within the southerly portion of the Park although outside of the project area. All of the drainages are characterized by a distinct bed and bank and eventually flow into Lagunitas Creek, just across Sir Francis Drake Boulevard from the project.

The majority of the drainages in the project area are ephemeral drainages that flow for brief periods of time in response to a single rain event. A few drainages in the project area can be characterized as intermittent drainages. Intermittent drainages in the project area flow for extended periods of time throughout the rainy season and dry up during late spring or early summer.

The elevation of the proposed trail alignment ranges from approximately 200 feet at the trailhead to 1,200 feet near the Barnabe Fire Road-Bill's Trail Junction. Vegetation consists mostly of dense wooded canopies within the drainages and swales to open grassland on the upper ridges outside of the swales.

Based on the Soil Survey of Marin County, California, Western Part, by the U.S. Soil Conservation Service (SCS) (renamed the Natural Resources Conservation Service in

1998); the predominant soil types in the project area are Dipsea-Barnabe, Cronkhite-Barnabe, Felton variant-Soulajule and Saurin-Bonnydoon complexes. See Chapter 4.5 “Soils, Geology, and Seismicity” for a comprehensive description of these soil types as well as a discussion of existing trail conditions and identified areas of existing erosion.

Flooding

Based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM, Panel #06041 C0275D) for the project area, SPTSP is not within the FEMA FIRM study area, and has therefore been designated by FEMA as Zone D (area of undetermined but possible flood hazards).

Dam Inundation

The Peters Dam is located approximately 0.7 mile from the Samuel B. Taylor SP boundary. In the event of a catastrophic failure of Peters Dam, portions of SP could be subject to inundation. The project area however, is located outside of the inundation zone (Marin County 2005).

Coastal Hazards

The project is located in proximity to Tomales Bay, the San Francisco Bay, and the Pacific Ocean/ Drakes Bay. However, the elevation of the project (between 200 and 1200 feet NGVD) and distance from the coast would preclude its exposure to coastal hazards such as sea level rise, tsunamis, seiches, or extreme high tides.

Water Quality

The quality of surface water and groundwater in the vicinity of the project site is affected by past and current land uses in the watershed as well as local geology. Water quality in surface and groundwater bodies is regulated by the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards.

The Hydrology and Water Quality Technical Report (2005) prepared for the Countywide Plan identifies impairing pollutants listed for Lagunitas Creek in the area of the site include nutrients, pathogens, and sedimentation/siltation. The Creek is also impaired for pathogens due most likely to aging, malfunctioning septic systems in its watershed.

4.8.2. Regulatory Setting

4.8.2.1. Applicable Federal Regulations

Federal Clean Water Act

The federal CWA was established in 1972 to maintain the chemical, physical, and biological integrity of the nation’s waters (Federal Water Pollution Control Act/Clean Water Act, 33 U.S.C. 1251 *et seq.*). It was also intended to provide a mechanism for regulating discharges of pollutants into the Waters of the U.S. and gave the U.S. EPA authority to implement pollution control programs, such as setting wastewater standards for industry and water quality standards for all contaminants in surface waters.

Section 400 *et seq.* of the CWA applies to permits and licenses required for activities that may impact the nation’s surface water (Waters of the U.S.). Waters of the U.S. are

subject to Section 404 of the CWA. Section 404 establishes a requirement to obtain a permit prior to any activity that involves any discharge of dredged or fill material into the Waters of the U.S., including wetlands. In general, if the fill to be placed into Waters of the U.S. is limited to an area of no more than 0.5 acres, such fill can be approved through the United States Army Corps of Engineers (USACE) Nationwide Permit (NWP) program.

The SWRCB and RWQCB enforce Section 401 of the federal CWA, including administration of the NPDES permits for various discharges into Waters of the U.S. (CWA §402). The new NPDES Stormwater Phase II requires implementation of Best Management Practices (BMPs) to maintain water quality by controlling run-off from construction and post-construction operations. A Notice of Intent (NOI) to discharge stormwater is filed with the SWRCB when a project is subject to a NPDES permit and a Stormwater Pollution Prevention Plan (SWPPP) must be approved prior to the start of work (for ground disturbance over 1 acre in size).

United States Army Corp of Engineers

USACE is responsible for implementing regulatory control and guidance using two statutory authorities, the Rivers and Harbor Act (Sections 9 and 10) which governs specified activities in “navigable waters” of the United States and the CWA (Section 404) which governs specified activities in “other waters of the United States” (USACE 2009). In addition, USACE districts use NWPs to authorize categories of activities with minimal effects on the aquatic environment.

The USACE defines wetlands as lands that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Typically, USACE jurisdictional wetlands meet three criteria: hydrophytic vegetation, hydric soils, and wetland hydrology. Activities that could result in any discharge into navigable waters are also covered under CWA Section 401.

4.8.2.2. Applicable State Regulations

California Department of Fish and Game (CDFG)

CDFG regulates activities within watercourses, lakes and in-stream reservoirs. Under California Fish and Game Codes 1600-1603, an entity proposing an activity that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the CDFG must receive a Lake or Streambed Alteration Agreement from the CDFG pursuant to Section 1601 of the California Fish and Game Code. Typically, this requirement applies to any work proposed within the 100-year floodplain of a stream or river and associated riparian areas. Construction activities within the channel of Deadmans Gulch are subject to CDFG’s Section 1601 jurisdiction.

State Water Resources Control Board (SWRCB)

SWRCB has jurisdiction over water quality for both surface water and groundwater at the Park. SWRCB Resolution 68-16, commonly referred to as the non-degradation policy, requires maintenance of the existing water quality within a specific surface-water

or groundwater system. SWRCB Order No. 2003-0003-DWQ addresses the discharge of “low-threat” waters from activities such as construction dewatering. Individual RWQCBs operate under the SWRCB.

San Francisco Bay RWQCB

The San Francisco Bay RWQCB, under the authority of the Porter-Cologne Act and pursuant to the CWA, is responsible for authorizing activities that have the potential to discharge wastes to surface water or groundwater resources. The Water Quality Control Plan for the San Francisco Bay Region, referred to as the “Basin Plan” (RWQCB 2010) identifies the beneficial uses of water bodies and provides water quality objectives and standards for waters of the region. State and federal laws mandate the protection of designated beneficial uses of water bodies. State law defines beneficial uses as “domestic; municipal; agricultural and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves” (Water Code Section 13050[f]). Major issues and the general conditions of existing beneficial uses of Lagunitas Creek are listed below.

4.8.3. Thresholds of Significance

The following thresholds have been prepared based on Appendix G and Section 15065 of the State CEQA Guidelines. The trail/road improvements and Change in Use project would have a significant impact on hydrology or water quality if it would:

- HYDRO 1: Violate any water quality standards or waste discharge requirements
- HYDRO 2: 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).
- HYDRO 3: Substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation.
- HYDRO 4: 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.
- HYDRO 5: Substantially degrade water quality.
- HYDRO 6: 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.
- HYDRO 7: Place structures that would impede or redirect flood flows within a 100-year flood hazard area.
- HYDRO 8: Expose people or structures to a significant risk of loss, injury, or death from flooding, including flooding resulting from the failure of a levee or dam.
- HYDRO 9: Result in inundation by seiche, tsunami, or mudflow.

4.8.4. Environmental Impacts, Project Requirements, and Mitigation Measures

Methodology

Impacts to hydrology and water quality were assessed by evaluating all potential direct, indirect, temporary, and permanent sources of run-off associated with implementation of the project. Potential impacts could occur through the following mechanisms:

- Changes in hydrology and water quality due to short-term construction activities, and;
- Changes in hydrology and water quality due to long-term operational activities.

Impact Statement HYDRO 1: Would the project violate Water Quality Standards or Waste Discharge Requirements.

Impact Statement HYDRO 3: Would the project substantially alter the existing drainage pattern of the site or area, including through alteration of the course of a stream or river, in a manner which would result in substantial on- or off-site erosion or siltation.

Impact Statement HYDRO 4: Would the project 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.

Impact Statement HYDRO 5: Would the project substantially degrade water quality.

Short-Term Construction Related Impacts

The impacts associated with construction, are shown in Table 4.8.1 on the following page. Approximately 4 acres of vegetation and duff would be removed from existing sections of Bill's Trail and Gravesite Fire Roads. This material would be raked or side cast above the trail and realigned segments. This material would be used after trail construction to aid in revegetation and erosion prevention. Further adjustments may be made to the proposed trail alignment if focused surveys result in identification of sensitive resources that can be avoided.

Table 4.8.1 Potential Constructed-Related Impacts to Water Quality

Construction Phase	Impact	Potential Threat to Water Quality	Example BMPs*
Grading	Exposed Soils	<ul style="list-style-type: none"> Grading would increase the erosion potential of onsite soils which could lead to offsite sediment transport. This impact is potentially significant. 	<ul style="list-style-type: none"> Apply straw mulch to disturbed soils; Limit grading activities to the driest time of the year, typically between May 15 and October 15 of each year.
	Soil transport from vehicles and equipment	<ul style="list-style-type: none"> Soil from disturbed areas could be tracked onto paved roads during egress from the site by vehicles and equipment, particularly during inclement weather. Soil on paved roads could be washed into the drainages during storm events. Sediment transport from the site could have adverse impacts to water quality which would be a potentially significant impact. 	<ul style="list-style-type: none"> Wash equipment in designated, contained areas only; Eliminate discharges to the storm drain by infiltrating the wash water; Train employees and subcontractors.
	Fugitive dust	<ul style="list-style-type: none"> Fugitive dust during construction is considered a form of erosion and has the potential to be deposited in sensitive resources. Without adequate dust abatement, fugitive dust could potentially result in significant impacts. 	<ul style="list-style-type: none"> Apply water or other dust palliatives to prevent or alleviate dust nuisance.
	Increased runoff	<ul style="list-style-type: none"> Increased runoff due to compacted soils during grading would increase the potential for offsite sedimentation. In addition to sediment, runoff could potentially carry pollutants. Runoff carrying sediment and other pollutants could potentially be significant. 	<ul style="list-style-type: none"> Install fiber rolls at grade breaks of exposed and erodible slopes to shorten slope length and spread runoff as sheet flow;
	Inadvertent release of hazardous materials	<ul style="list-style-type: none"> Grading, grubbing, and trenching activities could result in the release of hydraulic oil, diesel fuel, motor oil, and/or radiator fluid used in operation of mechanical equipment. If released, these products could potentially result in significant impacts on water. 	<ul style="list-style-type: none"> Minimize the storage of hazardous materials onsite; store materials in a designated area; Train employees and contractors.

* Actual BMPs will developed with the Stormwater Pollution Prevention Plan (SWPPP)

Removal of duff and vegetation exposes bare soil and causes unstable conditions, resulting in soils that are easily disturbed by equipment and eroded by rain and wind. Additionally, the steep slopes on which the trail alignment is located are subject to moderate to very high erosion hazard, which could result in erosion of surface soils

during reconstruction of the proposed trail. Finally, accidental spills of construction-related contaminants, such as fuels, oils, solvents, and cleaners, could occur during construction activities in the project area, resulting in contamination of surface soils.

Since the project would disturb more than one acre, a Notice of Intent must be filed with the SWRCB and a General Construction Activity Storm Water Permit must be obtained, pursuant to the NPDES regulations established under the Clean Water Act. This permit requires preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which is intended to prevent degradation of surface and ground waters during the grading and construction process.

Without such protections, impacts to water quality during construction could be significant. The impacts associated with construction are all considered short-term. Best Management Practices, would ensure that impacts to water quality would be reduced to less than significant levels through measures intended to control erosion and sedimentation within the perimeter of the site, and to effectively manage hazardous materials.

Comparative Runoff and Water Quality Impacts by User Group

Each user group creates varying levels of water quality impacts, which is an inevitable outcome of repetitive use. Soil compaction and erosion, loss of organic litter, and loss of ground cover are all potential water quality impacts that are common for all user groups.

Certain user groups however, create impacts that are unique to those groups. Table 4.8.2 identifies the potential Impacts on runoff and water quality for each user group.

Table 4.8.2 Potential Operational Impacts to Water Quality

Operational	Impact	Potential Threat to Water Quality	Example BMPs*
Hiking	Soil disturbances	<ul style="list-style-type: none"> Trampling native vegetation holding soils in place and filtering sediment from runoff. Crushing or uprooting native plants when hiking occurs off designated trails, or avoiding puddles or other problem areas; 	<ul style="list-style-type: none"> Install barriers at switchbacks to discourage trail shortcuts; Educate hikers with signage.
Horseback Riding	Soil disturbances	<ul style="list-style-type: none"> Loosening soil due to horse's hoof actions. This can make soils susceptible to erosion (Whittaker 1978). Riding on saturated trail surfaces. 	<ul style="list-style-type: none"> Avoid creating switchbacks, shortcuts, or new paths for others to follow; Close the trail seasonally when conditions.
	Loss of plant cover	<ul style="list-style-type: none"> Grazing and trampling can remove vegetation cover and can uproot plants leaving exposed areas. 	<ul style="list-style-type: none"> Use signage to educate riders to avoid grazing along trail route.
	Waterway disturbance	<ul style="list-style-type: none"> Horses often require direct access to water or they risk colic followed by death on the trail. The degradation of banks of streams could result in a potentially significant impact. 	<ul style="list-style-type: none"> Use signage to educate riders to avoid grazing along trail route.
	Horse wastes	<ul style="list-style-type: none"> Horse manure near/within waterways can produce oxygen depleting algae blooms. 	<ul style="list-style-type: none"> Use signage to educate riders to clean up after their horses.
Mountain Biking	Soil disturbances	<ul style="list-style-type: none"> Damaging or uprooting plants or the soil crust, thereby allowing the exposed soils to easily become windblown or washed away by water; Crushing or uprooting native plants when riding occurs off designated trails, or avoiding puddles or other problem areas; Skidding, linear rut development, user conflict, the addition of unauthorized constructed features to the trail, and informal trail development increases the potential for off-site sedimentation; 	<ul style="list-style-type: none"> Construct barriers such as fencing or boulders at switchbacks to prevent shortcuts; Install pinch points to reduce downhill speed; Use signage to educate riders to avoid sensitive areas.

* Actual BMPs will developed with the Stormwater Pollution Prevention Plan (SWPPP)

Hikers

Although each user group creates water quality impacts, those caused by hikers are typically minor when exercising proper trail etiquette on adequately-maintained trails and in good weather conditions. Nevertheless, impacts do occur as use (or misuse) often occurs under suboptimum conditions. Hikers may shortcut trails on switchbacks and cause erosion over volunteer routes. Shortcuts result in trampled native vegetation, loosened soil, and discharged sediment in runoff. Severe rutting or rockiness caused by soil erosion or muddiness often brings about trail widening from users as does hiking side-by-side.

Horses

Aust, Marion, and Kyle (2005) noted that whereas hikers generate an average of only 2.9 lbs/in² of pressure on the ground under each foot, horses generate approximately 62 lbs/in² of pressure on the ground under each shod hoof. The greater weight of horse and rider impacts trails by loosening surface soils that are otherwise compacted, detaching soil particles and increasing sediment yield and erosion. Horses also create potholes that fill with water and soften the surrounding surface, again increasing the potential for off-site sedimentation.

Westendorf (2009) found that horses can potentially create other water quality impacts that are unique to this user group. Organic matter present in manure can be a significant adverse impact if it runs off into surface waters. Eutrophication and additional oxygen depletion may occur as a result of decomposition of the organic matter. Grazing by horses can result in the loss of vegetation that holds soils in place and filters runoff.

Mountain Biking

Impacts unique to mountain bikes that contribute to erosion and off-site sedimentation are those caused by sudden braking or skidding, linear rut development, user conflict, the addition of unauthorized constructed features to the trail, and informal trail development. These impacts primarily result from excessive speed or using the trails under suboptimum conditions.

Conclusion

Lanza (2001) noted that there was very little hard data that conclusively proves that bikes do more damage to trails than hiking. Wilson and Seney, in a 1994 study employed an experimental design that simulated rainfall events and found that mountain biking actually generated less sediments from trails than horses and hikers. Most studies agree however, that equestrian impacts are far greater than either pedestrian or bike (Pickering et al, 2009).

While different studies have produced differing conclusions, the US Forest Service (USFS) has quantified their experience on a trail conversion and reconstruction project on the North Shore of the sensitive Lake Tahoe Basin. Brill, Harris, and Norman (2010) analyzed the results of pre and post construction erosion monitoring on a trail designed to serve mechanized (e.g., non-motorized devices such as mountain bikes, roller skis, dirt skates) and non-mechanized (e.g., pedestrians, equestrians) use. Pre-project monitoring was performed to determine the trails with the highest risk to water quality.

The post project evaluations indicated that risk levels dropped substantially with the implementation of trail upgrades. The analysis predicted a greater than 90% reduction in sediment yields at stream crossings by decreasing trail slope, and increasing water diversions to reduce connected length.

This Change in Use project has been designed with features to reduce impacts on water quality through implementation of trail design standards, Best Management Practices (BMPs), and periodic maintenance. Reconstruction of the trail includes the following specific design components to minimize impacts:

- Provide outslope to the trail tread and removing any outer edge berm to facilitate sheet flow off the trail where it can be filtered by vegetation and organic litter;
- Remove loose-debris (slough) collecting on the inside hinge;
- Reconstruct existing switchbacks to provide design drainage as originally constructed;
- Construct rolling dips where feasible to collect water and direct it safely off the trail to prevent buildup of surface runoff subsequent erosion;
- Where rolling dips are infeasible, reconstruct failing water bars to divert water to controlled points along the trail and provide rock at the downslope end;
- Install armored rock crossings at all ephemeral drainages and micro drainages to harden the trail tread in areas of potential interface between trail users and natural topographic drainage features;
- Install gravel surfacing on trail areas in close proximity to Devil's Gulch to provide a stable tread surface as well at each bridge approach;
- Seasonally close trails to all users when soils are saturated and softened.
- Immediately following reconstruction, the trail would be closed for approximately 12 months to allow the soil and materials to settle and compact before the trail opens to the public. Routine maintenance will also be performed on the trail as necessary to reduce erosion to the extent possible and to repair weather-related damage that could contribute to erosion.

The following design components are also required for the specific sections of Gravesite Road portion of the loop system trail.

- Armor-plate trail crossing at Deadmans Gulch;
- Re-rout Gravesite Fire Road section of the trail to the outside at approximately the 280' contour interval, and at a grade not to exceed 10%;
- Decommission and restore the entrenched section of Gravesite Fire Road.

The project incorporates measures to moderate rider behavior and minimize access (for bikes and horses) when conditions make the trails more susceptible to erosion and water quality impacts. They include:

- Install eucalyptus logs to create "pinch points" in approximately 100 locations to reduce downhill bicycle speed and increase the line of sight at curves. This creates an "S" path necessitating slower speeds to negotiate the path through the logs;
- Construct or repair barriers at switchbacks to discourage shortcuts and the creation of volunteer trails.

Although long-term operational impacts on runoff and water quality could be potentially significant, those impacts are mitigable to a less than significant level. With implementation of the following mitigation measures, in concert with **Project Requirements HYDRO 1, Erosion, Sediment Control and Pollution Prevention**; and **HAZ-1, Spill Prevention** will control soil erosion and surface water runoff and ensure no water quality standards are violated. These measures will result in a less than significant impact to water quality and waste discharge.

Level of Significance Before Mitigation:	Less Than Significant
Mitigation Measures:	None

4.8.5. Effects Considered No Impact or Less Than Significant Without Project Requirements

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

Impact Statement HYDRO 2 Could potentially deplete groundwater supplies or potentially interfere 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):

The proposed project would not involve groundwater extraction or major excavations that could intercept or otherwise interfere with groundwater flow or groundwater quality. The action alternatives would result in reduction of surface runoff rates and would improve sheet flow off the trail where it can be filtered by vegetation and organic matter prior to entering stream channels soil. Water supplies for the park would not be affected by the proposed project. Therefore, no impact would result.

Impact Statement HYDRO 6: Place structures or 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:

Structures or housing are not a component of the proposed project. Therefore, no impact would result.

Impact Statement HYDRO 8: Expose people or structures to a significant risk of loss, injury, or death from flooding, including flooding resulting from the failure of a levee or dam:

There is no levee or dam in any location that could threaten people or structures within Samuel P. Taylor SP, with or without the project. Therefore, no impact would result.

Impact Statement HYDRO 9: Result in inundation by seiche, tsunami, or mudflow:

The project location within Samuel P. Taylor SP is located approximately 5 miles from the Pacific Ocean and as such, is located outside of any potential risk of inundation by a

tsunami. Therefore, this project would not increase the exposure of people or structures to risk of loss, injury, or death as a result of these events. Therefore, no impact.

4.8.6. Findings

For hydrological conditions and water quality evaluated as part of this environmental document, the potential exists for significant degradation of water quality from erosion, sedimentation, and release of hazardous materials into surface waters; and increased stormwater runoff that could become a source of increased polluted runoff, as a direct or indirect result of proposed project activities. However, with integration of project requirements, the hydrologic and water quality impacts would be less than significant.

4.9. Land Use and Planning (Includes Agriculture, Minerals, and Recreation)

This section provides information on land use and planning conditions and issues, as well as Recreation within the Park. Agriculture operations are not allowed within the Park; Mineral Resource extraction is also not allowed in the park; therefore, these topics require no further discussion.

4.9.1. Land Use and Planning

4.9.1.1. Existing Conditions

(SPTSP consists of approximately 2685 acres located in the coastal hills of unincorporated Marin County. The actual area of the project encompasses approximately 52 acres. Bill's Trail is located on the northern half of SPTSP, and begins at a bridge crossing over Devil's Gulch. It extends 3.3 miles up Barnabe Mountain, and eventually terminates at Barnabe Fire Road. Barnabe Fire Road, designated as a fire road, is open to hikers, horses and bicycles.

Gravesite Fire Road is a narrow road as it rises away from Devil's Gulch and widens as it approaches Deadmans Gulch. Gravesite Fire Road is open to mountain bikes, hikers and equestrians and provides a link between lower Bill's Trail and Barnabe Fire Road.

4.9.1.2. Regulatory Framework

Applicable State Regulations

Currently, SPTSP does not have a general plan that guides the park's long-range management and goals. DPR is not required to prepare a general plan for a unit that has no general plan or to revise an existing plan, as the case may be, if the only development contemplated by the department consists of the repair, replacement, or rehabilitation of an existing facility or the construction of a temporary facility, as long as the construction does not result in the permanent commitment of a resource of the park unit. Any development is subject to the requirements of the California Environmental Quality Act (Division 13 (commencing with Section 21000)).

4.9.1.3. Thresholds of Significance

The following thresholds have been prepared based on the State CEQA Guidelines (Appendix G) and Section 15065 of the State CEQA Guidelines. The Project would have a significant impact on Land Use Planning if it will:

- LUP 1: Physically divide an established community.
- LUP 2: Conflict with the applicable land use plan, policy, or regulation of any 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.
- LUP 3: Conflict with any applicable habitat conservation plan or natural community conservation plan.

4.9.1.4. Effects Considered No Impact or Less Than Significance Without Project Requirements

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

The proposed project is not located within a community nor does it conflict with any applicable land use plan, habitat conservation plan, or natural community conservation plan.

4.9.2. Agriculture

The proposed project is located completely on State Park land and does not support any agricultural operations – no discussion necessary.

4.9.3. Minerals

The proposed project is located completely on State Park land and does not support any mineral extraction operations – no discussion necessary.

4.9.4. Recreation

Outdoor recreation opportunities are plentiful in Marin County mostly because of the extensive acreage protected in public parks, including lands managed by the California Department of Parks and Recreation (DPR), National Park Service (NPS), Marin County Department of Parks and Open Space (MCDPOS), and Marin Municipal Water District (MMWD). The County of Marin has listed existing conditions in most of these public lands and identified general countywide recreation issues and alternatives in the Park and Recreation section of the Marin Countywide Plan (Marin County 2005). Public lands and existing facilities in the county -are described below in Section 4.10.2.1 Existing Conditions.

4.9.4.1. Existing Conditions

SPTSP Recreational Facilities

SPTSP provides day use and camping facilities which are described in Table 4.9.1 below. These facilities include a family campground; two group campgrounds; a horse campground; a small tent-only campground; two picnic sites; hiking and horseback

riding trails; hiking, equestrian, and bike trails; and paved and dirt parking lots (DPR 2010).

NAME	DESCRIPTION
Redwood Grove Group Picnic Area	space for a maximum of 80 people
Irving Group Picnic Area	space for a maximum of 30 people
Main Campground	61 family campsites with restrooms, showers, piped drinking water; some sites can accommodate small trailers
Madrone Group Campground #1	space for a maximum of 50 people
Madrone Group Campground #2	space for a maximum of 25 people
Horse Campground #1	corral, hitching racks, watering troughs, and campsite for a maximum of 20 people
Devil's Gulch Campground	2 tent-only sites with a maximum of 10 people each
Bill's Trail	3.48-mile trail; hiking/equestrian use; connects with 0.5-mile Stairstep Falls Spur Trail and Barnabe Fire Road
Stairstep Falls Trail	0.2-mile trail; spur trail from Bill's Trail
Taylor's Grave Trail	0.06-mile trail; spur trail from Gravesite Fire Road
Cross Marin Trail	3.69-mile trail; hiking/equestrian/bicycle use; dogs on leash allowed
Irving Trail	0.34-mile trail; hiking use only
Pioneer Tree Trail	1.71-mile trail; hiking/equestrian use
Ox Trail	0.73-mile trail; hiking/equestrian use
North Creek Trail	0.76-mile trail; hiking use only
South Creek Trail	0.73-mile trail; hiking/equestrian use
Devil's Gulch Trail	0.73-mile trail; hiking use only
Devil's Gulch Fire Road	1.4-mile paved/dirt road; hiking/equestrian/bicycle use
Deer Point Fire Road	0.68-mile dirt road; hiking/equestrian/bicycle use
Gravesite Fire Road	0.52-mile dirt road; hiking/equestrian/bicycle use
Barnabe Fire Road	3.14-mile dirt road; hiking/equestrian/bicycle use
Deer Point Fire Road	0.68-mile; hiking/equestrian/bicycle use
Shafter Grade Road	0.15-mile; hiking/equestrian/bicycle use

SPTSP Recreational Activities (DPR 2010)

Camping

Camping is very popular during the summer season, partly due to limited availability of camping facilities in Marin County and high demand. Separate campgrounds serve families, groups, and equestrian users (see above). Each campground provides tables, piped water, and restrooms. Showers are only available at the family campground, which also can accommodate small trailers.

Picnicking

Formal picnic facilities are provided at two sites in the park. Each site has tables and piped water, with drinking water and restrooms nearby.

Trails

Approximately 19 miles of trail are available for hiking, biking, and horse riding. Bicycle use is allowed on about 10.3 miles of this total, including 3.69 miles of the paved Cross Marin Trail, which is mostly level and follows the old Northwest Pacific Railroad right-of-

way. Dogs on leash are allowed on the Cross Marin Trail. Horse riding is available on all but 1.49 miles of park trails.

Trail access is available from day use facilities, park campgrounds, and a few locations along Sir Francis Drake Boulevard (e.g. the dirt parking area opposite the Devil's Gulch Road entrance).

Water Activities

Fishing is not allowed in Lagunitas Creek in order to protect aquatic resources. However, swimming in the creek is permissible and a swimming hole is identified on the park brochure at a location just east of the western park boundary.

From 1996 to 2009 the annual total visitor attendance for SPTSP averaged 40,279 for paid day use, 53,445 for free day use (e.g. through park trails such as Cross Marin Trail), and 78,246 for camping (Table 4.9.2). The busiest months were May through September. During this period paid day use has declined from a high of 50,701 in 2004 to a low of 25,868 in 2009. Conversely, free day use has increased from 35,584 in 2007 to 46,320 in 2009, probably reflecting a weak economy.

Year	Paid Day Use	Free Day Use	Overnight	Total
1999	41,466	80,614	89,456	21,1536
2000	49,681	41,470	89,288	180,439
2001	43,470	29,738	68,955	142,157
2002	44,437	56,034	60,769	161,240
2003	48,215	48,143	68,811	165,169
2004	50,701	43,369	69,804	163,874
2005	36,344	81,801	72,270	190,415
2006	33,667	41,137	66,684	141,488
2007	32,200	35,584	77,366	145,150
2008	30,028	36,340	71,071	137,439
2009	25,868	46,320	63,106	135,294
Total	563,909	748,225	1,102,793	2,414,927
Average	40,279	53,445	78,771	172,495

Other Public Lands in Marin County

DPR

Five other DPR park units are located in Marin County (DPR 2010). These are Angel Island SP, China Camp SP, Mt. Tamalpais SP, Olompali SHP, and Tomales Bay SP. A brief description of park activities and facilities in these units are listed in Table 4.9.3 below.

Table 4.9.3 California State Parks in Marin County					
Activity/Facility	Angel Island SP	China Camp SP	Mt. Tamalpais SP	Olompali SHP	Tomales Bay SP
Visitor Center	Yes	Yes	Yes	Yes	No
Parking	No	Yes	Yes	Yes	Yes
Exhibits and Programs	Yes	Yes	Yes	Yes	Yes
Food Service	Yes	Yes	Yes	No	No
Lodging	No	No	Yes	No	No
Restrooms	Yes	Yes	Yes	No	Yes
Showers	No	Yes	No	No	No
Family Campsites	No	Yes	Yes	No	No
Group Campsites	No	No	Yes	No	No
Hike or Bike Campsites	Yes	Yes	No	No	No
Environmental Campsites	Yes	No	Yes	No	No
Enroute Campsites	No	Yes	Yes	No	No
Picnic Areas	Yes	Yes	Yes	Yes	Yes
Hiking Trails	Yes	Yes	Yes	Yes	Yes
Bike Trails	Yes	Yes	Yes	No	No
Equestrian Trails	Yes	Yes	Yes	Yes	No
Nature Trails	No	No	Yes	No	Yes
Guided Tours	Yes	Yes	Yes	Yes	No
Fishing	Yes	Yes	No	No	Yes
Wildlife Viewing	No	Yes	Yes	No	No
Boat Mooring	Yes	No	No	No	No
Boat Ramps	No	Yes	No	No	No
Windsurfing	No	Yes	No	No	Yes
Swimming	No	Yes	No	No	Yes

U. S. National Park Service:

Federal lands managed the U. S. National Park Service (NPS) in Marin County consists of Golden Gate National Recreational Area (GGNRA), Muir Woods National Monument (MWNM), and Point Reyes National Seashore (PRNS). Numerous recreational opportunities consistent with NPS rules and regulations and management philosophy are provided at these parks. A brief description of park activities and facilities in these parks are listed in Table 4.9.4 below.

Table 4.9.4 NPS Parks in Marin County			
ACTIVITY/FACILITY	GGNRA	MWNM	PRNS
Visitor Center	Yes	Yes	Yes
Parking	Yes	Yes	Yes
Exhibits and Programs	Yes	Yes	Yes
Food Service	Yes	No	Yes
Lodging	Yes	No	Yes
Showers	No	No	No
Vehicular Campgrounds	No	No	No
Group Campsites	No	No	No
Hike-in Campgrounds	Yes	No	Yes
Picnic Areas	Yes	No	Yes
Hiking Trails	Yes	Yes	Yes
Bike Trails	Yes	No	Yes
Equestrian Trails	Yes	No	Yes
Interpretive Walks	Yes	Yes	Yes
Fishing	Yes	Yes	Yes
Wildlife Viewing	Yes	Yes	Yes
Kayaking	No	No	Yes

Marin County Department of Parks and Open Space: (MCDPOS 2010)

The Marin County Parks and Open Space Strategic Plan (2008) identifies existing conditions and the goals and strategies for current and future management of the County's parks and open space preserves. These parks and preserves are described below.

County Parks:

Marin County supports a series of parks that provides the public with a wide variety of outdoor recreational opportunities for individuals, groups, and families (Table 4.9.5). Recreational facilities and features include but are not limited to boat launches, beaches, golf courses, swimming pools, picnic areas, and ball fields are just a few samples of the many opportunities available.

Table 4.9.5 Marin County Parks

Park Name	Location	Description
Agate Beach	Approximately 1.6 miles west of Bolinas, CA.	6.6-acre park with access to almost two miles of Pacific Ocean shoreline at low tide; opportunities for exploration of explore tidal pools.
Black Point Boat Launch	Black Point exit on Highway 37, southeast of Novato, CA.	1-acre site with parking and a two-lane ramp for boat launching onto the mouth of the Petaluma River.
Bolinas Park	Brighton Avenue in Bolinas, CA.	2-acre park with a tennis court, restrooms, and picnic tables.
Civic Center Lagoon Park	east side of Civic Center Drive near Marin County Civic Center, San Rafael, CA.	20-acre informal park with picnic areas, children's play structures and fishing; non-motorized boating is permitted in the 11 acre lagoon; in the summer, much of the park becomes the site of the Marin County Fair.
Creekside Park	Bon Air Road in Greenbrae, CA.	Children's playground, picnic tables, a lawn area and links to the popular Corte Madera Creek Multi-Use Pathway; views of Mt. Tamalpais.
Deer Park	Off Porteous Avenue in Fairfax, CA.	54-acre park with picnic areas and nature trails in a natural, wooded setting.
John F. McInnis County Park	1 mile east of Highway 101 on Smith Ranch Road in San Rafael, CA.	Skatepark, tennis courts, four multi-use fields, a 9-hole executive golf course, driving range, batting cages, miniature golf, a clubhouse, and hiking trails along Gallinas Creek.
McInnis Park Skatepark	1 mile east of Highway 101 on Smith Ranch Road in San Rafael, CA.	25,000 square foot skatepark at McInnis Park.
McNear's Beach Park	Off San Pedro Road along the shore of San Pablo Bay, San Rafael, CA.	Swimming pool, tennis courts, family and group picnic sites, a sandy beach, lawn areas, snack bar and a 500 foot long fishing pier.
Miller Park Boat Launch	Highway 1 at Tomales Bay, 3 miles north of Marshall, CA.	6-acre park with parking, a two lane ramp for boat launching and fishing opportunities.
Multi-purpose Paths	Sausalito to Mill Valley; San Marin H.S. to Stafford Lake Park; Creekside Park, Greenbrae & Kentfield, CA.	multi-purpose paths
Paradise Beach	Paradise Drive along the east shore of the Tiburon Peninsula, Tiburon, CA.	19-acre park with family and group picnic sites, lawn areas, a horseshoe court, sandy beach and a fishing pier; some boaters anchor out and row ashore to picnic.
Stafford Lake Park	On the shore of Stafford Lake 3 miles west of Novato, CA.	139-acre park offers lake fishing, a nature trail, picnic areas with barbecue facilities for groups of up to 500 people, a popular children's play structure, lawn areas, a softball field, volleyball, disc golf and horseshoe courts.
Tiburon Uplands Nature Preserve	Paradise Drive south of Paradise Beach Park, Tiburon, CA.	24-acre wooded upland preserve with a loop trail; preserve contains a variety of native plants and animals, as well as excellent bay views from the higher elevations.
White House Pool	1 mile west of Point Reyes Station, CA.	24-acre site provides opportunities for bird viewing

Open Space Lands:

The Marin County Open Space District (MCOSD) is responsible for acquiring and preserving public open space in Marin County, including ridgeland, bayland, and environmentally sensitive lands identified for preservation in the Marin Countywide Plan. These lands "are managed to protect and enhance their natural, undeveloped character while accommodating educational activities and trail-oriented uses such as hiking,

horseback riding and mountain bicycling.” Approximately 70 miles of fire protection roads and service roads exceeding eight feet in width are open to bicycle use. Dogs are allowed on open space lands when restrained by a 6' (maximum) long leash. MCOSD conducts interpretive walks through an environmental education program that includes naturalist-led outings and ranger-led events.

MCOSD currently manages 33 open space preserves described below in Table 4.9.6.

Table 4.9.6 Marin County Open Space Preserves		
Preserve Name	Location	Description
Alto Bowl Open Space Preserve	Mt. Tamalpais ridgelines between Corte Madera, CA on the north and Mill Valley, CA to the south.	Easternmost part of the Mt. Tamalpais ridgelines.
Bald Hill Open Space Preserve	Beside the Worn Springs Fire Road.	A small preserve of several parcels; Bald Hill summit is privately owned.
Baltimore Open Space Preserve	Headwaters of Larkspur Creek.	196-acre preserve encompasses a lovely canyon filled with history, stately trees, and a spectacular waterfall; the trail system connects to several of the main fire roads that traverse the north slopes of Mount Tamalpais, as well as to other District lands including King Mountain and Blithedale Summit.
Blithedale Summit Open Space Preserve	North ridge of Mount Tamalpais between the communities of Mill Valley and Corte Madera.	Trails and roads in through a variety of habitats, including deep forests and dense chaparral.
Bolinas Lagoon Open Space Preserve	Just north of Stinson Beach, CA.	Wedge-shaped estuary is important stopover point for many species of sandpipers, plovers, geese and ducks that travel the Pacific Flyway; home to a population of harbor seals.
Bothin Marsh Open Space Preserve	North end of Richardson Bay, adjacent to junction of Highways 101 and 1.	Tidal wetland surrounded by cordgrass and pickleweed; home for several endangered species, including the California clapper rail, and the salt-marsh harvest mouse.
Camino Alto Open Space Preserve	Mt. Tamalpais ridgelines between Corte Madera on the north and Mill Valley to the south.	225-acre preserve including grasslands, bay/oak woodlands, and redwood/Douglas fir forests; fire roads in this preserve are popular with hikers, bicyclists, and equestrians, with several relatively level routes on a ridge with views of San Francisco and Mount Tamalpais; the Middle Summit Fire Road in the northern section of the preserve connects with the Blithedale Summit Open Space Preserve
Cascade Canyon Open Space Preserve	Hills above Fairfax, CA in the Corte Madera Creek watershed.	500 acres of pristine habitat consisting of mixed broadleaf and evergreen forests above lush riparian corridors.
Deer Island Open Space Preserve	Just southeast of Novato, CA.	135 acres of grasslands and oak woodlands adjacent to the Petaluma River Delta area.
French Ranch Open Space Preserve	South-facing slope above the eastern end of the San Geronimo Valley.	370-acre preserve of grasslands and a forested canyon of Douglas fir, redwood, oak, and tanoaks.
Gary Giacomini Open Space Preserve	Encompasses portions of San Geronimo Ridge north of Kent Lake between Sir Francis Drake Boulevard and Fairfax-Bolinas Road.	Windswept ridge with stands of rare dwarf Sargent Cypress trees and Marin manzanita.

Horse Hill Open Space Preserve	Mt. Tamalpais ridgelines between Corte Madera on the north and Mill Valley to the south.	Southern half of the Alto Bowl Preserve is known as "Horse Hill" and is leased for horse pasturing by the Alto Bowl Horseowners Association
Ignacio Valley Open Space Preserve	Northern slope of eastern Big Rock Ridge, west of Ignacio, CA.	450 acres of grasslands, chaparral, and woodlands.
Indian Tree Open Space Preserve	West of Novato, CA at the end of Vineyard Road.	Mixed forests of redwood, California bay, oaks, and madrone.
Indian Valley Open Space Preserve	West end of Ignacio Valley, adjacent to Indian Valley campus of the College of Marin.	Grasslands and oak and California bay forests.
King Mountain Open Space Preserve	Above Larkspur, CA.	Grasslands, chaparral, and redwood, tanoak, and California bay woodlands.
Little Mountain Open Space Preserve	Just west of Novato, CA and adjacent to Hicks Valley-Novato Road.	220-acre preserve of grasslands interspersed with oaks
Loma Alto Open Space Preserve	Approximately 2 miles north of Fairfax and adjacent to Sir Francis Drake Boulevard.	Grasslands and California bay woodlands, with 1592-foot Loma Alto, one of the highest points in Marin County
Loma Verde Open Space Preserve	Northern slope of eastern Big Rock Ridge and adjacent to Ignacio Valley OSP, west of Ignacio, CA.	Grasslands, chaparral, and oak woodlands.
Lucas Valley Open Space Preserve	Western slopes of Big Rock Ridge above Lucas Valley; accessed from Lucas Valley Road.	Grasslands, chaparral, and oak woodlands
Maurice Thorer Memorial Open Space Preserve	Adjacent to Lagunitas School in San Geronimo, CA.	32 acres of grasslands and mixed woodlands.
Mount Burdell Open Space Preserve	Approximately 1 mile north of Novato, CA and adjacent to Olompali SP.	Grasslands, oak and California bay woodlands; 1,558-foot summit of Mt. Burdell offers views of the entire Bay Area.
Old St. Hilary's Open Space Preserve	Hilltop adjacent to Tiburon, CA	Grasslands immediately surrounding Old St. Hilary's Church; rare Tiburon jewelflower.
Pacheco Valle Open Space Preserve	Northern slope of eastern Big Rock Ridge and adjacent to Loma Verde OSP, west of town of Ignacio, CA	Grasslands, chaparral, and woodlands; includes 1825-foot summit of Big Rock Ridge, 2 nd highest point in Marin County
Ring Mountain Open Space Preserve	Approximately 2 miles southeast of Corte Madera, CA on ridgeline of the Tiburon Peninsula.	Grasslands, oak and California bay woodlands; rare plant species, including extremely rare Tiburon Mariposa Lily
Roy's Redwoods Open Space Preserve	Adjacent to the north end of San Geronimo, CA.	377 acres of redwoods, grasslands, and California bay woodlands.
Rush Creek Open Space Preserve	Adjacent to the eastern end of Novato, CA and bordered on south side by Atherton Ave and Highway 101 on west side.	500-acre plus preserve consisting of a low ridge with mixed broadleaf forests (e.g. blue oak) that adjoins CDFG managed Rush Creek Marsh.
San Pedro Ridge Open Space Preserve	Just east of San Rafael, CA and bordering China Camp SP.	Small stands of redwood and forests of oak, California bay, and Pacific madrone.
Santa Margarita Island Open Space Preserve	Just north of Marin County Civic Center, San Rafael, CA.	Grasslands dotted with oaks; adjacent to wetlands with abundant birdlife.
Santa Venetia Marsh Open Space Preserve	Just east of Santa Margarita Island OSP, San Rafael, CA	Wetlands with abundant birdlife.
Terra	Ridge lands between Lucas	Large 1,168 acre-preserve with grasslands and

Linda/Sleepy Hollow Open Space Preserve	Valley Road to the north, Highway 101 to the east, and Sir Francis Drake Boulevard to the southwest.	broadleaf forests; abundant birdlife.
Tiburon Ridge Open Space Preserve	Adjacent to east side of Highway 101, adjoining Ring Mountain OSP and western end of the Tiburon Peninsula.	Small parcel of grasslands.
Verissimo Hills Open Space Preserve	Ridge lands on west side of Novato, CA	Grasslands and oak and California bay woodlands.
White Hill Open Space Preserve	Ridge lands northwest of Fairfax; adjoins north side Cascade Canyon OSP.	Grasslands and manzanita and chamise chaparral; includes summit of 1,430-foot White Hill.

Marin Municipal Water District (MMWD 2010):

The Marin Municipal Water District preserves and protects watershed lands in the Mt. Tamalpais Watershed (slopes of Mt. Tamalpais north to Lagunitas, CA) and land adjacent to the Nicasio and Soulajule Reservoirs in west Marin County. These lands are managed as scenic open space and as areas for passive outdoor recreation, which is defined as “those activities that are based on nature and that require little or no development or facilities.”

Developed picnic areas have been established at Lagunitas Lake. Barbecues are provided at this site and open flames are restricted to the facilities provided by MMWD. Undeveloped picnic sites are available in more remote MMWD lands.

There are 30 miles of trails and unpaved roads available for hiking on MMWD lands. Many of these routes connect with adjacent national and state parks and Marin County parks open space lands. Hikers are cautioned to stay on authorized routes in order to minimize human disturbance to sensitive habitat and sensitive plant and wildlife species.

Bicycling is permitted on about 73 miles of unpaved roads but bicyclists are prohibited from riding or possessing a bike on hiking and equestrian trails. A maximum speed limit of 15 mph for bicycles is enforced.

Horseback riding is allowed on unpaved roads and designated trails. Horses may not enter streams and reservoirs, travel cross-country, or graze on watershed lands.

Fishing is allowed at all seven of the MMWD reservoirs. Dogs are permitted on MMWD lands only when restrained by a leash and under the control of the owner.

Community Recreation Resources:

In addition to federal, state, and county administered recreational lands there is a supporting system of more urban recreational pursuits provided by several communities and organizations in Marin County (Marin County 2005, Marin.Org 2010). These include the communities of Corte Madera, Larkspur, Marinwood, Mill Valley, Novato, San Rafael, Strawberry, Ross, San Anselmo, Sausalito, Stinson Beach, and Homestead Valley. Organizations providing and/or promoting recreation include Friends of Fields (maintains playing fields), Marin YMCA, and Marin Agricultural Trust (hikes, tours, and talks visiting farmers and ranchers in and near West Marin).

Facilities maintained by local communities and organizations include community centers, playgrounds, ball diamonds, tennis courts, bocce courts, picnic areas, and public pools. Private recreational facilities located in Marin County are listed in Table 4.9.7 below.

Name	Location	Description
Lawson's Landing (phone 707-878-2443)	Mouth of Tomales Bay at Dillon Beach, CA.	Fishing and boating resort and campground.
Olema RV Resort & Campground (Phone: 415.663.8106)	Olema, CA.	Campground on 30 wooded acres with 187 camping sites, all sites have fire rings and picnic tables; some sites with full hook-ups; bathrooms and showers; dump station.

4.9.4.2. Regulatory Setting

Recreation is a core program of the Department (DPR 2001) and is embodied in the Department's Mission Statement that reads in part, "...and creating opportunities for high-quality outdoor recreation." Recreation in State Parks is guided in part by the Department's strategic vision identified in "The Seventh Generation" (DPR 2001). The Department recognizes the need to keep pace with the needs of California's growing, diverse population and changing lifestyles, and the importance of its stakeholders, including park users, taxpayers, local communities, concessionaires, cooperating associations, and the legislature (DPR 2001).

The Department has developed strategic initiatives to address future recreational opportunities and needs for the California State Park system (DPR 2001, 2002). The most recent California Outdoor Recreation Plan (CORP) prepared by the Department's Planning Division identifies the statewide master plan for parks, outdoor recreation, and open space for California (DPR 2008). The CORP incorporates the 2005 California Recreation Policy adopted by the Department which provides a broad scope that considers the full range of recreation encompassing active, passive, indoors, and out-of-doors activities (DPR 2008). This policy has been divided into five general areas:

1. Adequacy of recreation opportunities
2. Leadership in recreation management
3. Recreation's role in a healthier California
4. Preservation of natural and cultural resources
5. Accessible recreational experiences

Public input into the recreation planning process for State Parks has been facilitated through periodic surveys, such as the 2009 California State Parks (CSP) Survey on Public Opinions and Attitudes on Outdoor Recreation in California. This survey analyzed data in four demographics: adults, youth, Hispanics, and by geographic regions. Responses were collected to topics that include: outdoor recreation activities that Californians are currently engaged in; outdoor recreation activities that they'd like to do more; opinions and attitudes regarding recreation facilities programs, services and

policies; and willingness to pay for their favorite activities. Based on the survey results several recommendations were identified. These are:

- Care for and maintain existing parks
- Maintain a diversity of parks.
- Provide local, easily accessible parks.
- Make parks accessible for physical activity.
- Make parks safe.
- Support private businesses in the recreation industry.
- Clean up pollution and preserve resources.
- Go green.
- Provide local activities for youth.
- Provide easy access to parks for youth.
- Increase access to snow and water sports for youth.
- Promote programs on fishing, celebrating cultural heritage, camping, and playing on a team.
- Provide youth activities that are close to home and provide equipment for these activities.

4.9.4.3. Thresholds of Significance

The following thresholds have been prepared based on Section 15065 of the State CEQA Guidelines. The Project would have a significant impact on recreation services if it would:

- REC-1: 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.
- REC-2: Include recreational facilities or require the construction or expansion of recreational facilities that could have an adverse physical effect on the environment.

4.9.4.4. Effects Considered No Impact or Less Than Significant Without Project Requirements

Impact Statement REC-1: 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.

Visitors who hike or horseback ride on Bill's Trail and Gravesite Fire Road would be displaced during construction; upgrades to these trails, which total approximately five miles. However, during closure park visitors would be able to use approximately 70% of the 19 miles of trails at SPTSP. Park staff would inform visitors about the temporary closure of these trails. Area closure signs would be posted at all trail access points, campgrounds, and information kiosks during project implementation.

In addition to SPTSP trails there are hundreds of miles of recreational trails in Marin County available for public use, including five other State Parks and lands managed by the National Park Service, Marin County Department of Parks and Open Space, and Marin Municipal Water District. More than 80 miles of trails exist within these five State

Parks, some of which link to other public lands. For example, the 50 miles of trail at Mt. Tamalpais State Park connect directly to another 220 miles of trails on adjoining public lands, including the Golden Gate National Recreation Area. With the existence of so many public trails from which to choose, a substantial increase in use or deterioration of other existing recreational facilities would not be expected to occur.

Level of Significance Before Mitigation:	Less than significant
Mitigation Measure:	None

Impact Statement REC-2: Include recreational facilities or require the construction or expansion of recreational facilities that could have an adverse physical effect on the environment.

This project would require modification of existing trail surfaces through widening and outsliping improvements, installation of new or modification of existing drainage features, and removal of trail side herbaceous and shrub vegetation. Temporary impacts from trail modification could occur, including short-term erosion, potential release of sediment, or temporary increase in levels of dust or smoke. These potential impacts would be temporary and addressed by BMPs identified in **Project Requirement HYDRO 1**.

Improvement of trail drainage characteristics and other modifications such as trail widening would produce long term benefits through improvement of existing erosion problems. Recreational users would benefit from a more stable trail surface and improvement of narrow and/or constricted trail locations.

Trail widening would require vegetation clearing along trail sides; however, this would be a minimal increase in ongoing park trail maintenance activity. No sensitive plant resources would be affected by vegetation clearing, as identified in **Section 4.3 Biological Resources**.

Level of Significance Before Mitigation:	Less than significant
Mitigation Measure:	None

4.9.4.5. Findings

For recreation resources evaluated as part of this environmental document, there would be a less than significant adverse impact to park visitors from temporarily closing Bill's Trail and Gravesite Fire Road, and a less than significant adverse physical effect on the environment from trail construction activities.

Approximately 70% of the 19 miles of trails at SPTSP would be available for public use during project implementation. Hundreds of miles of trails recreational trails in Marin County are available for public use by various user groups in other State Parks, National Park Service park units, Marin County Parks and Open Space Reserves, and Marin Municipal Water District lands in Marin County.

Erosion or increased sediment impacts produced from construction activities would be temporary and would be more than offset by the benefits from trail stability and improvement in trail drainage characteristics. Impacts from clearing of trailside vegetation would be a minimal increase from existing ongoing park trail maintenance activities and no sensitive plant resources would be impacted, as identified in **Section 4.3 Biological Resources**.

4.10. Noise

This section provides information on the noises that occur within and in the vicinity of the proposed project site located in SPTSP. The section also evaluates the potential impacts of noise associated with the proposed project.

4.10.1. Existing Conditions

Definitions

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air and the human ear detects sound as fluctuations in air pressure. Noise is generally defined as an unwanted sound.

Sounds vary based on pressure wave characteristics such as the rate of wave oscillation, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content. In particular, the amount of pressure has become the most common descriptor used to characterize the level of an ambient sound. Because sounds vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale similar to the Richter scale used to measure earthquake magnitude is used to measure sound pressure wave data. The logarithmic measurement of air pressure considered to be the faintest sound detectable by a keen human ear is called a decibel (dB).

Sound levels at maximum human sensitivity are considered to be noise and are factored more heavily into sound descriptions than those at lower levels; when noise is measured, an electronic filter is used to de-emphasize extreme high and low frequencies to which human hearing has decreased sensitivity. The resulting filtered noise measurements are expressed in weighting frequencies called A-weighted decibels (dBA). While zero dBA is the low threshold of human hearing, a sustained noise equal or greater than ninety dBA is painful and can cause hearing loss (Bearden 2000).

Noise is further described according to how it varies over time and whether the source of noise is moving or stationary. Background noise in a particular location gradually varies over the course of a twenty-four hour period due to the addition and elimination of individual sounds.

A sensitive receptor is a land use where a frequent or scheduled human use occurs which would benefit from low noise levels. Sensitive receptors typically include homes, schools, libraries, hospitals, skilled nursing facilities, and places of worship.

Measuring Noise

Many methods have been developed for evaluating community noise to account for, among other things:

- Variation in noise levels over time;
- Influence of periodic individual loud events; and
- Community response to changes in the noise environment.

Numerous methods have been developed to measure sound over a period. These methods include:

- Equivalent Sound Level (L_{eq});
- Community Noise Equivalent Level (CNEL);
- Day/Night Average Sound Level (L_{dn})

These sound measurement methods and a description of how people perceive changes in sound are described below.

Equivalent Noise Level (L_{eq})

L_{eq} is the measurement of sound energy over a specified time interval (usually one hour), and represents the amount of variable sound energy received by a receptor over the time interval in a single numerical value; for example, a one-hour L_{eq} sound level measurement represents the average amount of acoustical energy that occurred in one hour. Variations include L_{50} , which identifies the percentage of time that the noise level standard is exceeded during fifty percent of one hour (i.e., 50% of an hour is 30 minutes), or L_{25} , which identifies the percentage of time that the noise level standard is exceeded during twenty-five percent of one hour (i.e., 25% of an hour is 15 minutes). In addition, variations in sound levels may be addressed by other statistical methods; the simplest of these are the maximum (L_{max}) and minimum (L_{min}) noise levels, which are the highest and lowest levels observed within a specified time interval.

Community Noise Equivalent Level (CNEL)

CNEL is based upon twenty-four hours of sound measurement and applies a time-weighted factor that is designed to emphasize noise events that occur during the evening (7 p.m. to 10 p.m.) and nighttime sleeping hours (10 p.m. to 7 a.m.). Noise produced during the evening hours are penalized by 5 dBA, while noise that occurs during the nighttime hours is penalized by 10 dBA. These penalties account for how much more pronounced a noise typically is at night when other sounds have diminished.

Day/Night Average (L_{dn})

The USEPA utilizes L_{dn} as a criterion in the evaluation of community noise exposure. L_{dn} is a measure of the twenty-four hour average noise level at a given location and is based on the average of L_{eq} data over a twenty-four hour interval at a given location after penalizing noise produced during nighttime hours (10:00 p.m. to 7:00 a.m.) by 10 dBA to account for how much more pronounced a noise typically is at night. The maximum sound level recorded during a noise event is typically expressed as L_{max} . The sound level exceeded over a specified time period is expressed as L_n (i.e., L_{90} , L_{50} , L_{10}); for example, L_{50} equals the level exceeded fifty percent of the time.

How People Perceive Changes in Sound

As previously mentioned, people tend to respond to changes in sound pressure in a logarithmic manner. In general, a three dB change in sound pressure level is considered a “just detectable” difference in most situations; a five dB change is readily noticeable; and a ten dB change is considered a doubling (or halving) of the subjective loudness. A three dB increase or decrease in the average traffic noise level is realized by a doubling or halving of the traffic volume, or by about a seven mile per hour (mph) increase or decrease in speed.

For each doubling of distance from a point noise source, the sound level decreases by six dB. In other words, if a person is 100 feet (ft) from a machine and moves 200 ft from that source, sound levels drop by approximately 6 dB. Moving 400 feet away, sound

levels drop approximately another 6 dB. For each doubling of distance from a line source, such as a roadway, noise levels are reduced 3 to 5 decibels depending on the ground cover between the source and the receiver.

Noise Exposure

An interior CNEL of 45 dB is mandated by the State of California Noise Insulation Standards (California Code of Regulations [CCR], Title 24, Part 6, Section T25 28) for multiple-family dwellings and hotel and motel rooms. In 1988, the California Building Standards Commission expanded that standard to include all habitable rooms in residential use, including single-family dwelling units. Since normal noise attenuation within residential structures with closed windows is about 20 dB, an exterior noise exposure of 65 dB CNEL allows the interior standard to be met without any specialized structural attenuation such as dual paned windows. A noise level of 65 dB is also the level at which ambient noise begins to interfere with one's ability to carry on a normal conversation at reasonable separation without raising one's voice. Table 4.10.1 below summarizes typical noise sources, levels, and responses.

Source of Sound	A-Weighted Sound Level (dbA)	Noise Environment
Jet engine nearby	140	Deafening
Civil defense siren	130	Threshold of pain
Hard rock Band	120	Threshold of feeling
Motorcycle accelerating a few feet away	110	Very loud
Pile Driver	100	Very loud
Heavy City Traffic		
Ambulance Siren	95	Very loud
Food Blender		
Garbage Disposal	90	Very loud
Freight Cars	85	Loud
Pneumatic Drill	80	Loud
Vacuum Cleaner		
Busy Restaurant	75	Moderately loud
Near Freeway Auto Traffic	70	Moderately loud
Average Office	60	Moderate
Suburban Street	55	Moderate
Light Traffic	50	Quiet
Large Transformer	45	Quiet
Average Residence Without Stereo Playing	40	Faint
Soft Whisper	30	Faint
Rustling Leaves	20	Very faint
Human Breathing	10	Very faint (nearing the threshold of hearing)

(LSA Associates, Inc. 2010)

Regional Setting

Existing Noise Sources and Conditions in Marin County

Roadways

Motor vehicle traffic is the primary source of noise in Marin County and the highest sources of traffic noise levels occur along major roadways such as State Routes 1 and 101 and Sir Francis Drake Boulevard. Traffic noise levels along major thoroughfares have not changed significantly since 1987 (Marin County Community Development Agency 2007a). Noise levels, located along Sir Francis Drake Boulevard west and southwest of the proposed DPR project site, range from 58.2 dBA L_{dn} to 61.1 dBA L_{dn} as measured 50 feet outward from the roadway center line (LSA Associates, Inc. 2010). According to the Marin County Community Development Agency (MCCDA 2007a), projections for future traffic conditions throughout the county show that related noise levels are only expected to increase up to one dBA over existing noise levels, an amount essentially undetectable to the human ear.

Aviation Facilities

Three airports and fields, two heliports, and one heliport/seaplane base are located within Marin County; these six air facilities include Gness Field, Hamilton Field, Marin Ranch Airport, Commodore Heliport (San Francisco), San Rafael Heliport, and Commodore Center Heliport/Seaplane Base. Each of the air facilities is at least ten miles from SPTSP (Hometown Locator 2010, MCCDA 2007a).

Railroads

The Northwestern Pacific Railroad maintains a rail alignment through the northeastern portion of the county. Current railroad use does not exceed of annual average 60 L_{dn} noise level beyond the rail line's right-of-way (MCCDA 2007).

Industrial Uses

Industrial facilities within Marin County do not generate noise above annual average 60 L_{dn} beyond the facility property lines (MCCDA 2007a); however, no industrial plants, factories, or sites are located in the vicinity of SPTSP.

Other Noise Sources

There are a number of other noise sources in the county, such as localized agricultural activities, dog kennels, home maintenance activities, and recreational venues. None of these sources is known to generate an annual average L_{dn} greater than 60 dBA off of the source site (MCCDA 2007a).

Agricultural activities occur outside of the northeastern and eastern boundaries of SPTSP (MCCDA 2007a). Recreational uses occur in Golden Gate National Recreation Area (GGNRA), managed by the National Park Service (NPS) and the park unit borders GGNRA to the north, west, and southwest (DPR 2009a)

Project Area

SPTSP is comprised of approximately 2,685 acres in western, interior Marin County. Private rural land borders the park unit to the east, while GGNRA borders the park unit to the north, west, and southwest. Sir Francis Drake Boulevard passes through the park unit and serves as a major thoroughfare between northwestern and southeastern Marin County (DPR 2009b, Mapquest 2010, MarinMap 2010).

The proposed project site is in the north-central portion of the park unit and, at its closest point, is approximately 0.25 mile from the eastern park boundary. The towns of

Shafter, Lagunitas, and Forest Knolls are located southeast within approximately 1.5 and 2.0 miles of the proposed project and San Geronimo is located approximately three miles southeast of the proposed project (DPR 2009b, Mapquest 2010, MarinMap 2010).

SPTSP is known for its quiet, rustic setting and its namesake, Samuel P. Taylor, an entrepreneur who facilitated the early industrial and recreational development of the area. Typical natural sounds heard within the park unit include bird song, wind through the trees, and water running in streams and rumbling over Stairstep Falls. Throughout the year, out-of-town and local visitors are likely to be heard within the park unit gathering at campgrounds, picnic areas, and the Swimming Hole; hiking, biking, and horseback riding along park trails; and exploring points of historic interest such as the Old Dam and Old Mill sites. Motor vehicles traveling along Sir Francis Drake Boulevard are also audible in the southern and western portions of the park unit. Visitors who utilize Bill's Trail, Gravesite Fire Road (as well as Barnabe Fire Road which is not a part of the project) to hike a loop beginning and terminating at the Devil's Gulch Campground, would experience all of these sounds. Bill's Trail consists of a series of switchbacks located in the relatively remote eastern portion of the park unit where natural sounds prevail. Gravesite Fire Road is located in the central portion of the park and within approximately 0.5 mile of park campgrounds and Sir Francis Drake Boulevard where the sounds of visitors, horses, and vehicles mix with natural sounds.

No public facilities with sensitive receptors (as defined above) are located in the vicinity of the project site in SPTSP. The closest schools to the project site are approximately three miles to the southeast in San Geronimo and include Lagunitas and San Geronimo Valley elementary schools. The closest day care facilities are located within two miles of the project site in the Shafter-Lagunitas area. The closest places of worship include St. Mary's and St. Cecilia's Catholic churches within two miles in Lagunitas and San Geronimo Valley Church about three miles away in San Geronimo (Hometown Locator 2010, MCCDA 2007b, Mapquest 2010).

4.10.2. Regulatory Setting

Federal, state, and local governments have defined noise and established standards to protect people from adverse health effects such as hearing loss and disruption of certain activities. The project must comply with applicable state and federal rules.

Applicable Federal Regulations

When the federal Noise Control Act (NCA; US Code Title 45, Chapter 65) was passed into law in 1972, the USEPA assumed responsibility for all federal noise control activities. The NCA states that health risks from noise are a growing danger and these risks necessitate federal control of noise sources, particularly noise emissions standards for products in commerce. The Quiet Communities Act of 1978 (QCA) amended the NCA to promote the development of state and local noise control programs, provide funding for research, and distribute educational materials to the public on the harmful effects of noise and effectively noise control measures. In 1981, the presidential administration re-evaluated the federal noise control policy and transferred primary responsibility of regulating noise to state and local governments; however, Congress has not rescinded the NCA and QCA, which currently remain in

effect, although essentially unfunded (Advameg 2010, Noise Pollution Clearinghouse 2010, USEPA 2009).

Applicable State Regulations

Noise is defined in the California Noise Control Act, Health and Safety Code, California Code of Regulations (CCR) § 46,022 as excessive or undesirable sound made by people, motorized vehicles, boats, aircraft, industrial equipment, construction, and other objects.

Samuel P. Taylor State Park Management

DPR has not completed a General Plan for SPTSP ; however, the management approach for any unit of the State Park System, including SPTSP, is based on unit classification statutes specified in the California Public Resources Code (PRC) § 5019.50 through 5019.74. The statutes set forth the primary purpose of each classified unit, identify in general what types of facilities and uses could be permitted, and provide direction on how unit resources would be managed. The purpose of a State Park is to preserve outstanding resource values, species, and significant examples of California's ecological regions; each State Park would be managed as a composite whole to restore, protect, and maintain its native environmental complexes; improvements undertaken within a State Park would serve to make areas within the park unit available for public enjoyment and education in a manner consistent with resource preservation; and improvements could include recreational facilities as long as no major modification of land, forests, or waters occurs (PRC § 5019.53).

Local Regulations

DPR is exempt from local regulations, including general plans, specific plans and zoning ordinances (California Constitution Article XI, Section 7); however, DPR has reviewed and taken local regulations into account for the proposed project.

To promote compatibility among various land uses and protect human health and quality of life, Marin County has established noise policies and municipal code that control potential nuisances such as noise and vibration (MCCDA 2007a, Marin County 2010).

Marin County policies seek to limit noise resulting from new development, minimize transportation noise, and regulate noise-generating activities (Marin County 2007). To support and implement these policies, Marin County has twelve programs, several of which could apply to the proposed project (MCCDA 2007a). These include:

- Require Project-Specific Noise Mitigation: Require all development to mitigate its noise impacts where the project would raise the L_{dn} by more than 5 dBA; raise the L_{dn} by more than 3 dBA and exceed the normally acceptable standard; or raise the L_{dn} by more than 3 dBA and the normally acceptable standard is already exceeded.
- Coordinate with Public Agencies: Work with local, regional, State, and federal agencies to address existing and potential noise impacts and to determine appropriate measures necessary to meet acceptable noise levels.

- **Regulate Noise Sources:** The Marin County Code Title 6 (Loud and Unnecessary Noises), Sections 6.70.030(5) and 6.70.040 establish allowable hours of operation for construction-related activities (Marin County 2010). As a condition of permit approval for projects generating significant construction noise impacts, the County requires the project proponent to develop a construction noise reduction plan and designate a disturbance coordinator at the construction site to implement the provisions of the noise reduction plan.

Marin County Code Section 6.70.030(5) addresses construction activities, hours of operation, and exceptions while Section 6.70.040 addresses enforcement. Hours for construction activities related to building, plumbing, electrical, and other permits issued by the community development agency shall be limited to 7:00 a.m. to 6:00 p.m. Monday through Friday; 9:00 a.m. to 5:00 p.m. on Saturday; and prohibited on Sundays and designated holidays. Loud noise-generating construction-related equipment such as backhoes and generators could be maintained and operated at a construction site for permits administered by the community development agency from 8 a.m. to 5 p.m. Monday through Friday only. Special exceptions to these limitations could occur under certain conditions such as for city, county, state, or other agency or utility construction projects and for emergency work (Marin County 2010).

4.10.3. Thresholds of Significance

The following thresholds have been prepared based on the State CEQA Guidelines (Appendix G) and Section 15065 of the State CEQA Guidelines. The Project would have a significant noise impact if it will:

- NOISE-1: Generate or expose people to noise levels in excess of standards established in a local general plan or noise ordinance, or in other applicable local, state, or federal standards;
- NOISE- 2: Generate or expose people to excessive groundborne vibrations or groundborne noise levels;
- NOISE- 3: Create a substantial permanent increase in ambient noise levels in the vicinity of the project (above levels without the project);
- NOISE- 4: Create a substantial temporary or periodic increase in ambient noise levels in the vicinity of the project, in excess of noise levels existing without the project;
- NOISE-5: Be 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? If so, would the project expose people residing or working in the project area to excessive noise levels;
- NOISE-6: Be in the vicinity of a private airstrip. If so, would the project expose people residing or working in the project area to excessive noise levels?

4.10.4. Environmental Impacts, Project Requirements, and Mitigation Measures

Impact Statement NOISE 1: Construction activities associated with the proposed project could generate or expose people to noise levels in excess of standards established by a local general plan or in another applicable local standard.

Vehicles and equipment that could be used to construct the proposed project and that could contribute to noise increases in the vicinity of the proposed project include mechanized hand tools, delivery trucks, crew trucks, backhoes, and graders; however, the types of equipment to be used are, at this point, only generally known and the specific number of the pieces of equipment cannot yet be determined. Removing brush and trees would require equipment such as a chain saw, which would generate approximately 78 dBA (L_{max} at 50 feet) during periods of usage, resulting in short-term impacts to the ambient noise levels in the vicinity of the project. Removing debris and contouring the roads and trail to maintain drainage patterns would require the use of equipment like a grader, which would generate approximately 85 dBA (L_{max} at 50 feet) during periods of use (Patten et al 1980).

The distances of the project site from residences and small commercial ventures located adjacent to the property boundaries of the park unit are sufficient to prevent an objectionable level of noise. The established distance, at which noise levels noted above were measured (50 feet) places residences and businesses, including sensitive receptors, outside of the range at which noise levels would be considered a significant impact. Additionally, park topography and vegetation would effectively reduce noise levels generated by construction equipment. Nevertheless, during construction DPR would adhere to applicable Marin County standards for noise control and reduction described in the Marin Countywide Plan and the county municipal code to minimize any noise transmission beyond the boundary of the park unit (MCCDA 2007a, Marin County 2010) ; integration of **Specific Project Requirement NOISE 1: Construction Noise Reduction Plan** will ensure that any potential temporary noise transmission to County residences and businesses would remain less than significant.

Level of Significance Before Mitigation:	Less than significant
Mitigation Measure:	None

Impact Statement NOISE 4: Construction activities associated with the proposed project could create an adverse temporary increase in ambient noise levels in the vicinity of the project, in excess of noise levels existing without the project.

Construction noise levels at and near the project site would fluctuate, depending on the type and number of construction vehicles and equipment operating at any given time, and would exceed ambient noise standards in the immediate vicinity of the work for brief periods of time. This work would require a relatively short construction period, resulting in temporary and short-term impacts to ambient noise levels.

Depending on the specific construction activities being performed, short-term increases in ambient noise levels could result in speech interference at the work site and a potential increase in annoyance to park personnel. As a result, construction-generated noise would be considered to have a potentially significant short-term impact. Integration of **Standard Project Requirement NOISE 2: Noise Exposure** will ensure any potential temporary construction noise impacts will remain at a less than significant level.

Level of Significance Before Mitigation:	Less than significant
Mitigation Measure:	None

4.10.5. Effects Considered No Impact or Less Than Significant With Project Requirements

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

Impact Statement NOISE-1: Generate or expose people to noise levels in excess of standards established in a local general plan or noise ordinance, or in other applicable local, state, or federal standards.

Impact Statement NOISE-2: Generate or expose people to excessive groundborne vibrations or groundborne noise levels.

Impact Statement NOISE-3: Create a substantial permanent increase in ambient noise levels in the vicinity of the project (above levels without the project).

Impact Statement NOISE-5: Be 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? If so, would the project expose people residing or working in the project area to excessive noise levels?

Impact Statement NOISE-6: Be in the vicinity of a private airstrip. If so, would the project expose people residing or working in the project area to excessive noise levels?

Normal recreational use within SPTSP does not involve activities that would increase ambient noise levels at, and adjacent to, the proposed project site. Any potential increase in ambient noise levels would generally be limited to visitor conversations and passing vehicle traffic on nearby Sir Francis Drake Boulevard. No sensitive receptors are located within the vicinity of the proposed project. Additionally, topography and screening provided by existing, on-site vegetation would also reduce the long-term transmission of noise from the trail facility.

4.10.6. Findings

For noise sources and levels evaluated as part of this environmental document, the possibility exists for potentially significant short-term, construction-generated noise impacts, as a direct or indirect result of proposed project activities; however, standard and specific project requirements that avoid or substantially lessen these potentially significant environmental effects have been incorporated into the project. Full implementation of all project requirements would reduce any noise-related potential impacts to a less than significant level.

4.11. Public Services

This section provides information on public services and utilities and service systems serving the local and regional population that occur, and could be impacted by project activities at SPTSP. Pertinent elements include law enforcement, fire protection, other emergency response, and institutional resources such as schools and hospitals. The Public Services section also identifies measures designed to avoid or reduce the

significance of any potential impacts to performance levels or objectives, response times, or to available public resources.

4.11.1. Public Services

Public services are provided for public use and benefit, and include fire and police protection, libraries, and other institutions. This section identifies existing services, infrastructure, and their associated current levels of service or capacity.

4.11.1.1. Existing Conditions

Marin County covers 521 square miles north of the City of San Francisco and Golden Gate Bridge. SPTSP is located in the rural western, interior of Marin County and the project site is located close to the northwest boundary of the park unit. Private rural land borders the park unit to the east, while GGNRA borders the park unit to the north, west, and southwest. Sir Francis Drake Boulevard, which passes through the park unit, serves as a major thoroughfare between northwestern and southeastern Marin County (DPR 2009, Mapquest 2010).

Bill's Trail and Gravesite Fire Road primarily serve as trails for recreational users who visit the park unit. The trail and fire road do not serve any residences for park personnel and have limited use for emergency access. Due to the narrow width, steepness, and tight curves along Bill's Trail, State Park rangers and any other emergency personnel would only access Bill's Trail on foot. Gravesite Fire Road is accessible by authorized State Park ranger and other emergency vehicles and to recreational users. Gravesite Road is only accessible by the bridge across Devil's Gulch and from Barnabe Fire Road.

Law Enforcement

State Park rangers are generally the first responders to emergency situations that occur within the park unit. Rangers could call for additional or specialized support to other law enforcement and emergency agencies if needed (McNamee 2010a). These law enforcement agencies and their standard responsibilities and distance from the park unit are discussed below.

- **State Park Rangers:** State Park Rangers assigned to SPTSP are law enforcement officers who are certified in Peace Officer Standards and Training (POST 2009). Rangers are responsible for maintaining a peaceful and safe environment within the park unit and they provide immediate police protection twenty-four hours per day by patrolling the park boundaries and public use areas, enforcing the California Public Resource Code (PRC), and guarding against misuse of State Park property and resources. This includes SPTSP the proposed project site within the park unit near its northwest boundary.
- **Marin County Sheriff:** The Marin County Sheriff is responsible for a number of law enforcement duties throughout the county, such as patrols, oversight of the county jail, operation of a countywide communications division, and management of the county Office of Emergency Services (OES). Additionally, the Marin County Sheriff includes a Special Response Team (SWAT), a Canine Unit, a Search and Rescue Team, and a Dive Team. Much of the county's 521 square

miles is unincorporated and the Marin County Sheriff is the primary agency that provides crime prevention and law enforcement response services in these areas. Of the Marin County Sheriff's three substations, the substation in the town of Point Reyes Station, is approximately four miles northwest of SPTSP site and is the closest to the project site (Marin County Sheriff 2007).

- California Highway Patrol (CHP): The CHP enforces the California Vehicle Traffic Code and other laws in order to prevent crime; manages traffic and emergency incidents; assists other public agencies with law enforcement duties; and provides protection to the public, state employees, and state infrastructure (CHP 2010a). The CHP Golden Gate Division serves a 7,000 square mile area that spans nine Bay Area counties including Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma. The Golden Gate Division, which is staffed by approximately 1,043 uniformed officers and 333 non-uniformed personnel, has twelve area offices, three commercial inspection facilities, one traffic management center, and the Air Operations Unit that operates out of the Napa County Airport. The Napa County Airport is approximately six miles northeast of SPTSP (Mapquest 2010, Napa County Airport 2005). The Golden Gate Division's Marin Area Office is approximately eleven miles southeast of SPTSP in the town of Corte Madera and is the closest CHP office to the project site (CHP 2010b, Mapquest 2010).

Fire Protection and Other Emergency Services

Rural Marin County is characterized by having a moderate to high fire risk due to high fuel loads that consist of dense or dead vegetation and by low pressure in some portions of the water system. County fire protection services provide structural fire protection to most unincorporated areas within county boundaries, while some rural and all urbanized areas are served by local fire departments, fire protection districts, or volunteer protection. Both state and local protection is provided in wildland areas (MCCDA 2007, Marin County Fire Department 2007). See Section 4.6 on Hazards and Hazardous Materials for more information about hazardous materials response by government agencies.

- Marin County Fire Department (MCFD): MCFD provides structural fire protection and Emergency Medical Service (EMS) to the majority of unincorporated areas within Marin County. Of the seven MCFD stations in the county, the closest to SPTSP is the Headquarters station located approximately four miles east of the park unit in Woodacre. Additionally, the Headquarters station houses the department administrative staff, the Emergency Command Center, and the vehicle maintenance facility (Mapquest 2010, MCFD 2009).
- California Regional Urban Search and Rescue (US & R) Task Force 1 (US&R Task Force 1): US&R Task Force 1 serves the Marin County and could respond to a variety of emergencies or disasters such as confined space rescue, water rescue, physical search and rescue operations in collapsed structures, initial medical stabilization of injured response personnel and trapped victims, hazardous materials categorization, structural hazard evaluation, and stabilization of damaged structures. The team is comprised of members from

County fire departments and the Department of Public Works. US&R Task Force 1 is based in San Rafael which is located approximately eleven miles south of SPTSP (Mapquest 2010, US&R Task Force 1 2009).

- California Department of Forestry and Fire Protection (CalFire): CalFire personnel are equipped and trained to respond to many types of emergencies by providing fire protection; medical aid during emergencies; assistance during hazardous materials spills, civil disturbances, train wrecks, floods, and earthquakes; and search and rescue expertise. CalFire is primarily responsible for fire protection and stewardship of over thirty-one million acres of California's privately-owned wildlands known as State Responsibility Areas (SRAs). While CalFire contracts with thirty-six of California's fifty-eight counties to provide fire and other emergency services, it has allowed Marin County to assume responsibility for fire protection of SRAs within its boundaries (CalFire 2009, 2010a, 2010b) CalFire continues to be responsible for any state lands, such as SPTSP, that are located in Marin County (CalFire 2010c).
- SPTSP is situated in the Marin Unit of the CalFire Northern Region. The closest CalFire station and conservation camp to SPTSP are located in the Sonoma-Lake-Napa Unit of the CalFire Northern Region. The CalFire Station in Petaluma and the Delta Conservation Camp in Suisun City are located approximately fourteen and thirty-seven miles northeast of the park unit respectively. Additionally, the Sonoma Air Attack-Helitack Base is the closest air base to the park unit and is approximately 28 miles to the north (CalFire 2010d, Mapquest 2010).
- National Park Service (NPS): NPS manages the Golden Gate National Recreation Area (GGNRA) to the north and west of SPTSP. GGNRA falls under the jurisdiction the federal government and the national recreation area is, therefore, a Federal Responsibility Area for fire management. The GGNRA Office of Fire Management based in Sausalito monitors and responds to all wildland fires within the national recreation area boundaries. Additionally, the Office addresses wildfire risk on federal property under its jurisdiction and on private property in neighboring areas; manages hazardous fuels problems; and maintains effective coordination with local fire departments and state agencies (NPS 2010).
- California Emergency Management Agency (CalEMA): CalEMA is the lead agency for mobilizing the state's resources and requesting federal aid during an emergency such as a catastrophic fire, flood, or earthquake. While the primary responsibility for an emergency belongs to local agency, county, or other agency with jurisdiction, the CalEMA could facilitate the overall response when multiple government jurisdictions are involved. CalEMA oversees the Statewide Mutual Aid System, the process that local governments use to request additional assistance. In addition, CalEMA maintains the State Emergency Plan that defines the process for how local and state agencies coordinate their emergency response and communications (CalEMA 2007a). SPTSP is situated in the CalEMA California Coastal Region. The Coastal Region administrative office is located south of Marin County in the city of Oakland (CalEMA 2007b).

Schools

The closest schools are approximately two miles east of SPTSP in San Geronimo and include Lagunitas and San Geronimo Valley elementary schools in the Lagunitas School District (Hometown Locator 2010).

Parks

The San Geronimo Golf Club and Maurice Thorner Open Space Preserve, and Roy's Redwood Preserve are located in the vicinity of San Geronimo approximately two miles from SPTSP (Mapquest 2010). See Section 4.8 for more information about these outdoor recreational facilities.

Other Public Services and Facilities

Hospitals and Other Medical Treatment Facilities: The Kaiser Permanente Medical Center in San Rafael is located approximately nine miles southeast of SPTSP. The Medical Center provides primary and specialty outpatient care, as well as hospital and emergency services. In addition, the Medical Center manages satellite clinics that provide a variety of care including primary, specialty, laboratory testing, and pharmaceutical care. The satellite clinics are located in downtown San Rafael, Novato, Petaluma and Mill Valley (Kaiser Permanente San Rafael Medical Center 2010, Mapquest 2010). The Sutter Terra Linda Urgent Care, an affiliate of Novato Community Hospital, is located approximately ten miles southeast of SPTSP and provides medical service to for minor illness or injury (Mapquest 2010, Sutter Terra Linda Health Plaza 2008).

4.11.1.2. Regulatory Framework

Applicable State Regulations

State Fire Responsibility Act

Pursuant to PRC Section 4.15 *et seq.*, commonly known as the State Fire Responsibility Act, the State Board of Forestry classifies all lands within the state, based on factors such as vegetative cover and fire risks and hazards. The three fire hazard levels are moderate, high, and very high. This fire hazard classification system is used to determine areas where state government is primarily responsible for preventing and suppressing fires. SPTSP is classified as a moderate to high fire hazard area (CalFire 2007).

Furthermore, state-adopted fire protection regulations establish minimum wildfire protection standards to reduce the potential for wildland fires, decrease response times, and improve firefighters' chances of extinguishing wildland fires. These regulations are applicable in all SRAs served by CalFire. They do not apply to existing structures, roads, streets, or private drives and facilities; however, they do apply to provisions for emergency access; road width, grades, radius, and turnarounds; signage; one-way road designs; gate entrances; emergency fire use; fuel breaks, and greenbelts.

Applicable Local Regulations

DPR is exempt from local regulations, including general plans, specific plans and zoning ordinances (California Constitution Article XI, Section 7), although the project must comply with applicable state and federal rules such as the Coastal Act.

4.11.1.3. Thresholds of Significance

The following thresholds have been prepared based on the State CEQA Guidelines (Appendix G) and Section 15065 of the State CEQA Guidelines. The Project will have a significant impact on public services if it will:

- PUB-1: Result in significant environmental impacts from construction associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, to maintain acceptable service ratios, response times, or other performance objectives.

4.11.1.4. Effects Considered No Impact or Less Than Significant Without Project Requirements

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

Construction of the proposed project with mechanical equipment in areas with flammable vegetation could place additional demand on CalFire; however, the demand would be temporary in nature and considered less than significant.

4.11.1.5. Findings

Impacts to Public Service associated with the Project are either non-existent or less than significant.

4.12. Utilities

This section assesses the impacts of the proposed project on utilities and service systems, including water service; wastewater collection and treatment; solid waste generation and disposal service; and electrical, natural gas, and telephone services.

4.12.1. Water Service

4.12.1.1. Existing Conditions

DPR obtains water for its operations needs from groundwater wells and owns and operates its own water system within the park unit. DPR pumps water from the wells located within SPTSP into water storage tanks, where it flows by gravity to park facilities such as public restrooms (McNamee 2010b). Potable water is not available in the area of the park where the project is proposed.

4.12.1.2. Regulatory Framework

See Hydrology and Water Quality (Section 4.7) for a discussion of the applicable regulatory framework.

4.12.1.3. Thresholds of Significance

The following thresholds have been prepared based on the State CEQA Guidelines (Appendix G) and Section 15065 of the State CEQA Guidelines. The Project would have a significant impact on water services if it will:

- UTIL-1: Require or result in the construction of new water treatment facilities or expansion of existing facilities that would cause a significant adverse environmental impact during construction or operation
- UTIL-2: Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities that would cause a significant adverse environmental impact during construction or operation; and/or
- UTIL-3: Have insufficient water supplies available to serve the Project from existing entitlements and resources or require new or expanded entitlements.

4.12.1.4. Effects Considered No Impact or Less Than Significant Without Project Requirements

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

Any water required to construct the project would be brought in as needed. All project activities would have sufficient water supplies available to serve the project from existing entitlements and resources within the park unit and would not require new or expanded entitlements.

4.12.1.5. Findings

Project activities would not require water beyond the minor amount needed for dust control (See Air Quality, Section 4.2).

4.12.2. Wastewater Collection and Treatment

4.12.2.1. Existing Conditions

DPR owns and operates a sewage treatment plant within SPTSP that processes sewage collected from park restrooms, showers, and at a sanitary dump for recreational vehicles. After sewage generated in the park unit is treated, it is pumped to multiple forced main leach fields owned and operated by the National Park Service (NPS) (McNamee 2010b). The capacity of these facilities is sufficient to meet existing demand within the park unit. SPTSP is not connected to any municipal wastewater service.

4.12.2.2. Regulatory Framework

See Hydrology and Water Quality (See Section 4.7) for a discussion of the applicable regulatory framework.

4.12.2.3. Thresholds of Significance

The following thresholds have been prepared based on the State CEQA Guidelines (Appendix G) and Section 15065 of the State CEQA Guidelines. The Project would have a significant impact on wastewater collection and treatment services if it will:

- WW-1: Exceed wastewater treatment restrictions or standards of the applicable Regional Water Quality Control Board (RWQCB);
- WW-2: Result in a determination, by the wastewater treatment provider that serves or may serve the project that it has inadequate capacity to service the project's anticipated demand, in addition to the provider's existing commitments; and/or
- WW-3: Require or result in the construction of new wastewater treatment facilities or expansion of existing facilities in conditions that would cause a significant adverse environmental impact during construction or operation.

4.12.2.4. Effects Considered No Impact or Less Than Significant Without Project Requirements

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

SPTPS does not receive services from a wastewater treatment provider nor would the park unit require construction of a new wastewater treatment facility. Therefore, effects to thresholds of significance above will be less than significant.

4.12.2.5. Findings

SPTSP is not served by a wastewater treatment provider. Project activities would not require the expansion of the park unit's existing wastewater collection and treatment facility. The park unit's existing system does not exceed wastewater treatment restrictions or standards of the RWQCB.

4.12.3. Solid Waste Generation and Disposal Service

4.12.3.1. Existing Conditions

DPR personnel collect trash and recyclables from public use, day facilities, and park residences and transport these to large bins where it is removed from the park unit to approved off-site disposal and recycling facilities. Redwood Disposal Company removes trash from the park unit, while the CCC of the North Bay removes recyclables (McNamee 2010b). No garbage collection containers are located within the proposed project site.

4.12.3.2. Regulatory Framework

See Hydrology and Water Quality (See Section 4.7) for a discussion of the applicable regulatory framework.

4.12.3.3. Thresholds of Significance

The following thresholds have been prepared based on the State CEQA Guidelines (Appendix G) and Section 15065 of the State CEQA Guidelines. The Project would have a significant impact on solid waste collection and/or disposal services if it will:

- Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs;
- And/or Violate federal, state, and local statutes and regulations as they relate to solid waste.

4.12.3.4. Findings

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

Project activities would not generate an excessive amount of solid waste above that which is already generated at the park unit.

4.12.4. Other Service Systems

4.12.4.1. Existing Conditions

DPR obtains gas and electric to power facilities within SPTSP from Pacific, Gas, and Electric Company (PG&E) and obtains phone and internet service from AT&T (McNamee 2010b). No facilities requiring gas, electric, telephone, or internet service are available in the area of the park where the project is proposed.

4.12.4.2. Regulatory Framework

The California Public Utilities Commission (CPUC) regulates California's privately owned electric, natural gas, water, telecommunications, railroad, rail transit, and passenger transportation companies. Responsibilities of the CPUC include setting electric rates; consumer protection; promoting energy conservation; and ensuring electric system reliability. The California Energy Commission (CEC) is the state's primary agency for developing energy policy. The CEC takes responsibility for duties such as forecasting future energy needs for California and plans for and directs a comprehensive state response to energy emergencies (Center for Sustainable Energy California 2010).

4.12.4.3. Thresholds of Significance

The following thresholds have been prepared based on the State CEQA Guidelines (Appendix G) and Section 15065 of the State CEQA Guidelines. The Project would have a significant impact on other service systems if it will:

- Exceed the operating limits of the existing system.
- Require or result in the construction of any new system facilities or expansion of existing facilities.

4.12.4.4. Findings

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

Project activities would not require the use of gas, electric, phone, or internet services.

4.13. Transportation, Circulation, and Traffic

This section describes existing local and regional conditions and the potential impacts of the proposed Trail Change in Use Project on transportation, circulation, and traffic, along with pertinent traffic standards and regulations, and mitigations proposed to reduce the significance of potential impacts. The analysis focuses primarily on impacts to vehicle traffic on roadways providing access to SPTSP.

4.13.1. Existing Conditions

DPR proposes to improve the drainage and sustainability of Bill's Trail and Gravesite Fire Road in SPTSP. Further, DPR proposes to formally change the 'use' of Bill's Trail to allow bicycle riding in addition to hiking and horseback riding.

4.13.2. Methods

DPR conducted a comprehensive review of available literature, including roadway maps, the Marin Countywide Plan, the Sir Francis Drake Roadway Rehabilitation Project EIR, the Samuel P. Taylor Park Brochure, and associated guidelines and evaluation criteria to establish conditions and analyze potential impacts associated with potential project traffic.

Level of service (LOS) measures how the route operates during peak hour traffic. Level of service summarizes the effects of speed, travel time, traffic interruptions, freedom to maneuver and other factors. On a two-lane highway such as Route 1, the primary measures of service quality (LOS) are percent time-spent-following and average travel speed. LOS C (see Table 4.13.1 below) is the target level of service for a two-lane rural highway.

Performance of the County's roads and highways is evaluated based on level of service (LOS) calculations. Six levels of service represent varying roadway conditions ranging from ideal: LOS "A," to forced flow: LOS "F." The Marin Countywide Plan states that their objective is to have a LOS D or better for vehicles on streets and highways.

Table 4.13.1 Level of Service Description (LOS)

LOS	Description
A	Represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.
B	Stable flow, but the presence of other users in the traffic stream begins to be noticeable.
C	Stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.
D	Represents high density, but stable flow.
E	Represents operating conditions at or near the capacity level.
F	Represents forced or breakdown flow.

Source: Marin County General Plan

4.13.3. Roadway Systems

Samuel P Taylor Park is located on Sir Francis Drake Boulevard. The park is located between 15 miles northwest of Marin County's most populated city San Rafael (US 101) and roughly 7 miles east of the unincorporated town of Olema (State Route 1).

4.13.3.1. Highways & Arterial Streets

Sir Francis Drake Boulevard: is the primary east-west corridor in Marin County, linking US 101 to State Route 1. Much of the suburban segment of Sir Francis Drake Boulevard between US 101 and State Route 1 is a four-lane rural highway. The roadway widens up to six lanes near Larkspur Landing, east of US 101 and tapers to two lanes west of Fairfax.

State Route 1 (Shoreline Highway): is the primary corridor for travel in western Marin County. State Route 1 is a two lane highway that runs north to south and is primarily used for local intercommunity travelers or visitors of Marin County. The route follows the east side of the Golden Gate National Recreation Area, with the exception of the routes access point from US 101 at Tamalpais Valley.

US 101: is Marin Counties serves as the primary corridor of travel in eastern Marin County and serves as the main surface link from Marin to the Bay Area's financial center, San Francisco. US 101 runs north-south and varies between two and five lanes and is vital in connecting communities within Marin County for everyday activities such as work, school, shopping and recreation.

Lucas Valley Road: is an east-west arterial that connects the urbanized portions of the County with its agricultural interior and the communities in the west. Lucas Valley Road runs from US 101 in the eastern portion of the County to Nicasio Valley Road. Platform Bridge Road: is a two-lane rural roadway that connects Sir Francis Drake Boulevard with Point Reyes-Petaluma Road, which then travels west to State Route 1 and east to Petaluma and Novato.

Point Reyes- Petaluma Road: is a two-lane rural roadway that connects State Route 1 with the City of Petaluma

Bear Valley Road: travels parallel to State Route 1 between Point Reyes national Seashore and Golden Gate National Recreation Area.

Nicasio Valley Road: is a two-lane rural roadway that connects Sir Francis Drake Boulevard with Point-Reyes-Petaluma Road through the town of Nicasio and to Lucas Valley Road east through Lucas Valley to US 101.

Fairfax-Bolinas Road: is a winding two-lane rural roadway that connects the Town of Fairfax to State Route 1, the community of Bolinas, and the Pacific Ocean to the southwest.

San Geronimo Valley Road: is a two-lane roadway generally parallel to and south of Sir Francis Drake Boulevard within the community of San Geronimo.

4.13.3.2. Public Transportation

Marin County Transit District (MCTD): provides local fixed route services that operate throughout the day within Marin County. These routes cater to the needs of various school schedules, rural and recreational services, and paratransit service for individuals who need specialized service to individuals with disabilities.

Golden Gate Transit: is contracted by the MCTD to provide, 13 regular 'Local Service Routes' along with 12 supplemental 'School Service Routes' that provide bell time service to schools not served by a regular Local Service Route.

West Marin Stagecoach: is operated by Whistlestop Wheels and provides four round trips on weekdays from Bolinas-Stinson Beach to Mill Valley-Marin City and Inverness to San Anselmo.

Greyhound Lines, Inc.: provides interregional bus service to Marin County from its terminal in San Rafael. There are two northbound and southbound departures each day with an addition departure in each direction each day during the summer months. The northbound buses originate in San Francisco and terminate in Crescent City, Vancouver and Seattle. The outbound buses originate in Crescent City, Vancouver, and Seattle and terminate in San Francisco.

4.13.3.3. Ferry Services

The Golden Gate Bridge, Highway and Transportation District offer ferry service from Larkspur and Sausalito to the Ferry Building terminal in San Francisco.

The Blue and Gold Fleet also provide a ferry service between Tiburon and San Francisco, Sausalito and Fisherman's Wharf (San Francisco).

The Angel Island-Tiburon Ferry provides weekend service between Tiburon and Angel Island and limited, special-request-only, weekday service between Tiburon and Angel Island.

4.13.3.4. Airports

Marin has one general aviation airport (Gnoss Field) and one small craft airport (Marin Ranch).

Gnoss Field, north of Novato has a 3,300 foot asphalt runway that accommodates small private aircrafts up to 18,500 pounds. It is classified by the Federal Aviation Administration as a "B-1" facility and a "reliever" airport. The airport has a capacity for 320 aircrafts and handles roughly 60,000 takeoffs and landing per year.

Marin Ranch is a private airport with a 2,180 foot runway. The airport houses 100 aircrafts and caters to commuter, recreational and emergency response activities.

4.13.3.5. Bicycle and Pedestrian Travel

The existing bike system consists of 8.75 miles of biking/pedestrian pathways. The notable pathways are the Mill Valley-Sausalito Bike Path, Corte Madera Creek Pathway, Pacheco Hill Pathway, and the Cross Marin Trail.

Mill Valley-Sausalito Bike Path: A three and a half mile paved pathway on an abandoned railroad right-of-way that traverses wetland areas and serves numerous activity centers. This path is an important recreational and community route.

Corte Madera Creek Pathway: This paved path consists of five distinct segments, totaling three miles between Larkspur Landing and Ross. Near Larkspur Landing, the path is located south of Sir Francis Drake and serves the ferry terminal. West of US 101, the path is located on the Creek and is popular for recreational uses. Path users

must use South Eliseo for three quarters of a mile to Bon Air Road, where another popular section of path serves a hospital, schools, and the College of Marin. The final segment to Ross is a narrow four to six foot path located alongside a drainage channel.

Pacheco Hill Pathway: This paved path provides an important link in Northern Marin County between Miller Creek Road (Marinwood) and Alameda del Prado (Ignacio). The path provides the only linkage for bicyclists and pedestrians in this entire corridor.

Cross Marin Trail: This partially paved pathway extends through the park on the old NWP right-of-way to Tocaloma, and is popular with bicyclists, hikers, and equestrians.

4.13.3.6. Systems within Project Boundary

1.1.1.1.1. Highways & Arterials

Sir Francis Drake Boulevard: is the primary east-west corridor in Marin County, linking US 101 to State Route 1. Much of the suburban segment of Sir Francis Drake Boulevard between US 101 and State Route 1 is a four-lane rural highway. The roadway widens up to six lanes near Larkspur Landing, east of US 101 and thins to two lanes west of Fairfax.

Fire roads within Samuel P. Taylor Park are, Barnabe Road, Devil's Gulch Road, Gravesite Road, and Deer Point Road.

1.1.1.1.2. Public Transportation

Stagecoach Route #68 provides service between San Rafael and Inverness via Sir Francis Drake Boulevard; The bus stops at mile marker 17.10 at the campgrounds of Samuel P. Taylor Park. Eastbound stop are made at 6:30 a.m. and 6:11 p.m. and westbound stops are at 8:05 a.m. and 7:53 p.m.

1.1.1.1.3. Bicycle and Pedestrian Travel

The Cross Marin Trail is a partially paved pathway that extends 2.2 miles through SPTSP on the old North West Pacific Railroad right-of-way to Tocaloma. The path is popular with bicyclist's hikers, and equestrians.

1.1.1.1.4. Regulatory Settings

The development and regulation of the transportation networks within the Project Area fall under state and local jurisdiction. While the majority of Sir Francis Drake Boulevard is maintained by Marin County, sections of the road inside of within the Golden Gate National Recreation Area and SPTSP are managed separately.

Applicable State Regulations

California Department of Transportation (Caltrans) manages interregional transportation, including management of construction activities within or above the California highway system. In addition, Caltrans is responsible for permitting and regulating the use of state roadways. No state roadways occur in the immediate vicinity of the project area, the closest being Highway 1 approximately 2 miles west.

Caltrans requires that permits be obtained for transportation of oversized loads and transportation of certain materials, and for construction-related traffic disturbances.

Caltrans regulations would apply to the transportation of oversized loads on state roadways associated with the construction of the proposed Project.

Applicable Local Regulations

As a state agency, DPR is exempt from local regulations, including general plans, specific plans, and zoning ordinances, to the extent that such requirements conflict with DPR's own General Plan for the Park (California Constitution Article XI Section 7). However, DPR must comply with the Park's General Plan, as well as applicable state and federal rules and regulations governing historic buildings, structures, and districts and any local regulations applicable to impacts located outside the Park boundaries.

County: The Marin County Department of Public Works Traffic Division is responsible for the safe and efficient movement of traffic on all County-maintained roadways in the unincorporated area except for:

- State highways (contact Caltrans at 510-286-4444)
- City streets (contact the appropriate city or town)
- Non-County-maintained roads

According to Policy TR-1 and Implementation Plan TR-1.e of the existing Marin Countywide Plan, LOS D or better is the goal for vehicles on streets and highways.

The Countywide Plan also states in Policy TR-1.6 and Implementation Plan TR-1.o, that the roads of west Marin County should be maintained as two lanes routes to keep the area rural.

4.13.4. Thresholds of Significance

The following thresholds have been prepared based on the State CEQA Guidelines (Appendix G) and Section 15065 of the State CEQA Guidelines. The Project would have a significant impact on transportation, circulation, and traffic of the area if it will:

- CIRC-1: Cause a substantial increase in traffic, in relation to existing traffic and the capacity of the street system (i.e., a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections);
- CIRC-2: Exceed, individually or cumulatively, the level of service standards established by the county congestion management agency for designated roads or highways;
- CIRC-3: Cause a change in air traffic patterns, including either an increase in traffic levels or a change in location, that results in substantial safety risks;
- CIRC-4: Contain a design feature (e.g., sharp curves or a dangerous intersection) or incompatible uses (e.g., farm equipment) that would substantially increase hazards;
- CIRC-5: Result in inadequate emergency access;
- CIRC-6: Result in inadequate parking capacity; or
- CIRC-7: Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

4.13.5. Environmental Impacts, Project Requirements and Mitigation Measures

To identify potentially significant impacts resulting from the project, each proposed program action was assessed against the significance thresholds listed in the Threshold of Significance. The discussion below lists each type of potential traffic impact and provides an analysis of potential impacts from each program action, assesses the significance of each impact, and if necessary, identifies measures that would minimize impacts to a level below significance.

Impact Statement CIRC-1: Cause a substantial increase in traffic, in relation to existing traffic and the capacity of the street system (i.e., a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).

As SPTSP currently has trails open to biking, hiking and equestrians, there is no anticipated increase in visitation as a result of this project; therefore vehicle trips to and from the park are not expected to vary from existing levels.

Level of significance Before Mitigation:	Less than significant
Mitigation Measures:	None

Impact Statement CIRC-2: Exceed, individually or cumulatively, the level of service standards established by the county congestion management agency for designated roads or highways;

The Marin Countywide Plan states that their objective is to have a LOS D or better for vehicles on streets and highways. Sir Francis Drake Boulevard is below a LOS D in several segments, none of which occur in the vicinity of SPTSP. Furthermore, the project either itself or in conjunction with other projects will reduce the LOS. Therefore, the impact is less than significant.

Level of significance Before Mitigation:	Less than significant
Mitigation Measures:	None

Impact Statement CIRC-5: Result in inadequate emergency access;

The project site includes three roads (Devil's Gulch, Barnabe and Gravesite) that are used in part for fire protection purposes. Additionally, Barnabe Fire Road provides access to the Barnabe Peak Fire Lookout. Devil's Gulch and Barnabe Fire Roads however, will not be affected by construction and will remain available for emergency access. Gravesite Fire Road

Level of significance Before Mitigation:	Less than significant
Mitigation Measures:	None

4.13.6. Effects Considered to be No Effect or Less Than Significant without Project Requirements

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

- Impact Statement CIRC-3: Cause a change in air traffic patterns, including either an increase in traffic levels or a change in location, that results in substantial safety risks: The project is not located near an airport nor would it affect air traffic patterns. Therefore, no impact would result.
- Impact Statement CIRC-4: Contain a design feature (e.g., sharp curves or a dangerous intersection) or incompatible uses (e.g., farm equipment) that would substantially increase hazards: The project entails no construction on roads or land use changes that would result in incompatible uses. Therefore, no impact would result.
- Impact Statement CIRC-6: Result in inadequate parking capacity: As SPTSP currently has trails open to biking, hiking and equestrians, there is no anticipated increase in visitation as a result of this project; therefore the project is not anticipated to affect parking capacity. Therefore, no impact would result.
- Impact Statement CIRC-7: Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks): The project is consistent with the adopted policies, plans and programs supporting alternative modes of transportation. Therefore, no impact would result.

4.13.7. Findings

For transportation, circulation, and traffic conditions evaluated as part of this environmental document, project activities would not cause a substantial increase in traffic, exceed the LOS standards of Marin County, cause a change in air traffic patterns, include a design that would increase hazards, result in inadequate emergency access, or parking, or conflict with adopted policies, plans or programs supporting alternative transportation.

5.0 GROWTH-INDUCING AND CUMULATIVE IMPACTS

This section discusses ways that the Trail Change in Use Project could foster economic or population growth or increase the need for new housing construction. This section also traces any chain of cause and effect arising from project-related economic or social changes that could result in physical changes to the environment. Also, it identifies the Project's potential cumulative impacts, including the Project's temporary construction and long-term operational impacts. In addition, this section identifies additional impacts from Projects planned, or in the process, in the general vicinity that, combined with impacts from the Project, could result in a significant environmental impact.

5.1. Growth-Inducing Impacts (Population, Housing, and Employment)

CEQA requires a discussion of the ways that a proposed project could induce growth either locally or regionally. The CEQA Guidelines § 15126.2 (d) consider a project to be growth-inducing if it fosters economic or population growth or the construction of additional housing, either directly or indirectly, in the surrounding environment. Per the Guidelines, new employees from commercial and industrial development and new populations from residential development represent direct forms of growth. The expansion of urban services into a previously un-served or under-served area, the creation or extension of transportation links, or the removal of major obstacles to growth are examples of projects that are growth-inducing. Growth-inducing projects could have a secondary effect of expanding the size of local markets and attracting additional economic activity to the area (14 CCR § 15126.2 (d)).

Typically, the growth-inducing potential of a project would be considered significant if it fosters growth or a concentration of population above what is assumed in local and regional land use plans, or in projections made by regional planning authorities. Significant growth impacts also could occur if the project provides infrastructure or service capacity to accommodate growth levels beyond those permitted by local or regional plans and policies (14 CCR § 15126.2 (d)).

5.1.1. Existing Conditions

SPTSP is located in the coastal hills of Marin County. The park is located 6.5 miles west of the town of Fairfax and 2.5 air miles east of Olema. The rural community of Lagunitas sits on the east boundary of the park, while the town of Nicasio is just over the ridge to the northeast 1.7 miles away. Both Sir Francis Drake Boulevard and Lagunitas Creek bisect the park travelling southeast to northwest. The majority of the park is surrounded by the Golden Gate National Recreation Area and other public lands.

5.1.2. Regulatory Framework

There are no applicable federal, state or local regulations regarding population, housing and employment.

5.1.3. Thresholds of Significance

The Project would be considered to have a potentially significant adverse environmental impact to population and housing if it would:

- GROWTH 1: 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);
- GROWTH 2: Displace substantial numbers of existing housing units, necessitating the construction of replacement housing elsewhere; and/or
- GROWTH 3: Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

5.1.4. Effects Considered No Impact or Less than Significant without Project Requirements

No Impact and Less Than Significant impact determinations based on the CEQA Guidelines Section 15064.5 and Appendix G.

- The proposed project (see Section 2.0, Project Description) would not induce substantial population growth, either directly or indirectly. The Project does not include the construction of new houses or the commencement of new businesses. Over the long term, the Project would have no impact on population growth, as no significant long-term growth employment would result from the Project. This increase in local employment, while economically beneficial, would not be of a sufficient magnitude to result in a substantial increase in local population that is not otherwise accounted for in regional planning documents.
- No impacts would occur to existing off-site housing; project activities would be implemented within the Park's boundaries. The proposed project would not result in the displacement of existing housing.
- The Project would not displace a substantial number of people, thereby necessitating construction of replacement housing. The proposed project would be implemented within the Park's boundaries; therefore, no impact would occur to off-site displacement of people.

5.1.5. Findings

The proposed project would have a no impact on population growth (either directly or indirectly). Any increase in the workforce would not reach a level that would result in a substantial increase in local population not otherwise accounted for in regional planning documents. Nor would project activities have an impact on the displacement of a substantial numbers of housing or people; therefore, construction of replacement housing would not be required at, or in the vicinity of, the Park.

5.1.6. Cumulative Impacts

CEQA Guidelines require that all EIRs contain an analysis of cumulative impacts that a project might contribute. An EIR must discuss the "cumulative impact" of a project when its incremental effect would be cumulatively considerable. Section 15355 defines

cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts” (14 CCR § 15355). A cumulative impact “consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts” (14 CCR § 15130(a)(1)). The discussion of cumulative impacts “shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone” (14 CCR § 15130(b)). By requiring an evaluation of cumulative impacts, CEQA attempts to minimize the possibility that an EIR will overlook large-scale environmental impacts by only focusing on the effects of a single project.

Further, the Guidelines state “[l]ead agencies should define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for the geographic limitation used” (Section 15130(b)(1)(B)(3)). The cumulative impacts analysis “shall examine reasonable, feasible options for mitigating or avoiding the project’s contribution to any significant cumulative effects” (Section 15130(b)(5)). With some projects, “the only feasible mitigation for cumulative impacts may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis” (Section 15130(c)).

Section 15130(a)(3) also states that an EIR may determine that a project’s contribution to a significant cumulative impact will be rendered less than cumulatively considerable, and thus not significant, if a project is required to implement or fund its fair share of mitigation measure(s) designed to alleviate the cumulative impact.

CEQA requires that one of two methods of establishing this future baseline be used:

- A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or
- A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact. Any such planning document shall be referenced and made available to the public at a location specified by the lead agency (14 CCR, § 15130 (b)).

Efforts by CDFG, USFWS, MMWD, NOAA and Marin County to reduce siltation and sedimentation into Lagunitas Creek and improve habitat for steelhead and Coho salmon are ongoing. The Marin County Department of Public Works released an Environmental Impact Report in May 2010 to rehabilitate Sir Francis Drake Boulevard; parts of this project occur within SPTSP. In addition DPR often has smaller maintenance programs and rehabilitation project planned for a par unit.

These projects could cumulatively create additional impacts to the environment; however, each agency has integrated conditions and mitigations into their projects to avoid impacts whether individually or cumulatively. In addition, while rehabilitation of Lagunitas Creek is ongoing, both this project and the Sir Francis Drake Boulevard project are in the proposal phases and construction schedules are not set.

5.1.7. Findings

Impacts from environmental issues addressed in this DEIR do not overlap with these additional projects in such a way as to result in cumulative impacts that are greater than the sum of the parts. Full implementation of all Standard and Specific Project Requirements, conditions and mitigation measures, with this and other projects would reduce any potential cumulative impact to a less than significant level.

6.0 SIGNIFICANCE OF ENVIRONMENTAL IMPACTS

In accordance with CEQA Guidelines §15126.2, this DEIR identifies and analyzes the environmental effects of the proposed project and their significance, based on the physical conditions existing at and surrounding the proposed project location at the time the Notice of Preparation was published with the State Clearinghouse (SCH#XX), on March 30, 2011. Both direct and indirect potentially significant project-related effects are clearly described and the duration of these effects (long- or short-term) are noted. These include conditions specific to the proposed project area, physical changes, changes to ecological systems, human use and development of the land, public service demands, health and safety issues, and overall natural, cultural, and aesthetic impacts.

6.1. Cumulative Impacts

Most Project impacts addressed in this DEIR do not overlap with additional projects in a manner that would result in cumulative impacts that are greater than the sum of the parts. Full implementation of all Project Requirements and mitigation measures will reduce any potential cumulative impact to a less than significant level.

6.2. Environmental Effects Found to be No Impact

There was no potential for impacts to Land Use Planning (§4.9.1) [includes, Agriculture (§4.9.2), Minerals (§4.9.3), and Recreation (§4.9.4)]; Public Services (§4.11); Utilities (§4.12) or Growth Inducing/Cumulative (§5.0) [includes, Population, Employment, and Housing].

6.3. Environmental Effects Found to be Less Than Significant Impact

The following areas of potential environmental concern were found to have no potential for adverse impact or the potential for environmental impact was less than significant. “Significant” is defined in CEQA Guidelines §15382 as “...a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project, including land, air, water, greenhouse gases and climate change, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. An economic or social change by itself would not be considered a significant effect on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant. “Additional information on existing conditions and basis for determining significance can be found in the referenced sections of this document.

The potential for significant adverse environmental impacts to Aesthetics and Visual Resources (§4.1); Air Quality (§4.2), Biological Resources (§4.3), Green House Gases and Climate Change (§4.4), Cultural Resources (§4.5), Geology and Soils (§4.6), Hazards and Hazardous Materials (§4.7), Hydrology and Water Quality (§4.8), Noise (§4.10) and Transportation, Circulation, and Traffic (§4.13) was found to be less than significant.

6.4. Environmental Effects Found to be Significant

The proposed project was evaluated for potential significant adverse impacts to the natural environment. DPR determined that full implementation of the Standard Project Requirements integrated into this project and proposed mitigation measures included in this DEIR would reduce potential project-related adverse impacts to a less than significant level.

6.5. Cumulative Impacts

Impacts from environmental issues addressed in this DEIR do not overlap with these additional projects in such a way as to result in cumulative impacts that are greater than the sum of the parts. However, full implementation of all Project Requirements, mitigation measures, conditions, and constraints associated with this and other projects, and consistency with the development density established by existing zoning, community plan, and general plan policies would reduce any potential cumulative impact to a less than significant level.

6.6. Overriding Consideration

This section addresses Section 15093 of the CEQA Guidelines requiring the public agency "to balance, as applicable, the economic, legal, social, technological, or other benefits of a proposed project against its unavoidable environmental risks when determining whether to approve the project. If the specific economic, legal, social, technological, or other benefits of a proposed project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered 'acceptable'" (14 CCR §15093). This is known as a statement of overriding considerations. This statement of overriding considerations could be made where changes or alterations in the Project that would avoid or substantially lessen the significant environmental effects are within the responsibility and jurisdiction of another public agency, or where specific economic, legal, social, technological or other considerations, which make mitigation measures or project alternatives infeasible.

The proposed project contains no impacts that cannot remain at or be reduced to a less than significant level. A Statement of Overriding Consideration is not necessary for the Trail Change in Use Project.

7.0 REPORT PREPARATION

7.1. List of Preparers

Department of Parks and Recreation

Northern Service Center - Sacramento, California

Patty DuMont, Staff Park and Recreation Specialist
Roy Martin, Environmental Scientist
Heidi West, Environmental Coordinator
Michael Jasinski, Seasonal Archeologist
Warren Wulzen, Associate State Archeologist
Brad Michalk, Environmental Coordinator
Gary Waldron, Senior Park and Recreation Specialist
Dan Osanna, State Historian III

Marin District – Petaluma, California

Roy McNamee, State Park and Recreation Specialist
Bree Hardcastle, Environmental Scientist

Facilities

Karl Knapp, Staff Park and Recreation Specialist

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Appendix A

Notice of Preparation

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JERRY BROWN
GOVERNOR

STATE OF CALIFORNIA
GOVERNOR'S OFFICE of PLANNING AND RESEARCH
STATE CLEARINGHOUSE AND PLANNING UNIT



Notice of Preparation

April 1, 2011

To: Reviewing Agencies
Re: Trail Change in Use and Improvement Project Samuel P. Taylor
SCH# 2011032070

Attached for your review are copies of the Notice of Preparation (NOP) for the Trail Change in Use and Improvement Project Samuel P. Taylor draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Brad Michalk
California Department of Parks and Recreation
1 Capitol Mall, Suite 140
Sacramento, CA 95814

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Attachments
cc: Lead Agency

**Document Details Report
State Clearinghouse Data Base**

SCH# 2011032070
Project Title Trail Change in Use and Improvement Project Samuel P. Taylor
Lead Agency Parks and Recreation, Department of

Type NOP Notice of Preparation

Description Bill's Trail is currently used by equestrians and hikers only. More recently mountain biking interest groups have petitioned to open Bill's Trail to biking as well. DPR proposes to change the use of Bill's Trail to allow mountain biking in addition to hiking and horseback riding making the trail consistent with the Department's policy to construct multiple use trails. In order to convert the trail to Class I that would allow mountain biking, DPR must "catch up" with the deferred maintenance that has narrowed the trail, reduced drainage function, allowed exotic species to flourish and reduced user safety.

Bill's Trail has a constructed width of 48", the standard for multi-use trails in State Parks and continues nearly four (4) miles between the trail head in Devil's Gulch and the junction with the Barnabe Fire Road at 1,160-foot elevation.

Lead Agency Contact

Name Brad Michalk
Agency California Department of Parks and Recreation
Phone 916 445-8783
email
Address 1 Capitol Mall, Suite 140
City Sacramento
Fax
State CA **Zip** 95814

Project Location

County Marin
City
Region
Cross Streets Sir Francis Drake Blvd. and Devils Gulch Fire Road
Lat / Long 38° 1' 46.96" N / 122° 44' 40" W
Parcel No. 166-040-06
Township **Range** **Section** **Base**

Proximity to:

Highways 1
Airports
Railways
Waterways Lagunitas Creek, Tomales Bay
Schools
Land Use Recreational/Public/Open Space

Project Issues Aesthetic/Visual; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Forest Land/Fire Hazard; Geologic/Seismic; Noise; Public Services; Recreation/Parks; Soil Erosion/Compaction/Grading; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Wetland/Riparian; Wildlife; Landuse; Cumulative Effects

Reviewing Agencies Resources Agency; California Coastal Commission; Cal Fire; Office of Historic Preservation; Department of Parks and Recreation; San Francisco Bay Conservation and Development Commission; Department of Water Resources; Department of Fish and Game, Region 3; Native American Heritage Commission; Caltrans, District 4; State Lands Commission; Regional Water Quality Control Board, Region 2

Date Received 03/30/2011 **Start of Review** 03/30/2011 **End of Review** 04/28/2011

Note: Blanks in data fields result from insufficient information provided by lead agency.

NOTICE OF COMPLETION

Samuel P. Taylor State Park, Trail Change in Use and Improvement Project

Project Description

Bill's Trail is currently used by equestrians and hikers only. More recently mountain biking interest groups have petitioned to open Bill's Trail to biking as well. DPR proposes to change the 'use' of Bill's Trail to allow mountain biking in addition to hiking and horseback riding making the trail consistent with the Department's policy to construct multiple use trails. In order to convert the trail to Class I that would allow mountain biking, DPR must "catch up" with the deferred maintenance that has narrowed the trail, reduced drainage function, allowed exotic species to flourish and reduced user safety.

Bill's Trail has a constructed width of 48", the standard for multi-use trails in State Parks and continues nearly four (4) miles between the trail head in Devil's Gulch and the junction with the Barnabe Fire Road at 1,160-foot elevation. DPR staff completed a Trail Use Change Survey and prepared a trail log (Appendix D) identifying needed repairs, soil types, and features. The following summarizes the proposed work:

Trail Work

- Brush the trail from top of cut bank to top of fill slope to maintain constructed trail width and original brushed line of sight;
- Improve trail out-sloping and remove any developing outer edge (berm) trail tread to original design width averaging 48" (from top hinge of fillslope to bottom hinge of cut bank or back slope) to maintain drainage. Trail bench work will be limited to maximum of 6" in depth; ground disturbance will stay within the existing profile (top of cut bank to bottom of fill slope);
- Remove debris collecting on the inside hinge to maintain trail width and remove loose debris;

Bridge Repair/Drainage

- Replace wood-armored ephemeral stream crossings with rock armored crossings, as needed;
- Install armored rock crossings at all ephemeral drainages and micro drainages to harden the trail tread. Specific work to include:
- Manually excavate up to 18" of trail tread (in the ephemeral drainage) and backfill with large, flat-topped rock to provide a stable crossing;
- Place rock in the ephemeral stream channel gradient;
- Repair bridges as needed; no work would occur lower than existing bridge components within the bed and/or stream channel. Specific work to include:
- Excavate bridge approaches (and abutments as necessary) outward to first substantive vegetation and backfill with gravel;
- Install gravel surfacing to provide a stable tread surface at bridge approaches;
- Resource Management:
- Remove non-native eucalyptus trees identified by a DPR-approved Environmental Scientist to improve the stand management and encourage naturally occurring tree species;
- Where eucalyptus would be removed at least 75 square feet of basal area per acre (any tree species) would be retained on the slope;
- Logs hoisted to the trail would be suspended to minimize ground impacts;

User Safety

- Construct pinch points with two, 18" diameter or larger logs (from existing downed trees on site or imported as needed) protruding onto the trail from each side creating the need to travel an 'S' path to negotiate the path through the logs. Pinch points will be placed in approximately 100 locations along Bill's Trail to reduce bicycle speed and increase the 'line of sight' at curves, improving user safety. Where appropriate, rocks could be used in place of eucalyptus logs;
- Install signage to inform user groups how to have a safe and fun trail experience without conflict;
- Repair, replace or install split rail fencing along trail as needed for safety, resource protection, and shortcut prevention;

Gravesite Fire Road

- Improve and rehabilitate limited sections of road as needed per California State Park guidelines
- Ditchouts and rolling dips will be armored with aggregate at and near the outlet to reduce erosion. Aggregate would transitionally increase in size toward the outlet end.

No work will be performed on Barnabe Fire Road and is not a part of this project.

NOP Distribution List

County: MAPIN

SCH#

2011032070
Regional Water Quality Control Board (RWQCB)

- | | | | | |
|--|--|--|---|---|
| <p>Resources Agency</p> <p><input type="checkbox"/> Resources Agency
Nadell Gayou</p> <p><input type="checkbox"/> Dept. of Boating & Waterways
Mike Sotelo</p> <p><input type="checkbox"/> California Coastal Commission
Elizabeth A. Fuchs</p> <p><input type="checkbox"/> Colorado River Board
Gerald R. Zimmerman</p> <p><input type="checkbox"/> Dept. of Conservation
Rebecca Salazar</p> <p><input type="checkbox"/> California Energy Commission
Eric Knight</p> <p><input type="checkbox"/> Cal Fire
Allen Robertson</p> <p><input type="checkbox"/> Central Valley Flood Protection Board
James Heredia</p> <p><input checked="" type="checkbox"/> Office of Historic Preservation
Ron Parsons</p> <p><input type="checkbox"/> Dept. of Parks & Recreation Environmental Stewardship Section</p> <p><input type="checkbox"/> California Department of Resources, Recycling & Recovery
Sue O'Leary</p> <p><input type="checkbox"/> S.F. Bay Conservation & Dev't. Comm.
Steve McAdam</p> <p><input checked="" type="checkbox"/> Dept. of Water Resources Resources Agency
Nadell Gayou</p> <p><input type="checkbox"/> Conservancy</p> <p>Fish and Game</p> <p><input type="checkbox"/> Dept. of Fish & Game
Scott Filitt
Environmental Services Division</p> <p><input type="checkbox"/> Fish & Game Region 1
Donald Koch</p> | <p><input type="checkbox"/> Fish & Game Region 1E
Laure Harnsberger</p> <p><input type="checkbox"/> Fish & Game Region 2
Jeff Drongessen</p> <p><input checked="" type="checkbox"/> Fish & Game Region 3
Charles Arnor</p> <p><input type="checkbox"/> Fish & Game Region 4
Julie Vance</p> <p><input type="checkbox"/> Fish & Game Region 5
Don Chadwick</p> <p><input type="checkbox"/> Fish & Game Region 6
Gabrina Gatchel</p> <p><input type="checkbox"/> Fish & Game Region 6 IIM
Brad Henderson</p> <p><input type="checkbox"/> Fish & Game Region M
George Isaac</p> <p><input type="checkbox"/> Dept. of Fish & Game Marine Region</p> <p>Other Departments</p> <p><input type="checkbox"/> Food & Agriculture
Steve Shaffer</p> <p><input type="checkbox"/> Dept. of Food and Agriculture Public School Construction</p> <p><input type="checkbox"/> Dept. of General Services
Anna Garbeff</p> <p><input type="checkbox"/> Dept. of Public Health
Bridgette Binning</p> <p><input type="checkbox"/> Dept. of Health/Drinking Water</p> <p>Independent Commissions/Boards</p> <p><input type="checkbox"/> Delta Protection Commission
Linda Flack</p> <p><input type="checkbox"/> Cal EMA (Emergency Management Agency)
Dennis Castillo</p> <p><input type="checkbox"/> Governor's Office of Planning & Research
State Clearinghouse</p> | <p><input checked="" type="checkbox"/> Native American Heritage Comm.
Debbie Treadway</p> <p><input type="checkbox"/> Public Utilities Commission
Leo Wong</p> <p><input type="checkbox"/> Santa Monica Bay Restoration
Guangyu Wang</p> <p><input checked="" type="checkbox"/> State Lands Commission
Marina Brand</p> <p><input type="checkbox"/> Tahoe Regional Planning Agency (TRPA)
Cherry Jacques</p> <p>Business, Trans & Housing</p> <p><input type="checkbox"/> Caltrans - Division of Aeronautics
Phillip Crimmins</p> <p><input type="checkbox"/> Caltrans - Planning
Terr Pencovic</p> <p><input type="checkbox"/> California Highway Patrol
Scott Loetscher</p> <p><input type="checkbox"/> Office of Special Projects</p> <p><input type="checkbox"/> Housing & Community Development
CEQA Coordinator
Housing Policy Division</p> <p>Dept. of Transportation</p> <p><input type="checkbox"/> Caltrans, District 1
Rex Jackman</p> <p><input type="checkbox"/> Caltrans, District 2
Marcelino Gonzalez</p> <p><input type="checkbox"/> Caltrans, District 3
Bruce de Terra</p> <p><input checked="" type="checkbox"/> Caltrans, District 4
Lisa Carboni</p> <p><input type="checkbox"/> Caltrans, District 5
David Murray</p> <p><input type="checkbox"/> Caltrans, District 6
Michael Navarro</p> <p><input type="checkbox"/> Caltrans, District 7
Elmer Alvarez</p> | <p><input type="checkbox"/> Caltrans, District 8
Dan Kopusky</p> <p><input type="checkbox"/> Caltrans, District 9
Gayle Rosander</p> <p><input type="checkbox"/> Caltrans, District 10
Tom Dumas</p> <p><input type="checkbox"/> Caltrans, District 11
Jacob Armstrong</p> <p><input type="checkbox"/> Caltrans, District 12
Chris Herre</p> <p>Cal EPA</p> <p>Air Resources Board</p> <p><input type="checkbox"/> Airport Projects
Jim Lemmer</p> <p><input type="checkbox"/> Transportation Projects
Douglas Ito</p> <p><input type="checkbox"/> Industrial Projects
Mike Tollstrup</p> <p><input type="checkbox"/> State Water Resources Control Board
Regional Programs Unit
Division of Financial Assistance</p> <p><input type="checkbox"/> State Water Resources Control Board
Student Intern, 401 Water Quality Certification Unit
Division of Water Quality</p> <p><input type="checkbox"/> State Water Resources Control Board
Steven Herrera
Division of Water Rights</p> <p><input type="checkbox"/> Dept. of Toxic Substances Control
CEQA Tracking Center</p> <p><input type="checkbox"/> Department of Pesticide Regulation
CEQA Coordinator</p> | <p><input type="checkbox"/> RWQCB 1
Cathleen Hudson
North Coast Region (1)</p> <p><input checked="" type="checkbox"/> RWQCB 2
Environmental Document Coordinator
San Francisco Bay Region (2)</p> <p><input type="checkbox"/> RWQCB 3
Central Coast Region (3)</p> <p><input type="checkbox"/> RWQCB 4
Teresa Rodgers
Los Angeles Region (4)</p> <p><input type="checkbox"/> RWQCB 5S
Central Valley Region (5)</p> <p><input type="checkbox"/> RWQCB 5F
Central Valley Region (5)
Fresno Branch Office</p> <p><input type="checkbox"/> RWQCB 5R
Central Valley Region (5)
Redding Branch Office</p> <p><input type="checkbox"/> RWQCB 6
Lahontan Region (6)</p> <p><input type="checkbox"/> RWQCB 6V
Lahontan Region (6)
Victorville Branch Office</p> <p><input type="checkbox"/> RWQCB 7
Colorado River Basin Region (7)</p> <p><input type="checkbox"/> RWQCB 8
Santa Ana Region (8)</p> <p><input type="checkbox"/> RWQCB 9
San Diego Region (9)</p> <p><input type="checkbox"/> Other</p> |
|--|--|--|---|---|

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Appendix B

Natural Resource – Species Lists

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Table B-1: Special Status Wildlife Species

Scientific Names	Common Names	Status	Probability of Occurrence in SPTSP	Probability of Occurrence in Project Areas
INVERTEBRATES				
<i>Caecidotea tomalensis</i>	Tomales isopod		no suitable habitat	no suitable habitat
<i>Calicina diminua</i>	Marin blind harvestman		potentially suitable habitat	potentially suitable habitat
<i>Callophrys mossii bayensis</i>	San Bruno elfin butterfly	FE	no suitable habitat	no suitable habitat
<i>Callophrys mossii marinensis</i>	Marin elfin butterfly		potentially suitable habitat	no suitable habitat
<i>Cicindela hirticollis gravida</i>	sandy beach tiger beetle		no suitable habitat	no suitable habitat
<i>Danaus plexippus</i>	monarch butterfly		no suitable habitat	no suitable habitat
<i>Haliotis cracherodii</i>	black abalone	FE	no suitable habitat	no suitable habitat
<i>Hydrochara rickseckeri</i>	Ricksecker's water scavenger beetle		no suitable habitat	no suitable habitat
<i>Icaria icarioides missionensis</i>	mission blue butterfly	FE	potentially suitable habitat	no suitable habitat
<i>Ischnura gemina</i>	San Francisco forktail damselfly		no suitable habitat	no suitable habitat
<i>Lichnanthe ursina</i>	bumblebee scarab beetle		no suitable habitat	no suitable habitat
<i>Pomatiopsis binneyi</i>	robust walker		potentially suitable habitat	no suitable habitat
<i>Syncaris pacifica</i>	California freshwater shrimp	FE, SE	occurs in park	potentially suitable habitat
<i>Talanites ubicki</i>	Ubick's gnaphosid spider		no suitable habitat	no suitable habitat
<i>Trachusa gummifera</i>	A leaf-cutter bee		no suitable habitat	no suitable habitat
<i>Tryonia imitator</i>	mimic tryonia (=California brackishwater snail)		no suitable habitat	no suitable habitat
<i>Vespericola marinensis</i>	Marin hesperian		potentially suitable habitat	potentially suitable habitat
FISH				
<i>Acipenser medirostris</i>	green sturgeon	FT, SSC	no suitable habitat	no suitable habitat
<i>Eucyclogobius newberryi</i>	tidewater goby	FE, SSC	no suitable habitat	no suitable habitat
<i>Lavinia symmetricus</i>	Tomales roach	SSC	occurs in park	potentially suitable habitat
<i>Oncorhynchus kisutch</i>	central California coast coho salmon ESU	FE, SE	occurs in park	occurs in project area
<i>Oncorhynchus mykiss</i>	central California coast steelhead ESU	FT	occurs in park	occurs in project area
<i>Oncorhynchus tshawytscha</i>	California coastal chinook salmon	FT	potentially suitable habitat	no suitable habitat
<i>Pogonichthys macrolepidotus</i>	Sacramento splittail	SSC	no suitable habitat	no suitable habitat
AMPHIBIANS				

<u>Ambystoma californiense</u>	California tiger salamander	FT, SCE	no suitable habitat	no suitable habitat
<u>Rana boylei</u>	foothill yellow-legged frog	SSC	occurs in park	occurs in project area
<u>Rana draytonii</u>	California red-legged frog	FT, SSC	potentially suitable non-breeding habitat	potentially suitable non-breeding habitat
REPTILES				
<u>Actinemys marmorata marmorata</u>	northwestern pond turtle	SSC	potentially suitable habitat	no suitable habitat
<u>Caretta caretta</u>	loggerhead turtle	FT	no suitable habitat	no suitable habitat
<u>Chelonia mydas (incl. agassizi)</u>	green turtle	FT	no suitable habitat	no suitable habitat
<u>Dermochelys coriacea</u>	leatherback turtle	FE	no suitable habitat	no suitable habitat
<u>Lepidochelys olivacea</u>	olive (=Pacific) Ridley sea turtle	FT	no suitable habitat	no suitable habitat
BIRDS				
<u>Accipiter cooperi</u>	Cooper's hawk		potentially suitable habitat	potentially suitable habitat
<u>Accipiter gentilis</u>	northern goshawk	SSC	no suitable habitat	no suitable habitat
<u>Accipiter striatus</u>	sharp-shinned hawk		potentially suitable habitat	potentially suitable habitat
<u>Ardea alba</u>	great egret		no suitable habitat	no suitable habitat
<u>Ardea herodias</u>	great blue heron		potentially suitable habitat	no suitable habitat
<u>Athene cunicularia</u>	burrowing owl	SSC	no suitable habitat	no suitable habitat
<u>Brachyramphus marmoratus</u>	marbled murrelet	FT, SE	no suitable habitat	no suitable habitat
<u>Chaetura vauxi</u>	Vaux's swift	SSC	potentially suitable habitat	potentially suitable habitat
<u>Charadrius alexandrinus nivosus</u>	western snowy plover	FT, SSC	no suitable habitat	no suitable habitat
<u>Circus cyaneus</u>	northern harrier	SSC	potentially suitable habitat	potentially suitable habitat
<u>Coccyzus americanus</u>	western yellow-billed cuckoo	SE	no suitable habitat	no suitable habitat
<u>Cypseloides niger</u>	black swift	SSC	potentially suitable habitat	no suitable habitat
<u>Dendroica petechia brewsteri</u>	yellow warbler	SSC	potentially suitable habitat	potentially suitable habitat
<u>Diomedea albatrus</u>	short-tailed albatross	FE	no suitable habitat	no suitable habitat
<u>Elanus leucurus</u>	white-tailed kite	FP	potentially suitable habitat	potentially suitable habitat
<u>Falco columbarius</u>	merlin		potentially suitable habitat	potentially suitable habitat
<u>Falco peregrinus anatum</u>	Peregrine falcon	SE	potentially suitable habitat	potentially suitable habitat
<u>Geothlypis trichas sinuosa</u>	saltmarsh common yellowthroat	SSC	no suitable habitat	no suitable habitat
<u>Laterallus jamaicensis coturniculus</u>	California black rail	ST	no suitable habitat	no suitable habitat
<u>Melospiza melodia samuelis</u>	San Pablo song sparrow	SSC	no suitable habitat	no suitable habitat

<u>Pandion haliaetus</u>	osprey		occurs in park	potentially suitable habitat
<u>Pelecanus occidentalis californicus</u>	California brown pelican	FE, SE	no suitable habitat	no suitable habitat
<u>Phoebastria albatrus</u>	short-tailed albatross	FE, SSC	potentially suitable habitat	no suitable habitat
<u>Progne subis</u>	purple martin	SSC	potentially suitable habitat	potentially suitable habitat
<u>Rallus longirostris obsoletus</u>	California clapper rail	FE, SE	no suitable habitat	no suitable habitat
<u>Sternula antillarum (=Sterna, =albifrons) browni</u>	California least tern	FE, SE	no suitable habitat	no suitable habitat
<u>Strix occidentalis caurina</u>	northern spotted owl	FT, SSC	occurs in park	potentially suitable habitat
MAMMALS				
<u>Antrozous pallidus</u>	pallid bat	SSC	potentially suitable habitat	potentially suitable habitat
<u>Aplodontia rufa phaea</u>	Point Reyes mountain beaver	SSC	potentially suitable habitat	potentially suitable habitat
<u>Arborimus pomo</u>	Sonoma tree vole	SSC	outside of known range	outside of known range
<u>Arctocephalus townsendi</u>	Guadalupe fur seal	FT, ST	no suitable habitat	no suitable habitat
<u>Balaenoptera borealis</u>	sei whale	FE	no suitable habitat	no suitable habitat
<u>Balaenoptera musculus</u>	blue whale	FE	no suitable habitat	no suitable habitat
<u>Balaenoptera physalus</u>	finback (=fin) whale	FE	no suitable habitat	no suitable habitat
<u>Corynorhinus townsendii</u>	Townsend's big-eared bat	SSC	no suitable habitat	no suitable habitat
<u>Eubalaena (=Balaena) glacialis</u>	right whale	FE	no suitable habitat	no suitable habitat
<u>Eumetopias jubatus</u>	Steller (=northern) sea-lion	FT	no suitable habitat	no suitable habitat
<u>Lasionycteris noctivagans</u>	silver-haired bat		potentially suitable habitat	potentially suitable habitat
<u>Lasiurus blossevillii</u>	western red bat	SSC	potentially suitable habitat	potentially suitable habitat
<u>Lasiurus cinereus</u>	hoary bat		no suitable habitat	no suitable habitat
<u>Megaptera novaengliae</u>	humpback whale	FE	no suitable habitat	no suitable habitat
<u>Myotis evotis</u>	long-eared myotis		potentially suitable habitat	potentially suitable habitat
<u>Myotis yumanensis</u>	Yuma myotis		potentially suitable habitat	potentially suitable habitat
<u>Physeter catedon (=macrocephalus)</u>	sperm whale	FE	no suitable habitat	no suitable habitat
<u>Reithrodontomys raviventris</u>	salt marsh harvest mouse	FE, SE	no suitable habitat	no suitable habitat
<u>Taxidea taxus</u>	American badger	SSC	potentially suitable habitat	potentially suitable habitat

SE State Endangered
ST State Threatened

SCE State Candidate for Listing
SSC CDFG California Species of Special Concern
FP CDFG Fully Protected Species
FE Federally Endangered
FT Federally Threatened
PE Proposed Federally Endangered
C Federal Candidate
DPS Distinct Population Segment
ESU Evolutionarily Significant Unit

Table B-2 Special Status Plant Species Evaluated for Project

Table 1: List of Special Status Plant Species Known to Occur or Potentially Occur Within the Project Area

<u>Scientific Names</u>	Common Names	Habitat Requirements	CNPS ¹	Status	Suitable Habitat Present in Project Area/ Species Observed or Documented within Project Area
<u><i>Abronia umbellata</i> ssp. <i>breviflora</i></u>	pink sand verbena	coastal dunes	List 1B.1		No/No
<u><i>Allium peninsulare</i> var. <i>franciscanum</i></u>	Franciscan onion	cismontane woodland, valley and foothill grassland/clay, volcanic, often serpentinite	List 1B.2		No/No
<u><i>Alopecurus aequalis</i> var. <i>sonomensis</i></u>	Sonoma alopecurus	marshes and swamps (freshwater), riparian scrub	List 1B.1	FE	No/No
<u><i>Amorpha californica</i> var. <i>napensis</i></u>	Napa false indigo	broadleafed upland forest (openings), chaparral, cismontane woodland	List 1B.2		Yes/No MAYBE
<u><i>Amsinckia lunaris</i></u>	bent-flowered fiddleneck	coastal bluff scrub, cismontane woodland, valley and foothill grassland	List 1B.2		Yes/No MAYBE
<u><i>Arctostaphylos hookeri</i> ssp. <i>montana</i></u>	Mt. Tamalpais manzanita	Chaparral, valley and foothill grassland/serpentinite, rocky	List 1B.3		No/No
<u><i>Arctostaphylos virgata</i></u>	Marin manzanita	broadleafed upland forest, closed-cone coniferous forest, chaparral, North Coast coniferous forest/sandstone or granitic substrate	List 1B.2		No/No
<u><i>Astragalus pycnostachyus</i> var. <i>pycnostachyus</i></u>	coastal marsh milk-vetch	coastal dunes (mesic), coastal scrub, marshes and swamps (coastal salt, streamsides)	List 1B.2		No/No
<u><i>Astragalus tener</i> var. <i>tener</i></u>	alkali milk-vetch	playas, valley and foothill grassland (adobe clay), vernal pools/alkaline	List 1B.2		No/No

<u><i>Boschniakia hookeri</i></u>	small groundcone	North Coast coniferous forest	List 2.3		No/No
<u><i>California macrophylla</i></u>	round-leaved filaree	cismontane woodland, valley and foothill grassland/clay	List 1B.1		Yes/No UNLIKELY
<u><i>Calochortus tiburonensis</i></u>	Tiburon mariposa lily	valley and foothill grassland (serpentine)	List 1B.1	FT, ST	No/No
<u><i>Campanula californica</i></u>	swamp harebell	bogs and fens, closed-cone coniferous forest, coastal prairie, meadows and seeps, marshes and swamps, (freshwater), North Coast coniferous forest/mesic	List 1B.2		No/No
<u><i>Carex lyngbyei</i></u>	Lyngbye's sedge	marshes and swamps (brackish or freshwater)	List 2.2		No/No
<u><i>Castilleja affinis</i> ssp. <i>neglecta</i></u>	Tiburon paintbrush	valley and foothill grassland (serpentine)	List 1B.2	FE, ST	No/No
<u><i>Castilleja ambigua</i> ssp. <i>humboldtiensis</i></u>	Humboldt Bay owl's-clover	marshes and swamps, (coastal salt)	List 1B.2		No/No
<u><i>Ceanothus gloriosus</i> var. <i>porrectus</i></u>	Mt. Vision ceanothus	closed-cone coniferous forest, coastal prairie, coastal scrub, valley and foothill grassland	List 1B.3		Yes/No NOT FOUND
<u><i>Ceanothus masonii</i></u>	Mason's ceanothus	chaparral (rocky, serpentine)	List 1B.2	SR	No/No
<u><i>Chorizanthe cuspidata</i> var. <i>cuspidata</i></u>	San Francisco Bay spineflower	coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub/sandy	List 1B.2		No/No
<u><i>Chorizanthe robusta</i> var. <i>robusta</i></u>	robust spineflower	chaparral(maritime), cismontane woodland (openings), coastal dunes, coastal scrub/sandy or gravelly	List 1B.1	FE	No/No
<u><i>Chorizanthe valida</i></u>	Sonoma spineflower	coastal prairie, (sandy)	List 1B.1	FE, SE	No/No
<u><i>Cicuta maculata</i> var. <i>bolanderi</i></u>	Bolander's water-hemlock	marshes and swamps, coastal, fresh or brackish water	List 2.1		No/No
<u><i>Cirsium andrewsii</i></u>	Franciscan thistle	broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub/mesic, sometimes serpentine	List 1B.2		Yes/No
<u><i>Cirsium hydrophilum</i> var. <i>vaseyi</i></u>	Mt. Tamalpais thistle	broadleafed upland forest, chaparral, meadows and seeps/serpentine seeps	List 1B.2		No/No
<u><i>Collinsia corymbosa</i></u>	round-headed Chinese-houses	coastal dunes	List 1B.2		No/No
<u><i>Cordylanthus maritimus</i> ssp.</u>	Point Reyes bird's-beak	marshes and swamps (coastal	List 1B.2		No/No

<u><i>palustris</i></u>		salt)			
<u><i>Cordylanthus mollis</i> ssp. <i>mollis</i></u>	soft bird's-beak	marshes and swamps (coastal salt)	List 1B.2	FE, SR	No/No
<u><i>Delphinium bakeri</i></u>	Baker's larkspur	broadleafed upland forest, coastal scrub, valley and foothill grassland/decomposed shale, often mesic	List 1B.1	FE, SE	No/No
<u><i>Delphinium luteum</i></u>	golden larkspur	chaparral, coastal prairie, coastal scrub/rocky	List 1B.1	FE, SR	Yes/No
<u><i>Dirca occidentalis</i></u>	western leatherwood	broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland/mesic	List 1B.2		Yes/No NOT FOUND
<u><i>Entosthodon kochii</i></u>	Koch's cord moss	cismontane woodland (soil)	List 1B.3		No/No
<u><i>Erigeron biolettii</i></u>	streamside daisy	broadleafed upland forest, cismontane woodland, North Coast coniferous forest/rocky, mesic	List 3		Yes/No
<u><i>Eriogonum luteolum</i> var. <i>caninum</i></u>	Tiburon buckwheat	chaparral, cismontane woodland, coastal prairie, valley and foothill grassland/serpentinite, sandy to gravelly	List 1B.2		No/No
<u><i>Fissidens pauperculus</i></u>	minute pocket moss	North Coast coniferous forest, (damp coastal soil)	List 1B.2		Yes/No
<u><i>Fritillaria lanceolata</i> var. <i>tristulis</i></u>	Marin checker lily	coastal bluff scrub, coastal prairie, coastal scrub	List 1B.1		Yes/No
<u><i>Fritillaria liliacea</i></u>	fragrant fritillary	cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland/often serpentinite	List 1B.2		Yes/No
<u><i>Gilia capitata</i> ssp. <i>chamissonis</i></u>	blue coast gilia	coastal dunes, coastal scrub	List 1B.1		No/No
<u><i>Gilia capitata</i> ssp. <i>tomentosa</i></u>	woolly-headed gilia	coastal bluff scrub(rocky, outcrops)	List 1B.1		No/No
<u><i>Grindelia hirsutula</i> var. <i>maritima</i></u>	San Francisco gumplant	coastal bluff scrub, coastal scrub, valley and foothill grassland/sandy or serpentinite	List 1B.2		No/No

<u><i>Helianthella castanea</i></u>	Diablo helianthella	broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland	List 1B.2		No/No
<u><i>Hemizonia congesta</i> ssp. <i>congesta</i></u>	pale yellow hayfield tarplant	valley and foothill grassland/sometimes roadsides	List 1B.2		Yes/No
<u><i>Hesperevax sparsiflora</i> var. <i>brevifolia</i></u>	short-leaved evax	coastal bluff scrub (sandy), coastal dunes	List 1B.2		No/No
<u><i>Hesperolinon congestum</i></u>	Marin western flax	chaparral, valley and foothill grassland/serpentine	List 1B.1		No/No
<u><i>Holocarpha macradenia</i></u>	Santa Cruz tarplant	coastal prairie, coastal scrub, valley and foothill grassland/often clay, sandy			No/No
<u><i>Horkelia marinensis</i></u>	Point Reyes horkelia	coastal dunes, coastal prairie, coastal scrub/sandy	List 1B.2		No/No
<u><i>Horkelia tenuiloba</i></u>	thin-lobed horkelia	broadleafed upland forest, chaparral, valley and foothill grassland/mesic openings, sandy	List 1B.2		No/No
<u><i>Lasthenia californica</i> ssp. <i>macrantha</i></u>	perennial goldfields	coastal bluff scrub, coastal dunes, coastal scrub	List 1B.2		No/No
<u><i>Lasthenia conjugens</i></u>	Contra Costa goldfields	cismontane woodland, playas, valley and foothill grassland, vernal pools/mesic	List 1B.1	FE	No/No
<u><i>Layia carnosa</i></u>	beach layia	coastal dunes, coastal scrub (sandy)	List 1B.1	FE, SE	No/No
<u><i>Leptosiphon croceus</i></u>	coast yellow leptosiphon	coastal bluff scrub, coastal prairie	List 1B.1		No/No
<u><i>Lessingia hololeuca</i></u>	woolly-headed lessingia	broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland/clay, serpentine	List 3		No/No
<u><i>Lessingia micradenia</i> var. <i>micradenia</i></u>	Tamalpais lessingia	Chaparral, valley and foothill grassland/usually serpentine, often roadsides	List 1B.2		No/No
<u><i>Lilaeopsis masonii</i></u>	Mason's lilaeopsis	marshes and swamps (brackish or freshwater), riparian scrub	List 1B.1	SR	No/No
<u><i>Lilium maritimum</i></u>	coast lily	broadleafed upland forest, closed-cone coniferous forest, coastal prairie, coastal scrub, marshes and swamps	List 1B.1		Yes/No NOT FOUND

		(freshwater), North Coast coniferous forest/sometimes roadside			
<u><i>Lupinus tidestromii</i></u>	Tidestrom's lupine	coastal dunes	List 1B.1	FE, SE	No/No
<u><i>Micropus amphibolus</i></u>	Mt. Diablo cottonweed	broadleaved upland forest, chaparral, cismontane woodland, valley and foothill grassland/rocky	List 3.2		No/No
<u><i>Microseris paludosa</i></u>	marsh microseris	closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland	List 1B.2		Yes/No
<u><i>Mielichhoferia elongata</i></u>	elongate copper moss	cismontane woodland (metamorphic, rock, usually vernal mesic)	List 2.2		No/No
<u><i>Navarretia leucocephala</i> ssp. <i>bakeri</i></u>	Baker's navarretia	cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools/mesic	List 1B.1		No/No
<u><i>Navarretia rosulata</i></u>	Marin County navarretia	closed-cone coniferous forest, chaparral/serpentinite, rocky	List 1B.2		No/No
<u><i>Pentachaeta bellidiflora</i></u>	white-rayed pentachaeta	cismontane woodland, valley and foothill grassland (often serpentinite)	List 1B.1	FE, SE	Yes/No
<u><i>Phacelia insularis</i> var. <i>continentis</i></u>	North Coast phacelia	coastal bluff scrub, coastal dunes/sandy, sometimes rocky	List 1B.2		No/No
<u><i>Plagiobothrys glaber</i></u>	hairless popcorn-flower	meadows and seeps, (alkaline), marshes and swamps (coastal salt)	List 1A		No/No
<u><i>Plagiobothrys mollis</i> var. <i>vestitus</i></u>	Petaluma popcorn-flower	marshes and swamps, (coastal salt), valley and foothill grassland (mesic)	List 1A		No/No
<u><i>Pleuropogon hooverianus</i></u>	North Coast semaphore grass	broadleaved upland forest, meadows and seeps, North Coast coniferous forest/open areas, mesic	List 1B.1	ST	Yes/No NOT FOUND
<u><i>Polygonum marinense</i></u>	Marin knotweed	marshes and swamps (coastal salt or brackish)	List 3.1		No/No
<u><i>Quercus parvula</i> var.</u>	Tamalpais oak	lower montane coniferous forest	List 1B.3		Yes/No NOT FOUND

<u><i>tamalpaisensis</i></u>					
<u><i>Sidalcea calycosa</i> ssp. <i>rhizomata</i></u>	Point Reyes checkerbloom	marshes and swamps (freshwater, near coast)	List 1B.2		No/No
<u><i>Sidalcea hickmanii</i> ssp. <i>viridis</i></u>	Marin checkerbloom	chaparral (serpentine)	List 1B.3		No/No
<u><i>Stebbinsoseris decipiens</i></u>	Santa Cruz microseris	broadleaved upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland/open areas, sometimes serpentine	List 1B.2		Yes/No
<u><i>Streptanthus batrachopus</i></u>	Tamalpais jewel-flower	closed-cone coniferous forest, chaparral/serpentine	List 1B.3		No/No
<u><i>Streptanthus glandulosus</i> ssp. <i>pulchellus</i></u>	Mount Tamalpais bristly jewel-flower	chaparral, valley and foothill grassland/serpentine	List 1B.2		No/No
<u><i>Streptanthus niger</i></u>	Tiburon jewel-flower	valley and foothill grassland (serpentine)	List 1B.1	FE, SE	No/No
<u><i>Trifolium amoenum</i></u>	two-fork clover	coastal bluff scrub, valley and foothill grassland (sometimes serpentine)	List 1B.1	FE	Yes/No
<u><i>Triphysaria floribunda</i></u>	San Francisco owl's-clover	coastal prairie, coastal scrub, valley and foothill grassland/usually serpentine	List 1B.2		No/No
<u><i>Triquetrella californica</i></u>	coastal triquetrella	coastal bluff scrub, coastal scrub/soil	List 1B.2		No/No

¹California Native Plant Society (CNPS) Lists: List 1A = presumed extinct in California; List 1B = rare or endangered in California and elsewhere; List 2 = rare or endangered in California, more common elsewhere; List 3 = need more information; List 4 = plants of limited distribution. New threat code extensions are: .1 = seriously endangered in California; .2 = fairly endangered in California; and .3 not very endangered in California.

SE State Endangered
ST State Threatened
SR State Rare
CSC California Special Concern
FE Federally Endangered
FT Federally Threatened
FSC Federal Special Concern

Appendix C

Trail Observations

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Trail Observations
Patrick Vaughn, CEG#1784
February, 2011

Beginning at the Bill's Trail trailhead and proceeding clockwise around the proposed loop Vaughan noted the following (all distances are approximate, reported in meters and assume 0 is at the trailhead): 1) Between 30 and 130 low level fluvial terraces are on the left bank of Devil's Gulch; these terraces can store fine sediment that might result from trail reconstruction or recreational activities upslope; 2) 515 - a volunteer trail descends from the trail along the inner gorge slope; 3) 530 – a series of 2 to 4 foot diameter at breast height Douglas fir trees have swept trunks a short distance upslope from the trailcut; ground in the vicinity has some broken appearance – the features at 515 to 530 are within the possible envelope of a sediment source identified by PCI (1988); 4) 700 and environs – a small eucalyptus grove, with trunk diameters in excess of 3 feet, is proposed for removal; slopes in the area are about 60% to 65% grade about 230 feet upslope (in plan view) from the mouth of an incised drainage that contributes to the mainstem of Devil's Gulch; scattered oak trees populate the slopes between the eucalyptus tree; 5) 860 – bridge 3 crosses an incised channel; the immediate channel banks are notably more incised than other drainages; Stillwater Sciences (2007) mapped the area upchannel from the bridge as a sediment source due to channel incision; 6) 1240 to 1365 - a probable old landslide crosses the trail and terminates in the drainage bearing Stairstep Falls; Stillwater Sciences (2007) reported a sediment source along the southeastern flank of the probable old landslide that appeared to be associated with bank erosion at the toe of the landslide; 7) 2510 – cutbank slump in damp area, most debris cleared from trail (no sediment delivery potential); 8) 3255 and 3820 – damage noted due to travel across switchback (no to low sediment delivery potential if addressed); 9) 6005 - junction with Barnabe Fire Road.

From the Barnabe Fire Road – Bill's Trail Junction (6005) there are scattered minor waterbars (6455, 6815, 6925 – very minor water bars were not noted) and minor rilling in the road as the road traverses generally hard bedrock, generally at a 15% to 20% road grade to a ridgecrest 7290. A segment of the road has a 25% grade that is partially confined by a throughcut from 7130 to 7215 (more extensive rilling and a failed waterbar were noted on this road segment). Berms commonly captured flow along both the Barnabe and Gravesite fire roads, which generally have about a 15 foot wide tread. Numerous sediment sources have been reported in the drainages downslope from the road along the road segment from 6005 to 7290, some of which were confirmed by field inspection from the road and aerial imagery. Based on this and literature review the slopes and soils in the steeper drainages are vulnerable to erosion in the presence of concentrated flow. The closest failure observed from the road was a 6 to 10 feet deep, headward eroding slump about 65 feet downslope from 7010.

From the ridgecrest at 7290 to the junction of the Barnabe Fire Road and the Gravesite Fire Road at 7675 apparent recent grading had developed rolling dips and/or large water bar/associated ditch outs at 7350, 7410, 7450, 7495, 7540, 7580, 7615 and 7575. Rilling from freshly graded fill was noted that extended into vulnerable moderately sloping prairie soils at some of the ditch outs. A couple of previously identified sediment sources are

located downslope from this road segment upslope from an unnamed drainage that flows to Lagunitas Creek.

Gravesite Fire Road extends from its junction with Barnabe Fire Road at 7675 to its terminus at the junction with Bill's Trail trailhead at bridge 1 (station 0/8510 where the loop is closed). Although soils underlying the road may have a high shrink swell potential and/or low strength, the road appeared to be performing generally adequately, though there was some rilling that appeared to have been recently treated. However, forested soils between 7845 and 8030 were generally less capable than most of the rest of the road. Recent grading had improved or created additional large water bar/associated ditch outs at 7725 (at the bottom of 25% road grade throughout segment), 7805, and 7845. Recent grading had scraped an area about 35 feet wide outside the current road alignment between 7805 and 7845. From 7845 the road descends through a wet, highly rilled, throughout in more forested terrain south from the Deadmans Gulch channel (8005), which had flow in early February 2011. Ditchouts were observed at 7905, 7950 and 7990. Though the area was well vegetated and had about a 30% side slope, fine sediment from the ditchouts at 7990 and possibly 7950 appeared to have access to the channel. The channel approaches at 8005 are armored with 2 to 4 inch angular rock about 15 feet from the channel margins. Approximately 2 to 3 foot diameter boulders armor a knickpoint on the lower edge of the crossing. North from the crossing the road was very wet to about 8030; straw had been placed to inhibit flow from a bend in the road to the channel. Grading nearby appeared to reflect an attempt to develop a route around the wet road segment north from the channel. At 8055 an unarmored seeping drainage crossed the road and flowed to Deadmans Creek. This feature appears to be a sediment source identified by PCI (1997); PCI (1997) also identified another sediment source slightly farther north from the Deadmans Gulch channel but it was not noted during Vaughan's traverse. Sediment sources from previous studies were also identified in the upper watershed of Deadmans Gulch and noted on the 2005 aerial image upchannel from the feature at 8055. From 8385 to 8475 the road descends at about 20% grade toward the mainstem of Devil's Gulch. This road segment appears to be associated with two sediment sources identified by PCI (1988). A series of fiber water bars spaced at about 50 feet apart broke up flow in this road segment and directed finer-grained earth material toward a curl in the fiber at the outlet that acted as an effective stilling basin for the sediment. From 8475 to 8510 the road narrows to a trail and is within 2 to 3 feet of the top of the banks of the mainstem.

Appendix D

Bill's Trail Use Summary and Trail Log

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Trail: **Bills Trail**

Date: 11/1/2007

Segment: _____

Park
Unit: Samuel P Taylor
State Park

Feet	Action	Feature	Size/Qty			Units	Comment	Total
			L	H	W			
0		Rail Fence	35			lf		35
0		Sign					Interp.	0
0		Start and End of Trail Bills Trail						0
46		Junction					Dead Man Gulch/Gravesite Road	0
46		Bridge	45			lf		45
46	Remove	Slough and Berm	19629			lf	to allow water drainage	
46	reconstruct	trail at all drainage crossings and ephemeral or topographical swales					construct armored drainage crossings at all ephemeral and topographical drainages that cross the trail - remove existing at grade wooden drainage crossings and replace with rock structures at such crossings	
46		Rail Fence	12			lf		12
444	Const	Pinch Point						0
526		Drainage Crossing						0
526	Recon	Water Bar					replace 4" with 8"	0
526		Retaining Wall Wood	20	2		sq ft		40
590	Const	Pinch Point						0
590	Haul	Material	580			lf		580
766		Bridge	20			lf		20
766	Reconst	Bridge				lf		0
823	Const	Pinch Point						0
1294		Rocky Soil	1294			lf		1,294
1412	Reconst	Drainage Crossing						0
1420		Material					3 or 4 pp	0

1460	Const	Pinch Point						0
1677	Const	Pinch Point						0
1719		Full Soil	425			lf		425
1847	Const	Pinch Point						0
1862		Retaining Wall Wood- W	16	2		sq ft		32
1953	Const	Pinch Point						0
2044		Rocky Soil	325			lf		325
2076		Material						0
2216	Const	Pinch Point						0
2269		Full Soil	225			lf		225
2270		Material					Euc Grove, many pp	0
2432	Const	Pinch Point						0
2500	Const	Pinch Point						0
2545	Const	Pinch Point						0
2694	Const	Drainage Crossing					In Drainage	0
2862		Bridge	20			lf		20
2934		Rocky Soil	665			lf		665
2974	Const	Pinch Point						0
3230	Const	Pinch Point						0
3322	Const	Pinch Point						0
3404		Junction					Falls Trail	0
3404		Sign					Directional	0
3414	Remove	Water Bar -Wood						0
3424		Retaining Wall Wood	25	3		lf		75
3484		Slide						0
3518	Const	Pinch Point						0
3540		Material					down slope	0
3663	Const	Pinch Point						0
3669		Full Soil	735			lf		735
3700		Slide						0
3814	Const	Pinch Point						0
3814		Material					snag upslope 20'	0
3874	Const	Pinch Point						0
3919	Const	Pinch Point						0
3966		Material					snag, 2 pp	0
4235	Recon	Switchback						0
4279	Const	Pinch Point						0
4366		Material						0
4474	Const	Pinch Point					on ridge nose	0

4594		Rocky Soil	925			If		925
4660		Material						0
4780	Const	Pinch Point						0
4780		Material						0
4850	Const	Pinch Point						0
4910	Reconst	SW						0
4977	Const	Pinch Point						0
5050		Material						0
5102		Material						0
5270	Const	Pinch Point						0
5375		Material						0
5429	Const	Pinch Point						0
5494		Full Soil profile	900			If		900
5530	Const	Pinch Point						0
5564		Rocky Soil profile	70			If		70
5635		Material					upslope	0
5649	Const	Drainage Crossing					In Crossing	0
5674		Full Soil profile	110			If		110
5700	Const	Pinch Point						0
5792	Const	Pinch Point						0
5960	Reconst	Switchback						0
5989	remove	Limb						0
5989		Material					OH limb	0
6026		Material						0
6115		Material						0
6149	Const	Pinch Point						0
6189	remove	Rootwad						0
6254		Rocky Soil	580			If	Begin	580
6288	Const	Drainage Crossing						0
6354	Const	Pinch Point						0
6435		Material					upslope	0
6508	Const	Pinch Point						0
6571	Const	Pinch Point						0
6650	Const	Pinch Point						0
6721	Const	Pinch Point						0
6771		Material					down slope	0
6850	Const	Pinch Point						0
6904	Const	Pinch Point						0
7127	Const	Pinch Point						0
7127		Material					down slope, punky	0

7312	remove	Water Bar -Wood					Failed	0
7362	Reconst	SW						0
7405	remove	Water Bar -Wood						0
7405		Retaining Wall Wood	40	2		sq ft		80
7454		Full Soil profile	1200			lf		1,200
7513	Const	Pinch Point						0
7590	Reconst	Rail Fence						0
7620	Const	Pinch Point						0
7620		Material					need to drop material for use	0
7744		Rocky Soil	290			lf	Begin	290
7790	Const	Pinch Point						0
7870	Const	Pinch Point						0
7906	Const	Pinch Point						0
7961		Material					down slope	0
8032		Material						0
8137	Const	Pinch Point						0
8223		Material						0
8387		Material						0
8431	Const	Pinch Point						0
8477	Const	Pinch Point						0
8477		Material					1 pp	0
8750	Const	Pinch Point						0
8750		Material					upslope	0
8809	Const	Pinch Point						0
8942	remove	Water Bar -Wood					Fail	0
8972	Reconst	SW						0
8979		RF					End	0
9034		Retaining Wall Wood	40	3		sq ft		120
9055		RF					Begin	0
9072	remove	Limb						0
9072		Material					2 pp	0
9115	Const	Pinch Point						0
9164		Material					upslope 2 pp	0
9365	Const	Pinch Point						0
9402	Const	Pinch Point						0
9602		Material					5 pp	0
9759	Reconst	SW						0
9769		Rail Fence					End	0
9839	Reconst	Rail Fence					Begin	0

10036	Const	Pinch Point						0
10057	remove	Trees						0
10057		Material					3 pp	0
10070	Const	Pinch Point						0
10098	remove	Limb					not pp	0
10132	Const	Pinch Point						0
10282	Const	Pinch Point						0
10427		Material					3 pp	0
10547	Const	Drainage Crossing					In Drainage	0
10619	Reconst	Switchback						
10672		Material					2 pp	0
10692	Const	Drainage Crossing					In Drainage	
10900	Const	Pinch Point						0
10900		Material					upslope 1 pp	0
11100		Material					down slope 2 pp	0
11106	Const	Pinch Point						0
11192	remove	Limb					not pp	0
11244		Material					up and down slope, 6 pp	0
11295	Const	Pinch Point						0
11360	Const	Pinch Point						0
11360		Material					3 pp	0
11419	Const	Pinch Point						0
11584	Const	Pinch Point						0
11712		Material					upslope snag	0
11760	Const	Pinch Point						0
11871		Material					down slope 5 pp	0
12006	Const	Pinch Point						0
12155		Drainage Crossing						0
12155		Retaining Wall	25	2		sq ft	Monitor	50
12155	Reconst	Drainage Crossing						0
12305		Bridge	20			lf	Monitor R Abutment	20
12305		Bridge					Reconst. Hand Rail Lower	0
12323	Const	Pinch Point						0
12425		Material					possible OH limb for matl	0
12500	Const	Pinch Point						0
12545	Const	Pinch Point						0
12587	reconstruct	Switchback						0
12600	remove	Water Bar					Failed	0

12622	Reconst.	Switchback						0
12622		Retaining Wall	25	2		sq ft		50
12695	Const	Pinch Point						0
12723		Full Soil profile.	4979			lf	Begin	4,979
12866	Const	Pinch Point						0
12926		Material					up and down slope, 10 pp	0
13032		Bridge	20			lf		20
13083	remove	Limb						0
13083	Const	Pinch Point						0
13294		Rocky Soil	571			lf	Begins	571
13300	Const	Drainage Crossing						0
13300		Material					poor choice	0
13419	Const	Pinch Point					make root bump	0
13457	Const	Pinch Point						0
13774		Material					up and down 5 pp	0
13774	remove	log					up slope for sight	0
13807	Const	Pinch Point						0
13906		Material					1 pp	0
14064	Const	Pinch Point						0
14081	remove	Limb					not pp	0
14322	Constr.	Drainage Crossing					In Drainage Crossing	0
14322	Reconst	Bridge					Reconst Hand Railing for M. Users	0
14368	Const	Pinch Point						0
14474	Const	Pinch Point						0
14647	Const	Pinch Point						0
14801		Bridge						0
14801	Recon	Bridge						0
14926	Const	Pinch Point						0
15064	Reconst	Drainage Crossing					At Creek Crossing	0
15072	Remove	Berm	209	0.75	1.5	cu ft		235
15128		Material					snag 3 pp	0
15130	Const	Pinch Point						0
15184	Remove	Berm					ends	0
15281		Material					upslope 2 pp	0
15300		Material					upslope 2 pp	0
15404	Reconst.	Drainage Crossing					At Creek Crossing	0
15477	Remove	Berm	48	0.66	1.5	cu ft		48
15525	Remove	Berm					ends	0

15607	Reconst.	Switchback						0
15632	Const	Pinch Point						0
15714	Reconst.	Rail Fence	60					60
15773	Reconst.	Rail Fence					Ends	0
15779	remove	WB						0
15832	reconstruct	Drainage Crossing						0
15832		Retaining Wall Wood	25	2		sq ft	Monitor-Sitting in Drainage	50
15883	Reconst	Rail Fence	95					95
15964	Const	Pinch Point						0
15975	Reconst.	Rail Fence					end	0
15975		Full Soil profile.	2681			lf		2,681
16000	Const	Pinch Point						0
16012	Remove	Berm	57	0.66	1.5	cu ft		56
16063	Const	Pinch Point						0
16069	Remove	Berm					end	0
16233	reconstruct	Drainage Crossing						0
16250		Material					upslope 2 pp	0
16283	Monitor	Retaining Wall Wood	30	5	0.66	cu ft	Monitor This	99
16283		Rock Soil	308			lf		308
16384	Const	Pinch Point						0
16447	Const	Pinch Point						0
16544		Material					2 pp	0
16577	Const.	Drainage Crossing						0
16601	Const	Pinch Point						0
16637	Remove	Berm	187	1	3	cu ft		561
16662	Const	Pinch Point						0
16767		Material					upslope 2 pp	0
16824	Remove	Berm					end	0
16887	Const	Pinch Point						0
17000		Full Soil	717			lf		717
17052	Reconst	Drainage Crossing					Drainage is Eroding	0
17052		Rocky Soil	52			lf		52
17277	Const.	Drainage Crossing						0
17344	Const	Pinch Point						0
17407	Const	Pinch Point						0
17480	Const	Pinch Point						0
17590	Remove	Fence					End	0
17682	Recon	Fence					End	0
17682	Remove	Fence					Begin	0

17760	remove	OH						0
17814	Recon	Fence					Begin	0
17825	Const	Pinch Point						0
17920	Const	Pinch Point						0
17935	remove	Limb						0
17935	remove	Limb					2 pp	0
18074	Const.	Drainage Crossing						0
18131	Const	Pinch Point						0
18241	NA	DX						0
18242		Full Soil	1190			lf	Begin	1,190
18303	Const.	Drainage Crossing						0
18455	Const	Pinch Point						0
18455	remove	Limb						0
18605	Const	Pinch Point						0
18645	Recon	Switchback						0
18680	Const	Pinch Point						0
18718		Rail Fence	237			lf		237
18718		Retaining Wall Wood	10	2		sq ft		20
18780	Const	Pinch Point						0
18780	remove	Limb					not pp	0
18944		Rock Soil	702			lf		702
18955	Reconst	Rail Fence					end	0
18982		Full Soil	38					38
19090		Bridge #7	20			lf		20
19090		Bridge	20					20
19141		Rocky Soil	159			lf		159
19142		Material					downslope 1 pp	0
19232	Remove	Rail					Remove Rail Ends	0
19310	Const	Pinch Point						0
19362	Remove	Rail					Remove Rail Begin-(Cedar Fence)	0
19365	Const	Pinch Point						0
19600	Const	Pinch Point						0
19674		Full Soil	533			lf		533
19675		Trail Junction					Barnabe FR & Bill's Trail	0
19675		Trail Sign					Directional & Regulatory	0
19675	Recon	Trail					To profilevide O/S Drainage	0
19675		Rocky Soil	70			lf	Begins	70

19683	Remove	User Created Trail	45	2		sq ft	Cutting to Road	90
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Appendix E

Gravesite Fire Road Trail Log

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Name: Grave Site RoadDate: March 7, 2011Segment: Horse Camp to Grave Site Trail JunctionLand Unit: Samuel P Taylor State Park

Begin Feet	End Feet	Action	Feature	Size/Qty			Units	Comment	Total
				L	H	W			
0			Segment Begins					Horse Camp Road Edge	
0			Sign					"Riding and Hiking Trail"	
0	250	Construct	Trail Reroute 4 foot wide	250			LF	20%-40% Sideslope - narrow new trail from road width to trail width	250
0	180	Rehabilitate	Road Existing	180		12	sq ft	Full topographic rehabilitation	2160
180			Junction					Devils Gulch Trail	
187	232		Bridge	45			LF	Gluelam	45
233			Junction					Bills Trail (goes up stream/east)	
233	648	Construct	Trail Reroute 4 foot wide	415			LF	20%-40% Sideslope - Road to trail conversion. Existing alignment is overly steep, no drainage crossing designs, no outslope and capturing water	415
233	350		Trail Section	117			LF	Trail, Original road bed traversed creek in wet crossing - wet crossing is now closed	117
233	648	Rehabilitate	Road Existing	415		14	sq ft	Full topographic rehabilitation	5810
257			Sign					"To Barnabe Peak"	
372			Water Bar - Temporary straw canvas waddle					No Sediment capture	
391			Drainage					No road feature to decouple road prism from ephemeral drainage	
403			Water Bar - Temporary straw canvas waddle					Limited fines caught in bar	
444			Water Bar - Temporary straw canvas waddle					Limited fines caught in bar	
484			Water Bar - Temporary straw canvas waddle					Limited fines caught in bar	
540			Water Bar - Temporary straw					No Sediment capture	

			canvas waddle						
590			Water Bar - Temporary straw canvas waddle					some fines caught in bar	
640			Water Bar - Temporary straw canvas waddle					some fines caught in bar	
648		end	Trail Reroute 4 foot wide					Road grades level out	
648	920	Convert	Road to Trail	272			LF	Reduce road surface with from 14' to 4'	272
775			topographic swale					No road feature to decouple road prism from ephemeral drainage	
920	1165	Construct	Trail Reroute 4 foot wide	245			LF	20%-40% Sideslope - Road to trail conversion. Existing alignment is overly steep, no drainage crossing designs, no outslope and capturing water	245
1029			Sign					"Stay on Trail"	
1090			Drainage					Functioning - overly steep approaches on right and left bank	
1165		end	Trail Reroute 4 foot wide					Road grades level out	
1165			Road Bed Degraded					Road bed has completed degraded to trail	
1165	1367	Reconstruct	Trail	202			LF	No outslope, berm	202
1367	2374	Construct	Trail Reroute 4 foot wide	1500			LF	Trail is fall inline descending into drainage, in sections overly steep	1500
1367	1720	Rehabilitate	Trail Existing	353	5	sq ft		De-compaction only - meadow area, re-growth will happen quickly	1765
1720			Drainage					Wet crossing, steep left bank approach to Road junction	
1720			Road Bed					Road bed re-established profile on topography	
1720	2374	Rehabilitate	Road Existing	654	14	sq ft			9156
1855			Existing Pump Station					On Creek - Road elimination and trail conversion will severe vehicle access to pump station, but ATV/Gator Access would be available	
1865			Drainage					Wet crossing, steep left bank approach. Crossing has been treated with rip	

								rap	
1932			Water Bar - constructed earthen dip						
1970			Switchback					does not drain well	
1970			Through cut						
2229			Ditchout					to drain through cut half way	
2374			Leave Dead Man Gulch Watershed						
2374			Junction					Taylor Gravesite Trail	
2374		end	Trail Reroute					Ties into PWA Road work	

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Appendix F

Multiple Trail User Design Parameters

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Multiple Trail User Design Parameters

Multi-use trails are designed to accommodate a variety of user groups on one trail tread. For a trail to be considered multi use it must have designated use for mountain bikers, equestrians and pedestrians. Since trails that are specifically designated for Mountain Bike or Horse usage also allow pedestrians as a secondary use this combination of mountain bike/pedestrian or horse/pedestrian are not considered multiuse. It is assumed that pedestrians will utilize all types of designated trails in California State Parks. Many trails will have individual or shared use designations for use by equestrians, mountain bikers and hikers. Specific design parameters shall be incorporated into the layout, construction and reconstruction of the multiple use trails to reduce user conflict. These include sight distance, sinuosity, pinch points, firm and stable surfaces, textured surfacing and no abrupt grade changes. These multiple use design parameters are used in conjunction with each other and trail alignment to topography.

Sight Distance

Different types of users need to see oncoming or approaching trail users to react with the suitable trail etiquette. Sight distance is paramount to taking appropriate actions to safely allow the user to respond appropriately. This requires adequate brushing and trail alignment during layout. User speed affects the length of sight distance required.

Sinuosity

Sinuosity is the trail weaving in and out of the topography to create a curvy alignment. Sinuosity slows the mountain biker down by putting the user's concentration on steering the bike and reducing speed to stay on the trail. Because of this slowing effect, sinuosity reduces the distance needed for sighting oncoming or approaching trail users.

Pinch Points

Pinch Points are the placement of items such as rocks or logs that create a perceived narrow point in the trail corridor. These items should not be placed opposing each other on the opposite sides of the trail, as placement directly across from each other would create a narrow tread width. Instead, they would be placed "off set" from one another on opposite sides of the trail, giving the approaching trail user the horizontal vision of a perceived narrow spot or pinch point. In reality, the bike user would need to slow in order to proceed past the point as they weave or turn between the two opposing constrictions of trail tread. Since this technique slows the bike user, it also reduces the sight distance needed to react to oncoming or approaching trail users. Pinch points are best placed at locations where a user with ability to gain speed will not surprise or startle an oncoming trail user. They are typically placed at blind corners to slow users for approaching traffic from the other direction.

Firm and Stable Surfaces

Placement of trail alignments on soils and geology consisting of a tough matrix of rock and soils will better sustain mechanical wear. In places of lower soil capability, where trail grade and sheet drainage will not prevent entrenchment and subsequent rutting, a stable aggregate cap is recommended: if this is not feasible, explain why. This will facilitate year round use, as

well as provide a safer surface for multiple users and a more uniform tread to sheet drain water.

Textured Surfaces

This is the placement of materials on the tread surfaces that produce a roughened tread. Textured surfaces require additional attention by a user desiring to go fast (mountain bikes, trail runners, equestrian galloping) not negotiate the rougher surface. These surfaces can compose of a rip rap or cobble placed stones to roughen the tread. Careful placement is required to insure natural drainage is not inhibited

Abrupt Grade Changes

All users exert more effort to climb or brake when the trail grade changes abruptly, which decreases sustainability and increases erosion of the trail tread and the protective aggregate cap. When laying out trails, the gentle transition between grades minimizes the force applied by trail users.