Draft Initial Study/Mitigated Negative Declaration

for the proposed

Bowman Canyon Habitat Protection and Public Access Improvement Project

at

Mount Burdell Open Space Preserve

State Clearinghouse (SCH) Number: XXXXXXX

Public Comment Period: June 15th, 2026 – July 17th, 2026



Prepared by the Marin County Open Space District
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This document has been prepared pursuant to the

California Environmental Quality Act of 1970, as amended

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PROJECT INFORMATION SHEET

Project Title

Bowman Canyon Habitat Protection and Public Access Improvement Project

Lead Agency Name and Address

Marin County Open Space District (MCOSD)
1600 Los Gamos Drive, Suite 275
San Rafael, CA 94943

Contact Person

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Project Location

Mount Burdell Open Space Preserve
Novato, Marin County, California

Assessor Parcel Number(s)

APN 125-150-31
APN 125-150-32
APN 125-150-35
APN 125-150-37

General Plan Designation - Marin Countywide Plan

APN 125-150-31: AG1 Agriculture
APN 125-150-32: AG1 Agriculture
APN 125-150-35: AG1 Agriculture
APN 125-150-37: AG1 Agriculture

Zoning – Main Countywide Plan and City of Novato Municipal Code

APN 125-150-31: A60 Agriculture and Conservation (Marin County)
APN 125-150-32: A60 Agriculture and Conservation (Marin County)
APN 125-150-35: A60 Agriculture and Conservation (Marin County)
APN 125-150-37: A60 Agriculture and Conservation (Marin County)
APN 125-180-58: COS (Conservation), OS (Open Space), and ROS (Restricted Open Space) (City of Novato)

Coordinates

Latitude: -122 36.951
Longitude: 38 7.856
Coordinates in Degrees, Decimal Minutes.
Prime Meridian: Greenwich.
Datum: D_WGS_1984. Spheroid: WGS_1984.

United States Geological Survey

USGS Quad: Petaluma, Petaluma River, Novato, 7.5 Minute Series
Township: N/A
Range: N/A
Section: N/A
Mt. Diablo Baseline and Meridian

MITIGATED NEGATIVE DECLARATION

Marin County Environmental Review

Pursuant to Section 21000 et. seq. of the Public Resources Code and Marin County Environmental Impact Review Guidelines and Procedures, a Negative Declaration is hereby granted for the following project.

Project Name: Bowman Canyon Habitat Protection and Public Access Improvement Project

Location: Mount Burdell Open Space Preserve, Novato Marin County, California

Project Summary:

The proposed project would protect and enhance sensitive habitats and species while providing recreation opportunities on a sustainable network of fire roads and trails. This would be accomplished by reducing the overall road and trail footprint through a thoughtful process of decommissioning existing ranch roads in sensitive habitat, converting some ranch roads to trails, and relocating trails out of sensitive habitats. The areas where trails would be decommissioned and relocated away from sensitive habitats would be revegetated passively through natural recruitment supplemented by additional seeding and planting native shrubs. These actions would meet the project purpose and objectives by reducing environmental impacts, improving trail sustainability, and providing greater accessibility for all trail users.

Project Sponsor: Marin County Open Space District (MCOSD)

Finding:

Based on the attached Initial Study and without a public hearing, it is my judgment that:

☐ The project will not have a significant effect on the environment.

☒ The significant effects of the project noted in the Initial Study attached have been mitigated by modifications to the project so that the potential adverse effects are reduced to a point where no significant effects would occur.

Rachel Reid _____ Date: June 8, 2026

Rachel Reid
Environmental Planning Manager, Marin County Community Development Agency

Based on the attached Initial Study, a Mitigated Negative Declaration is granted.

Chris Chamberlain _____ Date: 06/10/2026

Chris Chamberlain
Director and General Manager, Marin County Parks and Open Space District

Mitigation Measures:

☐ No potential adverse impacts were identified; and therefore, no mitigation measures are required.

☐ Please refer to mitigation measures in the attached Initial Study.

☒ The potential adverse impacts have been found to be mitigable as noted under the following factors in the attached Initial Study.

The mitigation measures for the potentially significant environmental impact associated with California red-legged frogs and nesting birds has been incorporated into the project and are required as conditions of approval.

Preparation:

This Mitigated Negative Declaration was prepared by Kelly Hyde, Open Space Planner, of the Marin County Open Space District.

The document and the online comment form is available for review on the Marin County Parks website at: https://parks.marincounty.gov/projectsplans/bowman-canyon

INTRODUCTION

Marin County Parks (MCP), which includes the Marin County Open Space District (MCOSD), manages and maintains the Mount Burdell Open Space Preserve, one of its 34 open space preserves in Marin County. The Mount Burdell Open Space Preserve (Preserve) encompasses 2,036 acres of open space land covering the ridges north of the City of Novato. The Preserve supports a network of fire roads for maintenance, emergency access and passive recreation, as well as trails for hikers, cyclists, dog walkers, and equestrians, and several hiker and equestrian only trails. It also offers expansive views of Big Rock Ridge and San Pablo Bay. The Preserve contains no formal parking lots, but space for up to 6 vehicles is available on Bowman Canyon Road near Novato Boulevard. Stafford Lake Park is located two miles to the west of Bowman Canyon Road on Novato Boulevard.

Figure 1 shows existing roads and trail network within Mount Burdell Open Space

PROJECT NEED, PURPOSE, AND OBJECTIVES

Project Need

In 2018 and 2020, MCOSD acquired 409 acres of land directly adjacent to Mount Burdell Open Space Preserve, which is known as Bowman Canyon. The Bowman Canyon acquisition contains 6.7 miles of seasonal unimproved ranch roads and 3.3 miles of social trails.[1] For the past century the property has been used for cattle grazing and firewood cutting. The existing ranch road network was built to support these uses. The ranch roads are generally steep, their surfaces are earthen, and many are experiencing accelerated erosion. Several of the roads are located within areas of serpentine habitat containing sensitive endemic plant populations. The majority of social trails on the property are comprised of historical wildlife trails and cattle trails that have been lightly used by people. The social trail network also contains several minimally constructed trails developed prior to MCOSD ownership by a professional mountain biker with the permission of the prior owner to use as a training area. Many of the existing trails are overly steep, run longitudinally down the fall line of slopes, and cross through drainages and sensitive habitats. Runoff from the existing roads and trails ultimately drains to Bowman Creek, a tributary of Novato Creek, which supports native runs of threatened steelhead.

Figure 2 shows existing road and trail network within the project area, Bowman Canyon

While erosion and sediment delivery to streams is a naturally occurring process, elevated rates of sedimentation originating from anthropogenic sources, such as roads and trails, impair water bodies and are considered a pollutant. Sediment can smother instream habitats, lead to shallower and warmer stream conditions, and transport other pollutants that may be attached to soil particles.

In addition to being an anthropogenic[2] sediment source, MCOSD has determined that much of the existing ranch road and trail network within Bowman Canyon were not designed for public use and resource protection. Overly steep gradients, rill and gully erosional features, and variable tread conditions can diminish visitor access and require increased staff effort to maintain roads and trails in a safe and sustainable condition.

Project Purpose

The purpose of the proposed project is to implement MCOSD's Road and Trail Management Plan (RTMP) and to provide the public with a system of trails and fire roads[3] that enhances visitor experiences,

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1 A MCOSD social trail is defined as a trail created by visitors that has not been adopted as part of the system trail network identified through the RTMP Region 4 Conditional Trail Designation process

2 Anthropogenic: Environmental change originating in human activity.

3 A fire road is an unpaved road located on Open Space District lands that provides access for maintenance and emergency vehicles while also providing passive multi-use recreational opportunities for public use and enjoyment.

reduce environmental impacts on sensitive resources, and establish a sustainable system of roads and trails that meet design and management standards.

The applicable RTMP Policies and Best Management Practices (BMPs) would be implemented to minimize or eliminate potential environmental effects that could result from project implementation. These are listed in the Initial Study Checklist of this document and are included in their entirety in Appendix A. The project area is constrained by excessive slopes, geologic and hydrologic impediments such as landslides and steep drainages, and sensitive animal and vegetation communities The trails are narrow with uneven tread and would need improvements to meet standards outlined in the RTMP and the MCOSD's Inclusive Access Plan (IAP). These constraints limit the ability to construct all the planned road and trail network at widths and gradients that are fully compliant with the IAP. However, the proposed project would upgrade approximately 0.5 miles of the network to meet full IAP compliance. Approximately 3.2 additional miles of the proposed project road and trail network would meet the clear width parameter described in the IAP.

Project Objectives

Implementation of the proposed project would achieve the following project objectives:

- Protect sensitive habitats
- Reduce road and trail erosion and sediment delivery to streams
- Reduce road density[4] and habitat fragmentation[5]
- Improve visitor safety and access within the Preserve

SUMMARY OF THE PROPOSED PROJECT

Implementation of the proposed project would meet the project purpose and objectives by protecting sensitive habitats while providing recreational opportunities within a sustainable network of trails and fire roads. The project design is informed by five biological assessments and incorporates measures to avoid and minimize impacts to sensitive resources.

The proposed project would reduce the overall footprint of existing ranch roads and social trails through a combination of road and trail improvements, road and trail decommissioning, road to trail conversions, and the development of new trails. The proposed project would decommission 3.0 miles of ranch roads and 3.1 miles of social trails, relocating trails out of sensitive habitats, and converting 1.2 mile of ranch roads to trail use. The proposed project includes improvements of 2.5 miles of ranch roads and 0.2 miles of social trails, construction of 5.8 miles of newly-built trails, installation of drainage and watercourse improvements, and passive restoration of sensitive habitats, supplemented by additional seeding and planting of native shrubs consistent with the policies and best management practices included in the MCOSD's Road and Trail Management Plan.

The proposed project would include multi-use trails, hiking and equestrian trails, and hiking and cycling trails. Of the trails that are proposed for cycling access, four will be directional, allowing for one-way bicycle travel only. These directional trails will be designed to increase visitor comfort, recreational safety, and heighten the Open Space experience for all user groups. Directional trails are intended to improve user safely and reduce conflicts among user groups on the trail system. These actions would meet the proposed project purpose and objectives by protecting sensitive resources, reducing habitat fragmentation, reducing road and trail erosion and minimizing sediment delivery into surface waters, and providing an improved and sustainable trail network for visitors.

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[4] Road density refers to the ratio of road length to the preserve area or project area in which they are contained. Elimination of unsustainable roads would reduce road density.

[5] Habitat fragmentation describes modification of the natural habitat that results in negative effects on biodiversity, characterized by a strong contrast between plant communities and their surrounding environment.

Figure 3a shows the location of the proposed road and trail elements

Figure 3b shows the location of the proposed road and trail elements in aerial view

Figure 4a shows the location of the proposed road and trail treatment types

Figure 4b shows the location of the proposed road and trail treatment types in aerial view

Sensitive Habitat Protection

A primary focus of the proposed road and trail improvements is the conservation and protection of sensitive habitats and vegetation, rare plant species, wildlife habitat, and other ecological resources. Extensive biological assessments were conducted to fully investigate and document the ecology of the site. These assessments extended the planning process and informed a proposed road and trail improvement plan that prioritized the conservation of these resources, avoids sensitive natural resources, and minimizes recreational pressure in areas of significant ecological value.

Through the biological assessment process, several regionally significant plant classifications were mapped within the study area, including rare plants previously unknown to occur in Marin County, recently described rare plants, and State/Federally listed species. Trail planners worked closely with biologists and stakeholders to ensure the conservation goals of the project were being prioritized. As Project Development section of this document, the MCOSD consulted with several organizations through its Environmental Roundtable to ensure the proposed project would meet the Project Objective to protect sensitive habitats.

A total of five botanical surveys were conducted over a period of five years between 2019 and 2023 to inform the trail planning process. Floristic surveys, species-specific surveys, and vegetation classification surveys were conducted to thoroughly inventory, map, and understand the botany of the site. These studies are listed below and summarized in the Project Development section of this document.

TABLE 1: BIOLOGICAL SURVEYS

YEAR	CONSULTANT	SURVEY TITLE
2019	Nomad Ecology	Botanical Resource Survey Report, Bowman Canyon Baseline Surveys and Habitat Assessments
2019	Marin County Parks Staff	Burrow Report for Bowman Canyon at Mount Burdell Open Space Preserve
2021	Nomad Ecology	Bowman Canyon Vegetation Management Zone Classification
2022	Marin County Parks Staff	Bowman Canyon *Allium peninsulare* var*. franciscanum* Surveys, Bowman Canyon Wildlife Survey
2023	Nomad Ecology	Botanical Resource Survey Report, Bowman Canyon Road & Trail Plan
2023	Marin County Parks Staff	Bowman Canyon Serpentine Grassland Rare Plant Surveys, Bowman Canyon Wildlife Survey

Several project components prioritize the conservation of specific animal species, plant species, or vegetation types:

- Removal of Upper Serpentine Fire Road within the serpentine grassland to conserve this rare vegetation type, and the rare plants (Marin dwarf flax, Mount Burdell jewelflower, Tiburon buckwheat) and animals (American badger) living therein. This process would include recontouring the slope, active restoration through seeding of locally collected native grass and forb seed, and management of invasive plant species.

- Removal of ranch roads and reconfiguration of trails within the northern bay forest to protect the population of Franciscan onion.
- Designing new trail sections to avoid populations of sensitive animals, plants, and vegetation types.
- Early Detection and Rapid Response (EDRR) vegetation surveys would be integrated into all project activities This would ensure an accurate inventory of invasive plant species and prompt management of any newly established populations of invasive plants.
- Passive Restoration: Allowing native plant communities to reestablish through natural recruitment. This method is appropriate for sites with abundant sources of native seed, established native trees and shrubs which can grow into the former trail corridor, low invasive plant species pressure, and low probability of continued recreational use by people.
- Active Restoration: Assisted establishment of native plant communities through sowing of native seed or planting of native plants. This method is appropriate for sites with less probability of natural recruitment due to low native vegetation cover, high invasive plant species pressure, or higher likelihood of continued recreational use.

Tree Protection

Implementation of the proposed project would require minimal tree pruning to provide clearance for construction equipment and minimal excavation may be required within the root zone of some trees. These standard trail construction methods would be implemented consistent with International Society of Arboriculture[6] practices, including the following:

- Minimize impacts within the Root Protection Zone (RPZ).[7]
- Install temporary protective fencing around RPZs or, at a minimum, the dripline perimeter of trees near work areas.
- Avoid changes in drainage within protected tree perimeters to the extent feasible.
- Avoid soil compaction within protected tree perimeters to the extent feasible.
- Do no park or store heavy equipment, vehicles, and/or construction materials beneath trees within the delineated protected perimeter.
- Make pruning cuts just outside the branch collar without cutting the branch collar, using clean, sharp instruments.
- If a large limb is to be removed, first reduce its weight to reduce the possibility of tearing the bark. Make an undercut about 12 to 18 inches from the limb's point of attachment, then make a second cut from the top, directly above or a few inches farther out on the limb. Doing so removes the limb, leaving the 12- to 18-inch stub. Finally, remove the stub by cutting back to the branch collar. This technique reduces the possibility of tearing the bark.
- When tree roots require trimming, make clean cuts using clean, sharp instruments.
- Apply a 2- to 4-inch layer of organic mulch such as wood chips, shredded bark, or pine needles over a tree's root system for a simple and effective means of enhancing root growth as the mulch helps condition the soil, moderates soil temperatures, maintains moisture, and reduces

[6] https://www.isa-arbor.com/

[7] Native trees are particularly susceptible to disturbance, especially within the root crown and root zone, commonly referred to as the Root Protection Zone (RPZ), which is defined as 1.5 times the dripline radius measured from the tree trunk. The RPZ extends approximately three feet below the soil surface.

competition from weeds and grass. The mulch should extend as far out from the tree as practical for the site. Backfilling and mulch provide an optimal environment for root growth along with fostering beneficial and antagonistic fungi to help reduce infection.

- Monitor affected trees for decline and risk on an annual basis as part of other trail monitoring activities. Symptoms of decline include smaller and fewer leaves, dieback in the crown of the tree, and premature fall color. Stressed trees are more prone to attack by certain diseases and pests, which further a tree's downward spiral. Severe damage and decline may also lead to defects and decay, which would require removal of the tree.
- Consult with a certified arborist for a professional assessment if tree health or structural integrity becomes a concern.

Improve Road and Trail Segments

The proposed project would improve and adopt 2.5 miles of existing ranch roads into the Open Space designated fire road network. The ranch roads proposed for improvement and designation would be upgraded to MCOSD fire road standards to protect sensitive habitats, reduce erosion, and improve maintenance and emergency vehicle access and visitor safety. Of the 2.5 miles of upgraded ranch roads, approximately 0.5 miles would be fully IAP compliant. In addition, the proposed project would improve and adopt 0.21 miles of existing social trails.

Decommission Road and Trail Segments

Approximately 3.0 miles of the existing ranch road network would be decommissioned. These ranch road segments would be decompacted, recontoured where possible and hydrologically disconnected from the stream system. In addition, these former road corridors would be mulched, reseeded, and replanted where appropriate. Approximately 3.1 miles of social trail segments would also be decompacted, recontoured where possible and hydrologically disconnected from the stream system. In addition, these former trail corridors would be mulched, reseeded, and replanted where appropriate.

Road-to-Trail Conversion

The proposed project would convert 1.2 miles of existing ranch roads to sustainable trails. Road-to-trail conversion involves reducing the footprint from road width, which is commonly 10 or more feet, to a trail width, which would be between 2 to 5 feet depending on the intended trail designation. The reduction of width would be achieved through a variety of techniques, including excavation of road fill, decompaction, recontouring and revegetation of previously disturbed areas.

Development of New Sustainable Trails

The proposed project would develop approximately 5.8 miles of new sustainable, purpose-built trails. The sustainable trails would provide logical connections and loops for hikers, equestrians and cyclists. A major component of the new sustainable trail network would be the improvement and incorporation of some of the existing ranch roads and trails, through upgrading and road-to-trail conversion described above. To complete the connections and loops between the upgraded and converted road and trail segments, the project proposes to construct new purpose-built sustainable trail segments.

The construction of the purpose-built trails will vary by designation and intended use such as multi-use, hiking/equestrian, and hiking/biking). Multi-use trail segments would be built using equipment to provide greater width for comfortable passing of all users. Trails for hike/equestrian and hike/bike use may be hand-built or equipment-built depending on the location of the trail segment.

By improving existing ranch road and trail segments, decommissioning unsustainable ranch road and trail segments, converting existing ranch roads to trails, and constructing sustainable, purpose-built trails, the proposed project would develop a sustainable road and trail network consistent with the MCOSD's RTMP. This would create a designated road and trail system totaling 9.7 miles, consisting of 3.7 miles of

multi-use trails for hiking, biking, and equestrian use, 1.6 miles of hiking and equestrian trails, and 2.1 miles of hiking and bicycling trails. Of the trails providing bicycle use, 4.0 miles would be directional, allowing bicycle traffic to flow one-way only. Signage would be developed and installed for all newly designated trail uses to ensure safe, compatible, and informed public access consistent with resource protection and management objectives.

Drainage and Watercourse Improvements

The proposed project includes improvements to existing ranch roads and trails to enhance drainage, reduce erosion, and improve the long-term sustainability of the trail network. These improvements fall into two primary categories: drainage improvements and watercourse crossings. All drainages within the project area ultimately flow into Bowman Creek and then Novato Creek, which supports a steelhead run. The proposed drainage and watercourse crossing improvements would improve water quality and reduce sediment delivery to sensitive aquatic habitats and downstream biological resources.

Drainage improvements are features that manage surface runoff and prevent erosion without crossing a defined channel. Typical road treatments include rolling dips, grade reversals, cross drains, berm removals, knicks, insloping, and outsloping. These elements are designed to disperse water flow, reduce sediment transport, and improve hydrologic function along trail and road alignments.

Figure 5 shows typical rolling drainage dips for trail drainage

Figure 6 shows a typical grade reversal for trail drainages

Figure 7 shows a typical rock spillway for drainage dip or cross drain

Figure 8 shows a typical outsloped trail

Figure 9 shows a typical insloped turn

Figure 10 shows typical knicks for trail drainage

Watercourse crossings occur where a road or trail intersects a defined drainage channel. In the project area, these channels are primarily Class III ephemeral watercourses, defined under the California Forest Practice rules as channels that lack aquatic life but show evidence of surface flow and sediment transport during storm events. Watercourse crossing structures would include culverts, bridges, puncheons, causeways, or armored fords, and are further described in the Project Description.

Figure 11 shows a typical rock spillway for culvert outlet

Figure 12 shows a typical recreation trail bridge standard design

Figure 13 shows a typical trail puncheon

Figure 14 shows a typical rock armored ford

EXISTING SETTING

Project Location, Surrounding Land Uses, and Access

The proposed project is located on parcels acquired by the MCOSD in 2018 and 2020 commonly known as Bowman Canyon. The Bowman Canyon parcels total 409 acres and are now part of the 2,036-acre Mount Burdell Open Space Preserve. The Preserve supports habitat for native wildlife and botanical species while also providing passive recreational opportunities to the public. The land uses surrounding the Preserve include passive recreational opportunities on California State Park lands to the north, private ranch lands to the north and west, and residential development to the south and east. The private ranch immediately north of the project area utilizes the project area for grazing four to six months annually, typically between January and June. Adjustments to the grazing timeframe are dependent on forage availability, which is driven by weather and herd size.

Access to the project area is from Bowman Canyon Road via Novato Boulevard in the City of Novato. The project area can also be accessed from the east through the Mount Burdell Open Space Preserve. There is limited dedicated visitor parking for the preserve at two trailheads located on San Andreas Drive and Serano Way.

Existing Ranch Roads

The Bowman Parcels contain 6.7 miles of existing historical ranch roads that were utilized for cattle ranching, wood cutting, and rock quarrying. Poor construction and maintenance techniques over time have led to the deterioration of many of the ranch roads, leaving them in an eroded and unsustainable condition.

The existing ranch roads were named by MCOSD after property acquisition, which occurred in two discrete purchases. The first purchase contained the roads now known as Serpentine, Thirteen Oaks, and Band-tailed Road. After the second land purchase, the MCOSD opted to employ a temporary naming convention until a road and trail plan was developed. These roads were identified using two letters and two numbers. The two letters indicate the property on which the road occurs. In this case, WB for West Burdell. The number indicates the number of the road itself.

The existing ranch roads intersect several watercourses and swales. These are identified as “WC”, and each are given a unique number to identify the crossing location. The existing ranch roads are set forth below and are described from a survey conducted by MCOSD in September 2024.

Lower Serpentine Road

Lower Serpentine Road extends from the northwest corner of the Bowman Canyon parcels to the serpentine meadow located downslope of San Andreas Fire Road on Mount Burdell. Lower Serpentine Road is approximately 1 mile in length with an average width of 10 feet and an average gradient of 5 percent. This road provides a critical connector between Bowman Canyon Road and Mount Burdell.

The soils along the western half of the road consist of Tocaloma-McMullin complex over Franciscan complex metagreywacke and metamorphics. The eastern half of the road traverses Henneke stony-clay loam soils over coast range ophiolite, serpentinite. The Henneke stony-clay loam soils are prone to compression, rutting, and deformation. The Henneke soil also supports rare and endemic serpentine specific plant species. The road crosses two ephemeral streams with unimproved ford crossings.

Upper Serpentine Road

Upper Serpentine Road is 0.9-mile in length with an average width of 10 feet, and an average gradient of 17 percent, with some segments exceeding 25 percent. Much of this road segment traverses sensitive serpentine habitat.

The geomorphic position of the road is primarily ridgetop and fall-line in its orientation. The lower 0.6 mile of the road is on the serpentine Henneke stony clay loam soil over coast range ophiolite. This area is prone to rutting and surface erosion. The historical utilization of this road during wet conditions along with improper maintenance techniques has resulted in a deep fall-line through-cut and rutting and gullying of the roadbed.

Upper Serpentine Road contains one watercourse crossing (WC-7). The crossing is located in the axis of a wet swale where a spring emerges. The spring is captured in a pipe to feed a livestock trough further down the slope. A culvert drains excess flows through the road prism to the point of channel initiation below.

Thirteen Oaks Road

Thirteen Oaks Road is approximately 1.5 miles in length and extends from Bowman Canyon Road up the western slope to the main ridgeline and continues to the Bowman summit, terminating at its intersection with Serpentine Road. Approximately 0.2 mile of Thirteen Oaks Road is on the north side of Bowman summit and drains to Upper Serpentine Road. The main ridgetop portion of Thirteen Oaks Road is 0.8 mile in length. The lower 0.5 mile of Thirteen Oaks Road lies to the west of the ridge and is predominantly fall-line in its orientation to the natural hillslope.

The ridgetop segment of Thirteen Oaks Road from its intersection with Road WB-01 to the Bowman summit is approximately 0.8 mile in length with an average width of 10 feet and an average gradient of 13 percent, with several steep pitches exceeding 25 percent. The soil along the road segment consists of Saurin-Bonnydoon complex on 50-75 percent slopes over Franciscan complex metagreywacke and metamorphic parent rock. Because of its ridgetop position, the road intercepts very little runoff from the surrounding slopes. However, because it occupies the fall-line of the ridge, precipitation falling and accumulating on the road surface inherently drains longitudinally down the road. This has led to the development of rill erosion concentrated mainly on the steeper road pitches where runoff velocities and flow lengths are greatest. The vegetation along this road segment is dominated by non-native grasslands interspersed with smaller populations of purple needlegrass. Coast live oaks and California bay laurel are found in the heads of the drainages bordering the grassland ridges.

Band-tailed Road

Band-tailed Road is 0.4 miles in length and 10 feet wide. Located on the western slope of the Project Area, the road extends from Bowman Canyon Road upslope to Thirteen Oaks Road. Much of Band-tailed Road traverses a mapped landslide. The surrounding vegetation along the lower segment of Band-tailed Road is dominated by non-native grassland. The upper segment of the road intersects a coast live oak / California bay laurel woodland.

Road WB-01

Road WB-01 is located on the southwest side of the Bowman parcels. It extends from Bowman Canyon Road to the main Bowman ridgeline. The road is 0.6 miles in length and 10 feet wide with an average gradient of 14 percent. The geomorphic positioning of the road segments includes ridgetop at a gradient of 17 percent, midslope at a gradient of 16 percent, and toe of slope at a gradient of 7 percent. The surface of the 0.3-mile ridgetop segment is generally located on shallow metagreywacke bedrock, and rocky, well drained Bonnydoon variant and Gilroy variant loams that experience rapid runoff. The composition of the 0.1-mile midslope segment transitions to deeper gravely loams and passes over the head of a past landslide slump block. The 0.2-mile toe of slope segment traverses the contact between the base of the hillslope and farmed bottomland of the Novato Creek valley. The soil along this region transitions to Ballard loams, which are deep, well drained, prime farmland soils developed from alluvial material eroded from sedimentary rock. This segment of the road intersects two swales, referred to as WC-1 and WC-2, that drain to the valley floor. The vegetation along WB-01 is dominated by non-native grasslands.

Road WB-02

Road WB-02 currently provides vehicle access between Serpentine Road along Bowman Creek to Thirteen Oaks Road near the Bowman summit. Road WB-02 is approximately 1 mile in length and 10 feet wide with an average gradient of 14 percent, some segments exceeding 26 percent. The entire length of the road drains to Bowman Creek either directly or through ephemeral tributary streams that cross the road. Much of the road is through-cut, which exacerbates drainage issues including sedimentation and elevates erosion concerns. A significant portion of the road is located on land mapped as mostly landslides. The vegetation along Road WB-02 is dominated by coast live oak / California bay laurel forest.

Road WB-03

Road WB-03 is a poorly drained, 0.7-mile road that traverses mid-slope above Serpentine Road and to the east of WB-02. Road WB-03 is 10 feet wide and has an average gradient of 8 percent with some segments exceeding 25 percent. The road crosses five ephemeral streams. Four of the stream crossings are unimproved fills, where earth was bulldozed into the stream, filling the channel to build the road. One crossing historically contained an undersized culvert, which has since failed. Much of the road is located on land mapped as mostly landslides. The road also intersects an unnamed fault, shown on Figure 18 Geology map. The vegetation along Road WB-03 is dominated by coast live oak / California bay laurel forest.

Road WB-03.1

Road WB-03.1 is a 0.1-mile fall line road connecting WB-02 to WB-03. The average gradient of Road WB-03.1 exceeds 20 percent. Most of the road length is through-cut and drains directly to an intermittent stream at its intersection with WB-03. The vegetation along Road WB-03.1 is dominated by coast live oak / California bay laurel forest.

Road WB-04

Road WB-04 is a 0.1-mile, 10 foot wide abandoned ranch road that intersects Bowman Canyon Road. The average gradient of Road WB-04 is 20 percent, it is located on the left bank of an unnamed ephemeral stream. The road appears to have once provided access to an abandoned water source for the ranch located below it. The entire length of Road WB-04 is within a mapped landslide. The vegetation along Road WB-04 is dominated by California bay laurel forest.

Road WB-05

Road WB-05 is 0.2 miles in length and 10 feet wide with vegetation dominated by coast live oak forest. Road WB-05 extends from Band-Tailed Road, upslope to a stock pond on the western slope of Bowman ridge. The average gradient of Road WB-05 is 15 percent with some segments exceeding 25 percent. This segment of the road crosses three ephemeral streams with unimproved fills. Much of the hillslope traversed by this segment of Road WB-05 has been subject to past landslide activity.

Road WB-06

Road WB-06 is approximately 0.1 miles in length and 10 feet wide with an average gradient of 5%. It extends from the opposite bank of the stock pond mentioned above to 13 Oaks Road. The vegetation along Road WB-06 is dominated by oak-bay woodland.

Road WB-07

Road WB-07 is a 0.1-mile, 10-foot-wide road with an average gradient of 4%. Road WB-07 extends from WB-02 to its terminus on a ridge nose overlooking Bowman Canyon Road.

Existing Trails

There are approximately 3.3 miles of social trails on the Bowman parcels, shown on Figure 2: Existing Trails Map. The social trail network contains several minimally constructed trails developed prior to MCOSD ownership by a professional mountain biker with the permission of the prior owner to use as a training area. The social trail network is predominantly used by livestock, wildlife, and the occasional

human, and likely developed from cattle and wildlife paths. Some of these trails have been slightly improved by individuals prior to MCOSD acquiring the property. Many of these trails are fall-line in their orientation, meaning they run straight down the natural slope. While use is light, surface erosion and sediment mobilization is occurring on the steeper trail slopes.

Hydrology

Hydrology within the project area is influenced by a combination of precipitation, surface water runoff, underlying geologic stratigraphy, topography, soil permeability, and vegetative cover. No formally mapped streams pass directly through the project area. Obvious drainages within the project area include an unnamed creek in the southwest (Stream Segment B), and another unnamed creek on the eastern edge of the project area (Stream Segment A). Both creeks carry surface flows during spring but are dry by mid-summer, reflecting the strong season precipitation patterns of the region.[8] The Stream Segment B on the east side of the ridge flows east towards San Marin High School and the Stream Segment A flows west off the ridge and then south in Bowman Canyon for 0.4 miles, converging with Novato Creek on the other side of Novato Boulevard. An unnamed tributary to Bowman Canyon Creek is located immediately north of the project area.

In addition to these creeks, the project area includes Dry Lake Pond west of the ridge, and feeds into the drainage on the western side of the project area. This feature supports temporary ponding during the wet season, March through June, before drying later in the year. A freshwater seep is also present in the southwestern portion of the project area within grassland habitat, where it maintains localized surface moisture and supports wetland vegetation.

PROJECT DESCRIPTION

Implementation of the proposed project would meet the project purpose and objectives by protecting sensitive habitats while providing recreational opportunities on a sustainable network of trails and fire roads, informed by five biological resource assessments. This would be accomplished by reducing the overall road footprint through the decommissioning of some road and trail segments in sensitive habitat, relocating trails out of sensitive habitats, converting some roads to trails, improving some road and trail segments, development of new sustainable trails, installation of drainage and watercourse improvements, and passive restoration of sensitive habitats supplemented by additional seeding and planting of native shrubs consistent with the policies and best management practices included in the MCOSD's Road and Trail Management Plan. The proposed project would include fire roads, multi-use trails, hiking and equestrian trails, and hiking and cycling trails. Of the trails that are proposed for cycling access, four will be directional, allowing for one-way bicycle travel only. These directional trails will be designed to increase visitor comfort, recreational safety, and heighten the Open Space experience for all user groups. This is a new feature for MCOSD open space preserves that is expected to reduce user conflicts on the trail system. These actions would meet the proposed project purpose and objectives by protecting sensitive resources, reducing habitat fragmentation, improving trail sustainability by reducing road and trail erosion and minimizing sediment delivery into surface waters, and providing an improved and sustainable trail network for visitors.

Proposed Designated Fire Roads

Thirteen Oaks Road

The ridgetop segment of Thirteen Oaks Road from its intersection with Road WB-01 to the Bowman summit is approximately 0.8 miles and would remain a designated road and be combined with Road WB-01 to provide vehicle access for MCOSD staff and emergency service vehicles to the Bowman ridgeline and summit. Road shaping treatments such as berm breaches, knicks, road outsloping and rolling dips

[8] Nomad Ecology. 2023. *Draft Botanical Resource Survey Report—Bowman Canyon Road and Trail Plan*.

may be installed to decrease road surface erosion, and to improve drainage dispersion and long-term maintenance. The trail designation would be multi-use.

Lower Serpentine Road

Lower Serpentine Road crosses two ephemeral streams, referred to as WC-3 and WC-5. Both crossings have been partially filled with concrete rubble and other debris. Both crossings would be upgraded by removing all debris, restoring the natural channel gradients, and installing culverts sized appropriately to convey the 100-year return stormflow and entrained debris. The proposed culvert at WC-3 would be a 48-inch diameter by 60-foot-long corrugated metal pipe (cmp). The proposed culvert at WC-5 would be a 24-inch diameter by 60-foot-long cmp. Along the entirety of the 1 mile-road, road shaping treatments such as berm breaches, knicks, road outsloping and rolling dips would be installed to decrease road surface erosion, and to improve drainage dispersion, and to improve on-going maintenance. In addition, the road surface would be overlayed with Class II base rock to strengthen areas where weak soils occur. Approximately 400 cubic yards of Class II base rock would be needed to armor the entire length of Lower Serpentine Road.

Road WB-01

The proposed project would combine the 0.6 mile Road WB-01 with the main ridgeline portion of Thirteen Oaks Road to provide vehicle and multi-use access to the main Bowman ridge and summit. To improve road drainage and long-term maintenance, road shaping treatments such as berm breaches, knicks, road outsloping and rolling dips may be installed along the road length. In addition, rocking the road surface to improve drivability in the wet season would be necessary on the toe of slope and mid-slope segments where the soils are deeper and more prone to rutting and deformation than on the ridge nose. Approximately 150 cubic yards of Class II base rock would be needed to armor the toe of slope and mid-slope segments of Road WB-01.

Proposed Road and Trail Decommissioning

Upper Serpentine Road

Upper Serpentine Road bisects a serpentine grassland which is significant as a sensitive natural community, as a refuge for rare endemic plants, and as wildlife habitat. Rare plant taxa observed during botanical assessments of the project area include Marin dwarf flax *(Hesperolinon congestum)*, Mount Burdell jewelflower *(Streptanthus anomalus)*, Tiburon buckwheat *(Eriogonum luteolum var. caninum)*, and Sonoma clarkia *(Clarkia gracilis sonomensis)*. The vast majority of California grasslands have been lost to agriculture, development, invasive species, or type conversion, and as such a grassland dominated by native vegetation is a top conservation priority.

Upper Serpentine Road from the Bowman summit to the intersection with Lower Serpentine Road would be decommissioned, and to the extent possible, hydrologically disconnected from the swale and spring, to provide better protection of this sensitive habitat. Road decommissioning would entail road surface decompaction, recontouring to match the natural hillslope, the removal of roadside berms, and the installation of cross drains. While Upper Serpentine Road would be decommissioned, the culvert, its shallow road embankment and the livestock trough and pipe would remain intact to provide water for livestock grazing.

After decommissioning, the fire road would be actively restored by sowing locally collected native grass and forb seed, and management of invasive plant species. Of note is the population of invasive barbed goatgrass (Aegilops triuncialis) growing along the roadsides of Serpentine Fire Road. Barbed goatgrass is a serpentine-tolerant invasive annual grass from the Mediterranean. Management of this species is a regional priority for land managers, and the MCOSD has been removing this population by hand annually since 2020.

Road WB-02

Road WB-02 would be decommissioned and hydrologically disconnected from the stream network. Road decommissioning would entail road surface decompaction, recontouring to match the natural hillslope, the removal of roadside berms, and the installation of cross road drains. Cross road drains are ditches that are excavated across the surface of a decommissioned road to provide drainage. Cross road drains are installed in areas where total recontouring is not possible. The stream crossing WC-09 would be removed and restored to its natural grade. The natural hillslope contours through the road prism would be restored to the extent possible. Approximately 0.2 miles of WB-02 would be converted into a multi-use trail segment to be incorporated into Trail T-1.

WB-02, as well as the western section of WB-03, is located in the bay forest at the north end of the canyon, which is habitat for the rare Franciscan onion *(Allium peninsulare var. franciscanum)*. This population was located and mapped during extensive botanical assessments and is the first population of this species documented in Marin County. Bowman Canyon is the only known location for this rare species in Marin, and this slope is home to the densest population in the preserve. Removal and restoration of these roads and adjacent social trails will allow for the creation of a new trail that has been designed specifically to avoid impacts to this plant and its habitat.

Road WB-03

Road WB-03 would be decommissioned and its four stream crossings would be removed and restored to their natural grade, noted as WC-10, WC-11, WC-12, and WC-13. Road decommissioning would entail road surface decompaction, recontouring to match the natural hillslope, the removal of roadside berms, and the installation of cross drains. Approximately 55 feet of the existing road would be converted into a multi-use trail segment and incorporated into Trail T-1.

The eastern section of WB-03 crosses through the serpentine grassland, and this section would be restored as described for Upper Serpentine Road. WB-03 crosses the slope just above the recently discovered population of Mount Burdell jewelflower *(Streptanthus anomalus)*, which is one of only three known sites for this species. Removing and restoring the road would reduce recreation and invasive species pressure in this area which will help to conserve this rare endemic species.

Road WB-03.1

Road WB-03.1 would be decommissioned and hydrologically disconnected from the intermittent stream to the extent possible. Road decommissioning would entail road surface decompaction, recontouring to match the natural hillslope, the removal of roadside berms, and the installation of cross drains. The natural hillslope contours through the road prism would also be restored to the extent possible. Road WB-03.1 contains one watercourse crossing, WC-15, that would be removed and restored to its natural grade.

Road WB-04

The lower 0.07 mile of Road WB-04 would be decommissioned while the upper 0.03 mile would be converted into a multi-use trail segment and incorporated into Trail T-4. Road decommissioning would entail road surface decompaction, recontouring to match the natural hillslope where possible, the removal of roadside berms, and the installation of cross drains. Decommissioned sections would undergo passive restoration, supplemented with active restoration employed as needed to deter continued recreational use.

Road WB-05

Road WB-05 would be decommissioned. Road decommissioning would entail road surface decompaction, recontouring to match the natural hillslope, the removal of roadside berms, and the installation of cross drains. The natural slope contours through the road prism would be restored to the extent possible and the stream channels through the road prism, referred to as WC-16 and 17, would be restored to their natural grade.

Road WB-06

Road WB-06 would be converted to a segment of Trail T-3.1. Road to trail conversion would entail reducing the useable width of the segment from 10 feet to a maximum of 5 feet, then decommissioning and passively restoring the remaining road width.

Road WB-07

Road WB-07 would be converted to a segment of Trail T-1. Road to trail conversion would entail reducing the useable width of the segment from 10 feet to a maximum of 5 feet, then decommissioning and passively restoring the remaining road width.

Social Trails

The project area contains approximately 3.3 miles of social trails, 3.1 miles of which are steep, unsustainable, and would be decommissioned and passively and actively restored. This would be achieved by de-compacting the trail surface, recontouring, blocking access, mulching and revegetating areas as needed.

Proposed Designated Trails

The proposed trail network would include 5.8 miles of newly constructed trails, 1.3 miles of trails converted from ranch roads, and 0.2 miles of adopted social trails. The proposed trail network would total 7.3 miles of multi-use trails, hiking and equestrian trails, and hiking and cycling trails. Of the trails that are proposed for cycling access, four would be directional, allowing for one-way bicycle travel only. These directional trails would be designed to minimize environmental impacts, to improve the visitor experience and recreational safety, and to decrease trail user conflicts for all user groups.

T-1 Trail – (Multi-Use, Bicycle Up Route)

The T-1 Trail would be located on the north slope of the Bowman Canyon parcels. Its lower trailhead would intersect Serpentine Road nearly equidistant between the Mount Burdell-Bowman Canyon Connector Trail to the east, and Bowman Canyon Road to the west. This trailhead would be a hub for visitors connecting Mount Burdell and Bowman Canyon and accessing Bowman Ridge and the Bowman trail network. The T-1 Trail would provide a multi-use replacement to the unsustainable Roads WB-02, WB-03, and WB-03.1, which would be decommissioned. The T-1 Trail would be designated multi-use, in that it would be accessible to hikers, equestrians and cyclists. However, cycling use would be allowed in the uphill direction of travel only. The T-1 Trail would be approximately 2.0 miles in length, with an average gradient of 6 percent. Approximately 0.2 miles of the WB-02 road would be incorporated into the T-1 Trail.

The T-1 Trail would intersect four watercourses. These watercourse crossings are identified as WC-18, WC-19, WC-20, and WC-21. The WC-21 crossing would traverse an alluvial fan. Each watercourse crossing is described below.

WC-18

WC-18 is located approximately 60 feet upslope of WC-20 and crosses the same ephemeral stream. The channel is slightly entrenched, and the stream gradient and adjacent hillslopes are both steeper than that of WC-20 below. The bankfull channel dimensions at WC-18 were measured at 2 feet wide and 2.5 feet deep, and the channel gradient at 22 degrees. To span the stream channel and the steep adjacent hillslopes an 18-foot trail bridge would be installed.

WC-19

WC-19 is located within a hummocky swale associated with a past landslide. It appears that this may have been the historical drainage of the ephemeral stream flowing through WC-02, which has since shifted and occupied the lateral scarp to the west. There is little evidence of recent surface flow at the site of WC-03. The bankfull dimensions of the channel at the WC-19 crossing location is 1 foot wide and 0.5 feet deep.

The channel would be crossed utilizing an armored ford. The channel length through the armored ford would be 6 feet. The dimensions of the armored segment of trail would be 6 feet, consisting of the channel length and trail width and 15 feet, consisting of a one-foot channel width plus the left and right trail approaches at 7 feet each.

WC-20

WC-20 is a crossing of an ephemeral watercourse that appears to be the left lateral scarp[9] of a past landslide. Field measurements estimated the bankfull channel at 2.5 feet wide x 0.75 feet deep. The channel gradient is 17 degrees. The watercourse receives drainage from a portion of Road WB-02 located upslope. As stated above, Road WB-02 would be decommissioned and hydrologically disconnected from the stream system to correct existing drainage issues, such as sedimentation. The T-1 Trail would cross WC-20 utilizing an armored ford crossing. The channel length through the armored ford would be 6 feet. The dimensions of the armored segment of trail would be 6 feet wide by 22.5 feet, including a 2.5-foot channel width plus the left and right trail approaches at 10 feet each.

WC-21

WC-21 is located in an area of alluvial deposition, where sediment and organic debris transported out of a confined ephemeral stream channel historically flowed onto a broad low gradient meadow adjacent to Bowman Creek. At this location, ephemeral surface flows draining out of the confined channel above, slow, spread and sink on the meadow and entrained materials are deposited as they fall out of transport. At the time of survey there was very little evidence of past surface flows on the fan. However, it does appear that when overland flow discharges from the steep catchment, some runoff continues down the lower segment of Road WB-02, which is located on along the left flank of the alluvial deposits.

As mentioned above, Road WB-02 would be decommissioned and its roadbed recontoured to the extent possible. At the location where the T-1 Trail would intersect, an armored dip would be installed. The channel length through the dip would be approximately 6 feet. The entire width and length of the trail would be armored from the intersection with WB-02 on the west flank of the fan to the east flank of the fan, approximately 330 feet. In anticipation of potential channel migration on the alluvial fan, an armored dip would also be installed on the right flank of the alluvial deposit.

T-1.1 Trail – Hiking and Equestrian Trail

The T-1.1 Trail would extend from the intersection of the T-1 and T-3 Trails to the intersection with Thirteen Oaks Road and the T-2 Trail on the Bowman ridgeline. The T-1.1 Trail would be approximately 0.5 miles in length, with an average gradient of 6 percent. Approximately 0.1 miles of the WB-07 road would be converted and incorporated into the T-1.1 Trail. The T-1.1 trail would be designated for hiking and equestrian use.

T-2 Trail – Hiking and Equestrian Trail

The T-2 Trail would be located on the eastern side of the Bowman Canyon parcels. The lower trailhead would connect to the existing Dwarf Oak Trail on Mount Burdell, between San Andreas Fire Road and Little Tank Fire Road. Existing Dwarf Oak Trail uses, including hiking and equestrian use, would continue on the proposed T-2 trail. The upper trailhead would be located at the intersection of Thirteen Oaks Fire Road and the T-1.1 Trail. The T-2 Trail would be approximately 1.5 miles in length, with an average gradient of 5 percent, and would range in width from two to five feet. Approximately 0.5 mile of the trail would incorporate an existing unnamed social trail. The trail would also include 0.1 miles of converted road on the Bowman ridgeline. No trees would be removed during the construction of the T-2 trail.

T-3 Trail - Hiking – Cycling Only Upper Directional Downhill Route

The T-3 Trail would be located on the upper western slope of the Bowman Canyon parcels. It would occupy the alignment of an existing unnamed social trail. Its upper trailhead would be located at the

[9] A lateral scarp is a steep, linear slope or cliff that forms along the edge of a landslide due to the movement of the landslide mass, marking the top of the landslide.

intersection of the T-1 and T-1.1 Trails, at the 815-foot elevation contour and its lower trailhead would be located on Thirteen Oaks Road at the 750-foot elevation contour. The T-3 trail would be 0.2 miles in length with an average gradient of 6 percent. The T-3 Trail would be designated for hiking and cycling use. Cycling would be permitted only in the downslope direction.

T-3.1 Trail - Hiking - Cycling Only Middle Directional Downhill Route

The T-3.1 Trail would occupy upper and mid-slope areas of the western Bowman Canyon parcels. Its upper trailhead would be located on Thirteen Oaks Road near the 750-foot elevation contour. Its lower trailhead would be located at the current intersection of Thirteen Oaks Road and Road WB-06. The T-3.1 Trail would be 1.1 miles in length with an average gradient of 5.5 percent. The T-3.1 Trail would be designated for hiking and cycling use only. Cycling would only be permitted in the downslope direction. Approximately 0.1 mile of Road WB-05 would be converted to a trail and incorporated into Trail 3.1.

WC-22

The WC-22 watercourse crossing is located at the intersection of the T-3.1 and T-3.2 trails, near the point of channel initiation on a 1-foot wide and 0.5-foot-deep class III ephemeral stream at the toe of a swale within a historical landslide scarp. The stream gradient is 13 percent. An armored ford is recommended for this small stream crossing. The ford would be constructed by embedding 6- to 18-inch rock through the length and width of the crossing, and up the left and right approaches to the crossing. The total rock measurements within the channel would be approximately 4-feet long, 4-feet wide, and 1.5 feet deep. Approximately 1 cubic yard of rock would be needed to armor the crossing.

T-3.2 Trail – Hiking -Cycling Only - Lower Directional Downhill Route A-Line

The T-3.2 Trail would occupy the current alignment of the lower 0.4 miles of Thirteen Oaks Road, which would be converted to a technical trail for hiking and cycling use only. Road to trail conversion would include excavation of the fill along the outboard road prism, then placing and compacting it against the cutbank to blend with the natural hillslope above but retaining a portion of the original road bench to serve as the new trail[10.] The upper trailhead would be located at the intersection of the T-3.1 Trail and Thirteen Oaks Road. The lower trailhead would be located at Bowman Canyon Road. The trail would be 0.4 miles in length, varying in width from 2 feet to 6 feet, with an average gradient of 14 percent. Technical trail features may include berms, drops, rock gardens and other features. The T-3.2 Trail would be armored with rip rap, cobbles and base rock to harden the trail tread and prevent trail surface erosion. Trail contouring, outsloping and the installation of frequent trail drainage features, such as grade reversing dips would disperse runoff and decrease hydraulic energy potential and prevent erosion from trail related runoff.

The T-3.2 Trail would contain three watercourse crossings noted as WC-23, WC-24, and WC-25. Currently, these crossings are unimproved fills,[11] some containing concrete and other debris dumped into the ephemeral stream crossings. All fill materials would be removed from these crossings and the natural stream gradients, beds, and banks would be reestablished. Trail puncheons and bridges would be constructed to provide sustainable access over the ephemeral streams. These crossings would be upgraded following the 2006 California Department of Fish and Wildlife (CDFW) protocol outlined in Part X, Upslope Erosion Inventory and Sediment Control Guidance, California Salmonid Stream Habitat Restoration Manual.

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[10] California State Parks, 2019. *Trails Handbook*. California Natural Resources Agency, Department of Parks and Recreation.

[11] USFS defines “unimproved fill crossing” as an unengineered and unstabilized land crossing built by placing loose fill material over a channel, streambed, or wetland. Unlike permanent bridges or culverts, it is not designed to withstand frequent flooding and has significant environmental risks. This type of crossing is typically used for low-volume traffic on private, unimproved roads.

WC-23

The WC-23 watercourse crossing would be improved with a 20-foot-long, 6-foot-wide puncheon. The span would be constructed of Corten steel girders with redwood decking and rails. It would be placed and secured onto concrete abutments. Construction of the puncheon and abutments would follow MCOSD's Engineered Bridge Designs by Mayone Structural Engineers, Inc.

WC-24

The WC-24 watercourse crossing would be upgraded by installing a 30-foot-long, 6-foot-wide trail bridge. The span would be constructed of Corten steel girders with redwood decking and rails. It would be placed and secured onto concrete abutments. Construction of the bridge and abutments would follow MCOSD's Engineered Bridge Designs by Mayone Structural Engineers, Inc.

WC-25

The WC-25 watercourse crossing would be upgraded by installing a 25-foot-long, 6-foot-wide trail bridge. The span would be constructed of Corten steel girders with redwood decking and rails. It would be placed and secured onto concrete abutments. Construction of the bridge and abutments would follow MCOSD's Engineered Bridge Designs by Mayone Structural Engineers, Inc.

T-3.3 Trail - Hiking and Downhill Cycling Only - Lower Directional Downhill Route B-Line

The T-3.3 Trail would occupy the current alignment of the upper 0.3 mile of Band-Tailed Road, which would be converted to a hiking and cycling only trail, with cycling permitted only in the downslope direction. Road to trail conversion entails excavation of the fill along the outboard road prism, then placing and compacting it against the cutbank to blend with the natural hillslope above but retaining a portion of the original road bench to serve as the new trail (CSP, 2019). The upper trailhead of the T-3.3 Trail would be located at the intersection with the T-3.2 Trail. The lower trailhead would be located at the intersection with the T-4 Trail. The T-3 Trail would be 0.3-mile in length, vary in width from 2 feet to 5 feet, with an average gradient of 7 percent. The T-3.3 Trail would contain three crossings of ephemeral streams consisting of trail bridges or puncheons. Currently, the crossings, noted as WC-27, WC-28, and WC-29, are unimproved fills on Band-Tailed Road. All fills within these channels would be removed and the natural stream gradients, beds and banks would be reestablished. These crossings would be upgraded following the 2006 CDFW protocol outlined in Part X, Upslope Erosion Inventory and Sediment Control Guidance, California Salmonid Stream Habitat Restoration Manual.

WC-27

The WC-27 watercourse crossing would be upgraded by installing a 25-foot-long, 6-foot-wide trail bridge. The span would be constructed of Corten steel girders with redwood decking and rails. It would be placed and secured onto concrete abutments. Construction of the bridge and abutments would follow MCOSD's Engineered Bridge Designs by Mayone Structural Engineers, Inc.

WC-28

The WC-28 watercourse crossing would be upgraded by installing a 25-foot-long, 6-foot-wide trail bridge. The span would be constructed of Corten steel girders with redwood decking and rails. It would be placed and secured onto concrete abutments. Construction of the bridge and abutments would follow MCOSD's Engineered Bridge Designs by Mayone Structural Engineers, Inc.

WC-29

The WC-29 watercourse crossing would be upgraded by installing a 20-foot-long, 6-foot-wide trail puncheon. The span would be constructed of Corten steel girders with redwood decking and rails. It would be placed and secured onto concrete abutments. Construction of the bridge and abutments would follow MCOSD's Engineered Bridge Designs by Mayone Structural Engineers, Inc., with the handrails replaced with bull rails.

WC-30

The T-3.3 Trail also traverses through a swale in a historical landslide, noted as WC-30. A raised causeway will be incorporated into the trail at this location following causeway construction methods in the 2019 California State Parks Trails Handbook. The causeway dimensions would be approximately 25 feet in length and 6 feet in width.

T-3.4 Trail – Hiking and Bi-Directional Cycling - Midslope Connector

The T-3.4 Trail would provide a midway connection between the proposed T-3.2 and T-3.3 trails. The T-3.4 Trail would be 0.1 miles in length with an average gradient of 0 percent. The T-3.4 Trail would be designated for hiking and bi-directional cycling use only. The T-3.4 Trail would cross one ephemeral stream channel, referred to as WC-35.

WC-35

The WC-35 stream crossing would be achieved using a 25-foot-long, 6-foot-wide trail bridge. The span would be constructed of Corten steel girders with redwood decking and rails. It would be placed and secured onto concrete abutments. Construction of the bridge and abutments would follow MCOSD's Engineered Bridge Designs by Mayone Structural Engineers, Inc.

T-4 Trail - The Western Multi-Use Trail

The T-4 Trail would traverse the lower western slope of the Bowman parcels and provide a connection from the lower T-3.3. trailhead to Serpentine Road. The T-4 Trail would be full multi-use and bi-directional for all user groups. Its upper trailhead would be located on Serpentine Road, approximately 0.1 miles from the Serpentine Road and Bowman Canyon Road intersection. Its lower trailhead would be located adjacent to the lower T-3.3 Trailhead at Bowman Canyon Road, approximately 0.5 miles from Novato Boulevard.

The T-4 Trail would allow users to circulate along the western edge of the Bowman parcels and make critical trailhead connections. Bowman Canyon Road, which is at the footslope of Bowman Canyon, is a private road that experiences regular heavy truck traffic. The T-4 Trail would remove Preserve visitors from Bowman Canyon Road and improve visitor safety. The T-4 Trail would be approximately 1.2 miles in length, with an average gradient of 1.0 percent. Approximately 0.03 mile of the WB-04 road would be converted to a trail and incorporated into the T-4 Trail.

The T-4 Trail would intersect four ephemeral watercourses identified as WC-31, WC-32, and WC-33, and WC-34. Each watercourse crossing is described below.

WC-31

WC-31 is located approximately 0.1-mile from the T-4 Trailhead at Serpentine Road. The measured bankfull dimensions of the WC-31 stream are 4 feet wide by 0. 5 feet deep. The channel is ephemeral and was dry at the time of survey. The channel gradient was measured at 15 degrees, and the surrounding hillslopes at 33 percent. The proposed crossing is located in a bay-laurel woodland upstream of an alluvial fan where the channel is still confined. The T-4 Trail would cross WC-31 utilizing a 14-foot-long by 6-foot-wide bridge. The span would be constructed of Corten steel girders with redwood decking and rails. It would be placed and secured onto concrete abutments. Construction of the bridge and abutments would follow MCOSD's Engineered Bridge Designs by Mayone Structural Engineers, Inc.

WC-32

WC-32 is located approximately 0.4-mile from the T-4 Trailhead at Serpentine Road. The measured bankfull dimensions of the WC-32 stream are 4 feet wide by 1.0 foot deep. The channel is ephemeral and was dry at the time of survey. The channel gradient was measured at 16 degrees and the hillslope at 65 percent. The proposed crossing is located in an oak/bay woodland. The T-4 Trail would cross WC-32 utilizing a 16-foot-long by 6-foot-wide bridge. The span would be constructed of Corten steel girders with redwood decking and rails. It would be placed and secured onto concrete abutments. Construction of the

bridge and abutments would follow MCOSD's Engineered Bridge Designs by Mayone Structural Engineers, Inc.

WC-33

WC-33 is located approximately 0.6 mile from the T-4 Trailhead at Serpentine Road. The measured bankfull dimensions of the WC-33 stream are 4 feet wide by 1.5 feet deep. The channel is ephemeral and was dry at the time of survey. The channel gradient was measured at 20 degrees and the hillslope at 65 percent. The proposed crossing is located in a California bay forest. The T-4 Trail would cross WC-33 utilizing a 30-foot-long by 6-foot-wide bridge. The span would be constructed of Corten steel girders with redwood decking and rails. It would be placed and secured onto concrete abutments. Construction of the bridge and abutments would follow MCOSD's Engineered Bridge Designs by Mayone Structural Engineers, Inc.

WC-34

WC-34 is located approximately 150 feet from the T-4 Trailhead at its intersection with the proposed T-3.2 Trail. WC-34 is located in a swale upslope of a gully located on the cutbank of Bowman Canyon Road. Shallow subsurface flow emerges at the cutbank, which has caused the gully formation on the steep slope. An armored dip would be located on the trail in the axis of the swale leading to the gully to prevent trail related erosion at the location.

Proposed Water Crossings

The project area includes ephemeral streams that would be crossed using nine new trail bridges, three rock armored fords, two puncheons, and one causeway. The purpose of the crossings is to prevent fine sediment mobilization. The specific treatment was selected based on site-specific channel morphology and peak discharge, both of which affect visitor accessibility and safety.

Trail Bridges

The proposed recreational use bridges would be developed utilizing Marin County Open Space District Engineered Bridge Designs by Mayone Structural Engineers, Inc. These are Corten steel girder bridges with redwood decking and rails. The proposed trail bridges would be located above the 100-year flood elevation spanning the banks of the ephemeral streams. Concrete foundations would be set beyond the top of the stream banks and the bridge anchors would be set in the concrete foundation. Cut and fill volumes for the bridge foundations would be balanced in that the soil excavated for the footings would be replaced by concrete. All excavation associated with the bridge foundation would occur outside of the stream channels and beyond the top of bank.

Puncheons

The proposed recreational use puncheons would be developed utilizing Marin County Open Space District Engineered Bridge Designs by Mayone Structural Engineers, Inc. These are Corten steel girder puncheons with redwood decking and bull rails. The proposed trail puncheons would be located above the 100-year flood elevation spanning the banks of the ephemeral streams. Concrete foundations would be set beyond the top of the stream banks and the bridge anchors would be set in the concrete foundation. Cut and fill volumes for the bridge foundations would be balanced in that the soil excavated for the footings would be replaced by concrete. All excavation associated with the puncheon foundations would occur outside of the stream channels and beyond the top of bank. Puncheons are applicable on very small streams where the maximum height from the puncheon deck to the ground surface is less than 30 inches, thereby not requiring standard bridge rails.

Rock Armored Ford Crossings

The proposed rock armored ford crossings would be installed utilizing standard plans from the U.S. Department of Agriculture Forest Service. Rock armored ford crossings would generally be constructed on streams with high banks and are designed so that the stream flow travels across the trail, which is armored with rock to minimize erosion. The proposed rock armored ford crossings range in width and

length depending on the crossing. The proposed armored ford crossings would consist of rip rap rock varying in size from 3 to 18 inches embedded into the stream channel on both sides of the crossing and would be subject to regulatory permit authorizations.

Vented Causeway

The proposed vented causeway would be developed utilizing standard plans from the U.S. Department of Agriculture Forest Service. Vented causeways are trails segments elevated on a constructed embankment through seasonally wet areas. They are constructed by creating an embankment of imported rock over geotextile to provide separation between the surrounding wet ground and the dry elevated trail. The venting refers to open channels in the causeway that allows surface flows to pass through the causeway structure.

Construction

Construction of the proposed project would adhere to the Road and Trail Standards and BMPs outlined in Chapter 6 of the RTMP and included in Appendix A. Implementation of the proposed project would span three construction seasons, generally April through October. Construction would begin as soon as soil moisture conditions allow and after pre-construction surveys required to determine that sensitive species are not present in the project area. Construction related to water crossings and earthwork requiring use of equipment would be limited to the dry season as directed by the regulatory agencies, generally between May and September.

Road equipment that would be used for project implementation includes a Caterpillar D4 dozer, 318F hydraulic excavator, padfoot drum vibratory compactor, and 907 loader. Mechanized trail equipment would be similar to that used for residential landscape work, including a mini-excavator, small SWECO trail dozer, trail compactors, power wheelbarrow, and water truck. Other equipment that would be used to implement the proposed project would include hand tools. Mechanized equipment would operate for approximately 591 working days over a seven-month, three-season overall construction period, and approximately eight to 10 hours a day. Up to five MCOSD staff members would drive to and from the project site each day during construction to monitor activity and ensure that all RTMP BMPs and Mitigation Measures are implemented.

Construction staging areas would be restricted to roads and trails or other areas that would avoid any significant impacts on sensitive natural resources, including minimizing disturbance to trees. Access to the project site for construction equipment would be from Bowman Canyon Road. During construction, trails within the project area would be closed to recreation for safety purposes. Emergency access would be maintained during construction.

Operations and Maintenance

After project construction, recreation on the trail network would follow the proposed designated uses. The new trail configurations would be designated into the trail system and would be published on trail maps as formal system trails. The proposed project would not include any parking or other amenities to improve access to the trail system. Trail use is expected to increase as the trail system will be more accommodating to multiple user groups. The new trail configuration would improve access for ranger patrol and emergency responders on foot or using small all-terrain vehicles.

MCOSD maintains a monitoring program that would include regular inspections of all trails including closed and decommissioned trails. This allows for early detection of, and rapid response to, any trail issue including trail widening due to visitors utilizing areas adjacent to formal system trails and visitors accessing decommissioned trails. The improved and decommissioned trails at Mount Burdell Open Space Preserve would be incorporated into this monitoring program, which would identify locations where visitors are widening formal system trails or bypassing closed entrances to access decommissioned trails, determine the effectiveness of passive and active revegetation efforts, and assess the effectiveness of trail drainage features. If monitoring indicates an issue, MCOSD would identify and implement

remediation actions. Remediation actions could include signage about remaining on the defined trail, not accessing decommissioned trails, and respecting neighbors. Physical obstacles, including logs, brush, and additional revegetation, could be placed in problem areas as a deterrent to going off trail or accessing decommissioned trails. An increased ranger presence could also be utilized.

Once the trails are incorporated into the MCOSD trail system, the trails would be maintained by MCOSD staff. As the trails are designed to improve existing trail sustainability, the level of maintenance is expected to be low. Regular maintenance would include brushing of the trail corridor, maintaining the trail surface and drainage, and clearing fallen trees and trail obstructions as needed. As part of the proposed project, the decommissioned trail segments would be monitored to ensure revegetation is successful and to prevent continued use of the decommissioned trails. Minor maintenance work may occur as needed to prevent access to the decommissioned trails and trail cameras will be installed to capture baseline data after implementation of the proposed project.

The new trail system would be integrated into Marin County Parks' Early Detection/Rapid Response program, which is designed to find and manage newly established populations of invasive plants. This program involves 'early detection' surveys to locate and map any new sites, followed by 'rapid response' treatments to manage the invasives before they become permanently established. Whenever new patches of invasive plants are located, they are mapped and entered into Marin County Park's Calflora database to enable future follow-up treatments. Newly built roads and trails are surveyed annually for three years after completion to ensure no high-priority weeds were introduced during construction and then surveyed on a three-year cycle thereafter.

Permits and Approvals

The proposed project requires the following permits and approvals, which would be obtained prior to construction:

- San Francisco Bay Regional Water Quality Control Board, Section 401 of the Clean Water Act, and the State of California's Porter-Cologne Water Quality Control Act
- California Department of Fish and Wildlife, California Fish and Game Code Sections 1062 – 1603: Lake or Streambed Alteration Agreement
- US Army Corps of Engineers, Clean Water Act Section 404, Nationwide Permit 42 – Recreational Facilities

PROJECT DEVELOPMENT

The initial 167-acre parcel was acquired in 2018, and the remaining 242 acres were acquired in 2020. During the acquisition process, the MCOSD identified relevant stakeholder groups and initiated planning for biological, cultural, and geological studies to guide development of a comprehensive road and trail improvement plan. Project development was also informed by community input from a series of stakeholder meetings and field visits, which provided opportunities to provide feedback on project objectives, alignment options, and habitat protection. The MCOSD also engaged in ongoing coordination and stakeholder discussions throughout the project development process.

Conservation and protection of sensitive biological resources were a foundational aspect in the development of the proposed project. Biological studies conducted over approximately five years characterized site conditions and identified sensitive habitats and regionally significant plant classifications, including rare species not previously documented in Marin County, and State- and Federally listed species. The results informed an iterative planning process that included revisions to the proposed road and trail layout to avoid sensitive resources and minimize impacts. Project development was temporarily paused for one full year to capture additional data on the Franciscan onion *(Allium*

peninsulare var. franciscanum) in 2022[12]. The additional year of data collection provide a clearer picture of population density and distribution. MCOSD wove the biological resources into the planning process to integrate conservation and habitat protection objectives into the final project design.

Together, stakeholder outreach and technical studies informed the development of the proposed project and its design refinement. Stakeholder engagement helped identify project objectives and considerations, while biological, geological, and soil studies provided site-specific information to guide alignment decisions and protect sensitive resources. The following sections describe the stakeholder outreach process and summarize the technical studies that supported project development.

Additional Outreach

Environmental Roundtable

The MCOSD Environmental Roundtable is a forum facilitated by MCOSD and includes two representatives from each of the following environmental organizations: California Native Plant Society, Sierra Club, Friends of Corte Madera Creek, Marin Conservation League, Environmental Forum of Marin, and Marin Audubon Society. The purpose of the Environmental Roundtable is to facilitate a natural resource-focused discussion and exchange of ideas between MCOSD and the environmental community regarding natural resource management and project development. The proposed project has been presented at the Environmental Roundtable multiple times, including several site visits beginning in 2019. The Environmental Roundtable has expressed general support for the proposed project, as the improvements would advance its objectives of protecting sensitive habitats.

Equestrian Community

The MCOSD began meeting with the equestrian community in 2019 with meetings occurring on September 1, 2020 and July 5, 2022, including Morning Star Stables and Indian Valley Stables. This stakeholder group expressed support for the proposed project, specifically that the existing Dwarf Oak Trail would be preserved as a hiking/equestrian trail.

Homeowners Association Public Meeting

A public meeting with the Sandy Creek Homeowners Association (HOA) occurred on February 9, 2022 to discuss the Bowman Canyon public access planning. The HOA opposed to a trail connection to the existing Dwarf Oak Trail, which was closer to the HOA. In response, MCOSD removed the trail connection. The HOA did not express any additional concerns regarding the proposed project.

MCL Parks and Open Space Committee

MCOSD staff presented a deep dive into all aspects of the newly acquired Bowman Canyon. Topics included cattle grazing, defensible space fuels management, invasive species management, sensitive species monitoring, and existing and public access planning. The meeting occurred on October 13, 2022.

MCOSD staff presented the RTMP workplan update, which included an update on the Bowman Canyon public access planning process. The meeting occurred on July 13, 2023.

MCOSD staff gave a detailed presentation on the Bowman Canyon public access planning, which was very well received and generally supported by MCL. The meeting occurred on January 11th, 2024.

California Native Plant Society Meeting

MCOSD staff presented to the California Native Plant Society (CNPS) membership via Zoom in the Spring of 2024. Staff gave a detailed presentation of the Bowman Canyon public access planning and the protection of sensitive habitats- it was very well received and supported by CNPS.

[12] Marin County Parks. 2022. Bowman Canyon *Allium peninsulare* var. *franciscanum* Surveys.

Marin County Parks and Open Space Commission

MCOSD staff presented on the Bowman Canyon acquisition and the public access planning process to the Parks & Open Space Commission at multiple meetings, beginning in 2020.

FootPeople

FootPeople is an association of Marin residents with the goal to conserve public lands and their natural resources. MCOSD staff met with the FootPeople stakeholder group on November 30, 2021 to discuss goals and concepts and hear feedback on the Bowman Canyon public access planning.

Mountain Biking Community

The MCOSD began engaging with the Marin County Bicycle Coalition, Access 4 Bikes, and Norcal in 2019 to discuss proposed project goals and hear feedback on Bowman Canyon public access planning.

Tribal Consultation

On January 23, 2024, a request was sent to the State of California's Native American Heritage Commission (NAHC) by MCOSD seeking information from the Sacred Lands File and the names of Native American individuals and groups. Through letters dated March 19, 2024, MCOSD staff provided notification of the proposed project to the Federated Indians of Graton Rancheria, the Guidiville Indian Rancheria, Coast Miwok Tribal Council of Marin, and Ione Band of Miwok Indians. The consultation letters notified tribes of the proposed project and informed them that Tom Origer & Associates would be conducting a cultural resources survey of the study area. Of the groups contacted, MCOSD received requests to consult from the Federated Indians of Graton Rancheria (FIGR) and the Guidiville Indian Rancheria (GIR).

In an email dated March 21, 2024, FIGR acknowledged receipt of the notification and requested that a representative be present during the scheduled fieldwork on April 17, 2024. A representative of FIGR was present for the fieldwork on that date. GIR responded by letter dated May 30, 2024, thanking MCOSD for the notification and the opportunity to be present for the fieldwork, and requesting a copy of the final cultural resources study. MCOSD provided the finalized cultural resources study to both FIGR and GIR on June 11, 2024.

Project Development Studies and Report

Biological Resources Studies

To understand how implementation of the proposed project could affect biological resources, MCOSD contracted with Nomad Ecology (Nomad), who prepared a series of biological resources studies between 2019 and 2023. The Special-Status Ground-Nesting Bird Habitat Assessment (2019)[13] and the Aquatic Wildlife Survey Report (2019)[14] evaluated wildlife habitat conditions, identified the occurrence or potential to occur for special-status species, and assessed potential impacts on wildlife resulting from the proposed project. The Burrow Report,[15] prepared by Marin County Parks in 2019, provided additional information on burrow distribution and use within the project area. Additional wildlife surveys were conducted in 2022 and 2023 by MCOSD biologists to evaluate potential impacts of alternative trail alignments.

Vegetation surveys were conducted in 2019, 2021, 2022, and 2023 to document plant communities and special-status species within the proposed project area. The baseline Botanical Resource Survey Report[16] was prepared in 2019 following the initial 167-acre acquisition of Bowman Canyon in 2018. The survey covered a 167-acre study area and provided initial documentation of vegetation types within the

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13 Nomad Ecology, 2019. *Bowman Canyon Property Special-Status Ground Nesting Bird Habitat Assessment.*

14 Nomad Ecology. 2019. *Baseline Aquatic Wildlife Survey Report.*

15 Marin County Parks. 2019. *Burrow Report for Bowman Canyon at Mount Burdell Open Space Preserve.*

16 Nomad Ecology. 2019. *Botanical Resource Survey Report, Bowman Canyon Baseline Surveys and Habitat Assessments.*

preliminary project footprint. The Vegetation Management Zone Classification Memo[17] prepared in 2021 expanded the study area to approximately 446 acres to capture the additional parcels acquired in 2020. Marin County Parks staff conducted surveys of Franciscan onion (*Allium peninsulare* var. *franciscanum)* in 2022,[18] and Serpentine Grasslands rare plant surveys in 2023.[19]The Draft Botanical Resources Survey Report[20] prepared in 2023 surveyed approximately 97 acres within the project area, focusing on sensitive plant communities and previously identified special-status plant species along the proposed road and trail alignments and within the northern section of the project area.

The surveys assessed biological resources within the project area, evaluated potential impacts to these resources from the implementation of the proposed project, and offered recommendations to reduce the effect of potential impacts to a less than significant level. Maps, vegetation classifications, and protocol-level surveys from these studies have been extensively incorporated into the analysis presented in the Biological Resources section of the CEQA Checklist. The reports are available for review at the Marin County Parks and Open Space District Administrative Office.

While the reports describe the biological resources occurring or potentially occurring within the study area, the entire study area would not be disturbed by project-related improvements and activities. Road decommissioning would entail road surface decompaction, recontouring to match the natural hillslope, the removal of roadside berms, and the installation of cross drains. Proposed designated roads would be improved by road shaping treatments, such as berm breaches, knicks, road outsloping, and rolling dips, would be installed to decrease road surface erosion, improve drainage dispersion, and improve on-going maintenance. In addition, the road surface would be overlayed with Class II base rock to strengthen areas where weak soils occur. Road to trail conversions and trail construction would involve trail contouring and outsloping. Installation of frequent proposed trail drainage features, such as grade reversing dips that would disperse runoff and decrease hydraulic energy potential, and prevent erosion from trail related runoff, would be installed throughout the proposed road and trail alignment. Drainage features are described in detail in the Draining and Watercourse Improvements section of the Project Description.

Vegetation Types

Vegetation types in the project area were mapped using the Manual of California Vegetation classification system in all botanical surveys. While the surveyed acreage varied among survey years to accommodate newly acquired parcels and an evolving project boundary, the findings are consistent in documenting the predominance of vegetation types. The 2021 memo, encompassing the entire 466-acre Bowman Canyon area, identified the following vegetation types in the project area, with descriptions at the end of this section excerpted from the 2023 Botanical Resources Survey Report:

Non-Native Grasslands – approximately 36 percent

Mixed Evergreen Forest (*Quercus agrifolia – Umbellularia californica)* – approximately 16 percent

California Bay Forest & Woodland (*Umbellularia californica*) — approximately 15 percent

Coast Live Oak Woodland (*Quercus agrifolia)* – approximately 11 percent

Serpentine Grasslands (*Stipa pulchra*) – approximately 11 percent

Purple Needlegrass Grasslands (*Stipa pulchra*) – approximately 3 percent

The following vegetation types are present in the study at less than 2 percent: Chamise Chaparral, Annual and Perennial Grassland, Coyote Brush Scrub, Black Oak Forest, Oregon White Oak Forest, Valley Oak Woodland, Seasonal Wetland.

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17 Nomad Ecology. 2021. *Vegetation Management Zone (VMZ) Review for Marin County Open Space District's Bowman Canyon Preserve, Marin County, California.*

18 Marin County Parks. 2022. Bowman Canyon *Allium peninsulare* var. *franciscanum* Surveys.

19 Marin County Parks. 2023. *Bowman Canyon Serpentine Grassland Rare Plant Surveys.*

20 Nomad Ecology. 2023. *Draft Botanical Resource Survey Report, Bowman Canyon Road and Trail Plan.*

Figure 15 shows the vegetation types within the proposed project relative to watersheds

Sensitive natural communities are defined as rare, limited in distribution, or declining within the state or region. The CDFW's List of California Terrestrial Natural Communities and the Manual of California Vegetation (MCV) indicate which vegetation types are sensitive within the State of California classification. Within the proposed project area, the 2019, 2021, and 2023 assessments identified eight sensitive natural communities currently recognized by CDFW.[21]

California Brome – Blue Wildrye Prairie (*Bromus carinatus)* - *Rank: S3/G4 (provisional)*

Cottonweed Patches *(Micropus californicus)* - Rank: S2 (point occurrences)

Purple Needlegrass Grasslands (*Stipa pulchra*) - *Rank: S3/G3*

Northern Coyote Brush Scrub *(Baccharis pilularis / Nasella (Stipa) pulchra)* - Rank: S3/G3

California Bay Forest & Woodland (*Umbellularia californica*) - *Rank: S3/G4*

Mixed Evergreen Forest *(Quercus agrifolia – Umbellularia californica)* – Rank S3/G3

Valley Oak Woodland & Forest (*Quercus lobata)* - *Rank: S3/G4*

Oregon White Oak Woodland & Forest (*Quercus garryana)* - *Rank: S3/G4*

California Brome – Blue Wildrye Prairie (*Bromus carinatus - Elymus glaucus* Herbaceous Alliance)
As described by Sawyer *et al.* (2009) this alliance is characterized by California brome (*Bromus carinatus*), blue wildrye (*Elymus glaucus*), and/or bracken fern (*Pteridium aquilinum* subsp. *pubescens*) being dominant or co-dominant in the herbaceous layer with other forbs and grasses present including yarrow (*Achillea millefolium*), bigflower agoseris (*Agoseris grandiflora*), scarlet pimpernel (*Lysimachia arvensis*, slender oats (*Avena barbata*), ripgut brome (*Bromus diandrus*), soft chess (*Bromus hordeaceus*), wild carrot (*Daucus pusillus*), brome fescue (*Festuca bromoides*), foxtail fescue (*Festuca myuros*), cut-leaf geranium (*Geranium dissectum*), California buttercup (*Ranunculus californicus* var. *californicus*), and blue-eyed grass (*Sisyrinchium bellum*), among others. Emergent shrubs may be present at low cover, including poison oak (*Toxicodendron diversilobum*). Herbaceous species typically reach heights of about 3.3 feet (1 meter), forming open to continuous cover on basins, terraces, dry floodplains, steep mesic slopes, and forest openings between 33 and 5,249 feet (10–1,600 meters).

Within the study area, California brome-blue wildrye prairie was observed in a single polygon along the proposed trail alignment in the western portion of the site. It occurred on steep northwest-facing slopes above California bay forest and woodland and within a matrix of California annual and perennial grassland. The community was dominated by an herbaceous layer of California brome (*Bromus sitchensis* var. *carinatus*), bracken fern, and blue wildrye with other forbs present including coyote mint (*Monardella villosa* subsp. *villosa*), yarrow, California saxifrage (*Micranthes californica*), lady's mantle (*Aphanes occidentalis*), dogtail grass (*Cynosurus echinatus*), purple sanicle (*Sanicula bipinnatifida*), tomcat clover (*Trifolium willdenovii*), slender phlox (*Microsteris gracilis*), slender oats, harvest brodiaea (*Brodiaea elegans* subsp. *elegans*), and California skullcap (*Scutellaria californica*), among others. Overall, this community had a high level of native integrity. No shrub or tree cover was observed in this community.

California Annual and Perennial Grassland Macrogroup
This macrogroup includes remnant native perennial and annual grasslands of California, typically dominated by cool-season bunchgrasses such as blue wildrye (*Elymus glaucus*), California fescue (*Festuca californica*), California melic (*Melica californica*), and needlegrasses (*Stipa spp.*). Native annuals including fiddleneck (*Amsinckia spp*.), poppy (*Eschscholzia spp.),* and lupine (*Lupinus spp*.) are also present. These grasslands are now restricted to remnant and restored stands, often on xeric to mesic

[21] California Department of Fish and Wildlife (CDFW). 2023. California Natural Community List, the Vegetation Classification and Mapping Program. California Natural Diversity Database, Biogeographic Data Branch.

ultramafic soils where non-native annual grasses are less competitive. Elevations range below 5,577 feet (1,700 meters).

In the study area, California annual and perennial grassland is widespread and occupies more than 10% of total acreage. It occurs on all slopes and aspects, often interspersed with oak woodlands and scrub communities. Many stands exhibit slight to moderate disturbance, supporting a high cover of non-native annuals such as ripgut brome*, slender oats*, wild oats (*Avena fatua*), and Italian ryegrass *(Festuca perennis**). Many areas retain high native integrity with abundant California brome, purple needlegrass (*Stipa pulchra*), hayfield tarweed (*Hemizonia congesta subsp. lutescens*), California buttercup (*Ranunculus californicus*), and blue-eyed grass (*Sisyrinchium bellum*). Shrub saplings, including coyote brush (*Baccharis pilularis*) and oak seedlings, occasionally emerge in more established patches. Overall, habitat quality ranges from moderate to high, supporting diverse native flora and providing foraging habitat for wildlife.

Cottonweed Patches (*Micropus californicus* - Provisional Herbaceous Association)
This association is described by Sawyer et al. (2009) with slender cottonweed (*Micropus californicus*) being characteristically present in the herbaceous layer with a variety of other native and non-native herbaceous species. Shrub and tree cover are absent and herbaceous cover is open to continuous. Herbs reach heights of 23.6 inches (60 centimeters). Membership rules dictate that slender cottonweed comprise greater than 30 percent relative cover individually in the herbaceous layer, or greater than 50 percent relative cover collectively with other native herbaceous species. It occurs on ridges and slopes of all aspects on shallow loams and clays, especially on volcanic and serpentine substrates. Elevations range from 279 to 3,773 feet (85 to 1,150 meters).

Within the study area, cottonweed patches were observed at six locations where they are represented by point data, typically on north- and west-facing slopes within grassland habitats. These patches occupy thin or compacted soils and share species with surrounding California annual and perennial grasslands, but slender cottonweed dominates the herbaceous layer. Adjacent vegetation includes occasional coyote brush individuals. No shrubs or trees occur within the patches. Habitat quality is high where native grassland integrity is maintained.

Purple Needlegrass Grasslands (*Stipa (Nassella) pulchra* - Herbaceous Alliance)
This alliance is described in Sawyer et al. (2009) with purple needlegrass as dominant or characteristically present in the herbaceous layer with other perennial grasses and herbs. Emergent trees and shrubs may be present at low cover. Purple needlegrass grassland occurs on a variety of soil types, including clay-rich, loamy, or serpentine substrates below 5,577 feet (1,700 meters).

Within the study area, purple needlegrass grassland occurs in small to large patches throughout the western, central, and eastern areas, especially along proposed trail alignments and on serpentine Henneke stony clay loam soils. On non-serpentine soils, this community is dominated by purple needlegrass with associated native species such as Idaho fescue (*Festuca idahoensis*), blue wildrye, and California melic. Common forbs include valley tassels (*Castilleja attenuata*), dove lupine (*Lupinus bicolor*), and tomcat clover. On serpentine soils, cover is more open, and native forbs such as dwarf plantain (*Plantago erecta*), few-flowered evax (*Hesperevax sparsiflora* var. *sparsiflora*), and coffee fern (*Pellaea andromedifolia*) are abundant. Across all sites, this grassland exhibits high native integrity and provides valuable habitat for pollinators and soil stabilization.

Coyote Brush Scrub (*Baccharis pilularis* - Shrubland Alliance)
This shrubland is characterized by dominance of coyote brush (*Baccharis pilularis*) with varying amounts of other native shrubs such as bush monkeyflower (*Diplacus aurantiacus*), California sage (*Artemisia californica),* and poison oak (*Toxicodendron diversilobum*). The shrub canopy is typically less than 9.8 feet (3 meters) tall, and emergent trees may be sparsely present.

In the study area, coyote brush scrub occurs in small patches on north-facing slopes near the junction of Thirteen Oaks Road and Serpentine Road. It is dominated by a continuous coyote brush canopy with scattered bush monkeyflower and poison oak. The herbaceous layer is patchy, containing native and non-native species such as bee plant (*Scrophularia californica*), Pacific sanicle (*Sanicula crassicaulis*), and blue-eyed grass. Habitat quality is moderate, with native understory cover present at low levels. These scrub patches provide habitat heterogeneity and serve as transitional areas between grassland and woodland habitats.

Coyote Brush – Purple Needlegrass Scrub (*Baccharis pilularis - Nassella pulchra* Shrubland Alliance)
This association shares characteristics with coyote brush scrub but is distinguished by the co-occurrence of purple needlegrass (*Stipa pulchra*) in the herbaceous layer beneath an open coyote brush canopy. It occurs on ridges and upper slopes with shallow, rocky soils.

Within the study area, this community is limited to north- and northeast-facing slopes along the proposed trail alignment in the eastern portion of the site. The shrub canopy is open, dominated by coyote brush with a grassy understory rich in purple needlegrass and native forbs. Habitat quality is moderate to high due to the native composition of both canopy and understory, providing structural diversity and important wildlife habitat.

Coast Live Oak Woodland and Forest (*Quercus agrifolia* Woodland and Forest Alliance)
Coast live oak woodland and forest is characterized by dominance of coast live oak (*Quercus agrifolia*) with other native broadleaf trees such as California bay (*Umbellularia californica*) and toyon (*Heteromeles arbutifolia)*. The canopy is open to continuous, and the understory ranges from sparse to grassy.

In the study area, this community occurs primarily on north- and west-facing slopes in the southwestern and northern portions of the site. Coast live oak dominates the canopy with scattered California bay and buckeye. The sparse shrub layer includes snowberry (*Symphoricarpos albus*), oceanspray (*Holodiscus discolor*), and poison oak. The herbaceous layer varies in density, with native species such as rough hedge nettle, canyon nemophila (*Nemophila heterophylla*), and Torrey's melic grass (*Melica torreyana*) common. Habitat quality is high, with a diverse assemblage of native species and limited invasive cover.

Mixed Evergreen Forest (*Quercus agrifolia - Umbellularia californica* Woodland and Forest Alliance)
This community is defined by co-dominance of coast live oak and California bay in the overstory, with a sparse to intermittent shrub layer and variable herbaceous cover. It typically occurs on north-facing slopes and shaded canyons.

In the study area, coast live oak–California bay woodland forms extensive stands on north-facing slopes in the northern portion. The canopy is dense and continuous, with occasional toyon, buckeye, and Oregon oak (*Quercus garryana*). The understory varies from open to thick, supporting native species such as sweet cicely (*Osmorhiza berteroi*), milkmaids (*Cardamine californica),* and woodland brome (*Bromus laevipes*). Habitat quality is high, with native-dominated vegetation and limited invasive presence.

Oregon White Oak Woodland and Forest (*Quercus garryana* Forest and Woodland Alliance*)*
This woodland is characterized by dominance of Oregon white oak (*Quercus garryana*) with occasional California bay and black oak (*Quercus kelloggii*). The canopy is open to savanna-like, with a grassy herbaceous layer.

In the study area, Oregon white oak woodland occurs in four polygons on north-facing slopes. The canopy is dominated by Oregon oak with sparse bay and live oak. The herbaceous layer is dense, supporting California fescue (*Festuca californica*), ground iris (*Iris macrosiphon*), and California buttercup. Non-native species such as false brome (*Brachypodium distachyon**) and Italian thistle* are present at moderate cover. Habitat quality is moderate to high, with good native structure and function but some non-native invasion.

California Black Oak Forest and Woodland (*Quercus kelloggii* Forest and Woodland Alliance)
This alliance is defined by dominance of California black oak (*Quercus kelloggii*) with an open to continuous canopy. The understory consists primarily of grasses and forbs with sparse shrub cover.

In the study area, black oak woodland occurs in three polygons on north-facing slopes. The canopy is open and dominated by mature black oaks with scattered bay and live oak. The herbaceous layer is continuous and grassy, composed of California fescue, miner's lettuce (*Claytonia perfoliata*), yarrow, and blue dicks *(Dipterostemon capitatus*). Habitat quality is moderate to high, with native grass dominance and low shrub encroachment.

Valley Oak Woodland and Forest (*Quercus lobata* Woodland Alliance)
Valley oak (*Quercus lobata*) woodlands are characterized by open to continuous canopies of valley oak, often accompanied by other broadleaf species. The shrub layer is typically sparse, and the herbaceous layer is grassy and dominated by both native and non-native species.

In the study area, valley oak woodland occurs in three polygons along west-facing slopes in the western and southwestern portions. The canopy is open, dominated by valley oak, and the herbaceous layer includes California melic, purple needlegrass, soap plant (*Chlorogalum pomeridianum*), and rough hedge nettle (*Stachys rigida*). Non-native grasses such as slender oats and soft chess are common. Habitat quality is moderate; while non-native grasses dominate, the structure and native tree composition remain intact.

California Bay Forest and Woodland (*Umbellularia California* Forest and Woodland Alliance)
This community is dominated by California bay (*Umbellularia californica*) in the tree canopy, with smaller amounts of coast live oak and buckeye. The canopy is dense and evergreen, shading a sparse understory of ferns and herbaceous species.

In the study area, California bay forest and woodland occurs extensively on north-facing slopes and in shaded drainages. The canopy is dominated by California bay, with scattered coast live oak and toyon. The understory supports native ferns including maidenhair fern (*Adiantum jordanii*), sword fern (*Polystichum munitum),* and goldback fern (*Pentagramma triangularis*). The community provides important riparian protection, erosion control, and wildlife movement corridors. Habitat quality is high, with dense native canopy cover and limited non-native species.

Bowman Creek and Riparian Habitat
The Mount Burdell Open Space Preserve lies within the upper portion of the Novato Creek Watershed, which drains northwestern Marin County. Within the project area, the dominant hydrologic features include ephemeral tributaries of Bowman Canyon Creek and several seasonal or spring-fed surface water features. Bowman Canyon Creek is an intermittent stream that flows primarily during the winter and spring months, fed by stormwater runoff and groundwater seepage from upland slopes. The project area does not include a named perennial creek, but it supports riparian and wetland-edge habitats associated with these ephemeral flows.

Figure 16 shows the proposed project relative to watersheds

The Aquatic Wildlife Survey Report[22] conducted by Nomad to evaluate the potential for occurrence of California red-legged frogs, Foothill yellow-legged frogs, and Western pond turtles within two stream reaches, Stream A and Stream B, and two ponds, Dry Lake Pond and Wet Road Pond. The streams are non-perennial, fed primarily by upland seeps, and exhibited shallow water during both visits. Dense canopy cover provided minimal sun exposure for basking, and shallow channel depths limited the potential to support breeding habitat. Stream Segment A consisted of muddy substrates with eroded banks and several seep-fed tributaries, portions of which were dry by the May surveys. Stream Segment B contained rocky substrates with small pools exceeding one foot in depth but lacked sufficient water

[22] Nomad Ecology. 2019. *Baseline Aquatic Wildlife Survey Report.*

permanence and open basking areas. Both streams provide low-quality, ephemeral aquatic habitat that may offer limited non-breeding or dispersal use if nearby breeding populations exist.

California red-legged frog (*Rana draytonii*)
Listing Status: Federal Threatened; California Species of Concern

The preferred habitat of this amphibian includes marshes, stream pools, reservoirs, and ponds. It occurs from sea level to elevations of 5,200 feet. Breeding occurs in streams, deep pools, backwaters within streams and creeks, ponds, marshes, sag ponds, dune ponds, lagoons, and stock ponds. Breeding adults are often associated with still or slow-moving water of 2-foot depth and dense, shrubby riparian or emergent vegetation. California red-legged frogs have also been observed in shallow sections of streams and ponds that are devoid of vegetative cover. California red-legged frog uses non-aquatic riparian and upland habitats for foraging, shelter, cover, and dispersal movement. The species is known to rest and feed in riparian vegetation, and it is believed that the moisture and cover of the riparian zone provide foraging habitat and facilitates dispersal. The species has been documented dispersing through areas with sparse vegetative cover and dispersal patterns are dependent on habitat availability and environmental conditions.

A habitat and stream assessment was conducted by Nomad to evaluate the potential for occurrence of California red-legged frogs within two stream reaches, Stream A and Stream B, both of which intersect with roads proposed for trail conversion and proposed new trails. Two ponds, Dry Lake Pond and Wet Road Pond, which will not be impacted by the proposed project were evaluated for presence of habitat. No California red-legged frogs were observed during the surveys. The streams are non-perennial, fed primarily by upland seeps, and exhibited shallow water during both visits. Dense canopy cover provided minimal sun exposure for basking, and shallow channel depths limited the potential to support breeding habitat. Stream Segment A consisted of muddy substrates with eroded banks and several seep-fed tributaries, portions of which were dry by the May surveys. Stream Segment B contained rocky substrates with small pools exceeding one foot in depth but lacked sufficient water permanence and open basking areas. Both streams provide low-quality, ephemeral aquatic habitat that may offer limited non-breeding or dispersal use if nearby breeding populations exist. California red-legged frogs have been observed throughout the adjacent Mount Burdell preserve since 2014 and began breeding there in 2022, about one mile east from Dry Lake Pond.

The Dry Lake Pond exhibited sufficient depth and hydroperiod to support breeding California red-legged frog during the March habitat assessment. Aquatic vegetation and ponding duration suggest that it may retain water long enough for egg and larval development under average rainfall conditions. The nearby Road Wet Pool, a shallow depression created by a seep crossing an access road, held water only temporarily and lacks the necessary depth and hydroperiod to support amphibian breeding.

The proposed project area provides limited aquatic habitat suitable for California red-legged frog. While the two stream segments are unlikely to support breeding, they are potentially suitable non-breeding habitat. Dry Lake Pond has potential for suitable breeding habitat and will not be altered as a result of the proposed project.

Foothill yellow-legged frog (*Rana boylii*)
Listing Status: Candidate Threatened / California Species of Concern

Foothill yellow-legged frog prefers foothill woodlands and chaparral near streams and ponds, riparian woodlands, wet meadows, also inhabits mixed conifer forest streams, slow streams and rivers with sunny, sandy and rocky or gravelly banks at 6,000 ft. and below in elevation. They are characteristically found close to water in association with perennial streams and seasonal creeks that retain pools through the end of summer. Adults prefer shallow edgewater areas with low water velocities, usually characterized by gravel, cobble, and boulder substrate for breeding and egg laying and plunge pools that provide escape

cover. Juvenile and non-breeding adult frogs may be found adjacent to riffles, cascades, main channel pools.

A habitat and stream assessment was conducted by Nomad to evaluate the potential for occurrence of Foothill yellow-legged frog within two stream reaches, Stream A and Stream B, and two ponds, Dry Lake Pond and Wet Road Pond. No Foothill yellow-legged frogs were observed during the surveys. The streams are non-perennial, fed primarily by upland seeps, and exhibited shallow water during both visits. Dense canopy cover provided minimal sun exposure for basking, and shallow channel depths limited the potential to support breeding habitat. Stream Segment A consisted of muddy substrates with eroded banks and several seep-fed tributaries, portions of which were dry by the May surveys. Stream Segment B contained rocky substrates with small pools exceeding one foot in depth and could potentially provide non-breeding aquatic habitat. Stream Segment B is unlikely to be currently utilized as there are no known breeding populations of this species occurring within the dispersal distance. Based on the California Natural Diversity Database (CNDDB), there has been three documented occurrences of Foothill yellow-legged frogs have been documented within approximately 5 miles of the project area at Sausal Creek (5 miles north northwest), Halleck Creek (4.9 miles southwest), and Nicasio Creek (5 miles south).

The Dry Lake Pond exhibited sufficient depth and hydroperiod to support breeding amphibians; however, Foothill yellow-legged frogs typically breed in perennial or long-duration streams and rivers with flowing water rather than still ponds. As such, while the pond may retain water long enough for larval development, it does not represent preferred habitat for this species. The nearby Road Wet Pool, a shallow depression created by a seep crossing an access road, held water only temporarily and lacks the necessary depth, flow, and hydroperiod to support Foothill yellow-legged frog breeding.

The proposed project area provides limited aquatic habitat suitable for Foothill yellow-legged frogs. Stream Segments A and B are unlikely to support breeding or provide suitable habitat for non-breeding due to lack of perennial flow, limited sun exposure, and steep gradients, and the ponds do not provide the flowing-water habitat preferred by the species.

Western pond turtle (*Actinemys marmorata*)
Listing Status: California Species of Concern

The preferred habitat of this reptile includes perennial ponds, deep slow-moving streams, marshes and lakes at 6,000 feet and below in elevation. Western pond turtle lays its eggs in loose soil on land in oak woodlands, mixed coniferous forests, broadleaf forests and grasslands, usually within 400 feet of ponds, lakes, slow streams and marshes with vegetated borders, rocks, or logs. Western pond turtles require logs, rocks, cattail mats, and exposed banks for basking. Suitable non-breeding habitat is present at Dry Lake Pond. Both juvenile and adult Wester Pond Turtles have been observed at Mount Burdell in recent years, and the CNDDB lists five occurrences of Western pond turtle within approximately 5 miles of the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area and will not be altered as a result of the proposed project.

MCOSD Burrow Surveys

MCOSD staff biologists conducted burrow surveys in the project area between February 19th and March 1st of 2019[23] to assess the presence and potential use of burrows by the American badger (*Taxidea taxus)*. Staff walked all sections of open grassland in transect lines spaces roughly 50 feet apart, accommodating occasionally for terrain features. Upon detection of a burrow, the height and width of the entrance were measured with a measuring tape, and photos were taken of the entrance and dirt apron. Signs of activity, such as scat, tracks, or claw marks were noted along with an assessment of the species present. Signs of inactivity such as cobwebs, vegetation growing in the apron, or a collapsed entrance were also noted. No burrows with an opening smaller than 3 inches wide and 3 inches tall were recorded, as small rodents likely have no bearing on local badger distribution, and because there are no special

[23] Marin County Parks. 2019. Burrow Report for Bowman Canyon at Mount Burdell Open Space Preserve.

status burrowing species of such small size within the survey area. Collapsed burrows were also noted if they featured a measurable entrance, as past activity is still useful for assessing habitat suitability. Lastly, GPS coordinates were recorded for mapping purposes.

Of the 116 burrows surveyed in Bowman Canyon, 46 were presumably American Badger, one coyote (*Canis latrans*), 16 small rodent, and 53 California ground squirrel (*Otospermophilus beecheyi*) burrows or burrow complexes. Twenty-four of the badger burrows were determined active and the one coyote burrow was inactive. No active burrowing owl burrows were detected. Signs of badger foraging were seen at some of the smaller burrows, indicated by large, wide but shallow holes with large aprons and smaller burrows inside and around the foraging area.

A high concentration of burrows, particularly badger burrows, was observed near the summit in the center of the study area, with additional burrows scattered from the northeast to southwest corners. The existing main road crosses the area of highest burrow density. While no burrowing owl burrows were detected, existing ground squirrel and badger burrows offer potential wintering habitat. Due to the areas' elevation and steep slopes, it is unlikely to support nesting burrowing owls, which prefer flatter, low-elevation terrain. However, wintering burrowing owls have been documented in similar foothill habitats and may utilize Bowman Canyon. The abundance of burrows also highlights the area's importance as habitat for badgers and other fossorial mammals. Under existing conditions, Bowman Canyon sees little visitor use. When considering that use may increase in the future with new trails and greater public access, care was taken to mitigate impacts on local wildlife by avoiding construction of new trails through burrow-dense areas.

Special-Status Plants

Protocol-level surveys were conducted in spring and summer of 2019,[24] 2022,[25] and 2023[26] [27] to identify special-status plant species. A total of 11 special status plant species were the targets of the 2021 protocol-level surveys and a total of 12 target species in 2023 surveys based on a review of available databases and literature, familiarity with the regional flora, and presence of specific vegetation types. Of the twelve total target species evaluated, six special-status plant species were observed within the study area:

Marin Western Flax (Hesperolinon congestum)
Listing Status: Federally and State-listed Threatened; CNPS 1B.1

Marin western flax is a small annual herb endemic to the northern San Francisco Bay Area. It occurs on serpentine soils within grassland and chaparral and blooms from May to July. Within the Nomad study area, 231 individuals were observed in serpentine Purple Needlegrass Grasslands, primarily along ridgeline trail alignments and existing social trails. The species' presence within the project area underscores the biological sensitivity of serpentine habitats.

Franciscan Onion (Allium peninsulare var. franciscanum)
Listing Status: CNPS 1B.2

Franciscan onion is a bulb-forming perennial herb known from open grasslands and oak woodlands, often in clay or serpentine soils. In 2023, over 2,300 individuals were documented across 21 locations in shaded understory habitats, primarily within Coast Live Oak – California Bay vegetation communities.

Napa False Indigo (Amorpha californica var. napensis)
Listing Status: CNPS 1B.2

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[24] Nomad Ecology. 2019. Botanical Resource Survey Report, Bowman Canyon Baseline Surveys and Habitat Assessments.

[25] Marin County Parks. 2022. Bowman Canyon *Allium peninsulare* var. *franciscanum* Surveys.

[26] Marin County Parks. 2023. Bowman Canyon Serpentine Grassland Rare Plant Surveys.

[27] Nomad Ecology. 2023. Draft Botanical Resource Survey Report—Bowman Canyon Road and Trail Plan.

Napa false indigo is a shrub associated with chaparral and woodland ecotones. Seven individuals were observed during the survey in mid-slope Oak Woodland. The species is relatively inconspicuous outside of flowering season.

Although observed near potential trail realignment areas, none of the mapped individuals fall within proposed trail disturbance footprints.

Tiburon Buckwheat (Eriogonum luteolum var. caninum)
Listing Status: CNPS 1B.2

Tiburon buckwheat is endemic to serpentine outcrops in the northern San Francisco Bay. Within the study area, approximately 646 individuals were observed in north-facing serpentine grasslands. This species is highly vulnerable to soil disturbance.

Lobb's Aquatic Buttercup (*Ranunculus lobbii*)
Listing Status: CNPS 4.2

Lobb's Aquatic Buttercup is a floating flowering plant with no roots often found in seasonal wetlands. One population of approximately 50 individuals was found within the project area in a seasonal wetland on the southwestern end of the property. The proposed project does not include alterations to the seasonal wetland and the population will not be impacted by the proposed project.

Mount Burdell Jewel Flower (*Streptanthus anomalus*)
Listing Status: CNPS 1B.1

Mount Burdell jewel flower is an annual member of the mustard family. First described in 2019, the Bowman Canyon population represents one of only three extant[28] sites of this species, all distributed around Mount Burdell. Consisting of fewer than 200 individuals, it was located in 2023 by Marin County Parks staff during rare plant surveys[29] of the serpentine grassland.

All occurrences were documented with GPS and CNDDB field forms. Several of these species occur in serpentine grasslands or shaded woodland understories. No federally or state-listed plant species beyond Marin dwarf flax *(Hesperolinon congestum)* were observed.

Nine additional locally rare plant species were recorded within the project area. While not listed under state or federal designations, they are considered regionally significant and contribute to biological diversity. While not protected under the State or Federal Endangered Species Act, these species are considered significant under CEQA Guidelines Section 15380 and were primarily found in needlegrass grasslands and forested habitats. These species were mostly observed in undisturbed serpentine grassland and woodland habitats. These species include:

Sonoma clarkia *(Clarkia gracilis* ssp. *Sonomensis*)
Hooded coralroot *(Corallorhiza striata*)
Franciscan erigeron *(Erigeron foliosus* var*. franciscensis*)
Heterocodon *(Heterocodon rariflorum*)
Hare's ear *(Lagophylla ramosissima*)
California filago *(Logfia filaginoides*)
Oak mistletoe *(Phoradendron leucarpum* ssp*. tomentosum*)
Denseflowered rein orchid *(Piperia elongata*)
Thymeleaf mesa mint *(Pogogyne serpylloides*)

A total of 247 plant taxa were identified within the study area. MCOSD would incorporate applicable RTMP Special Status Plants BMPs, which were designed to minimize or avoid potential environmental

[28] Extant: currently existing in the wild; not extinct, extirpated, or otherwise no longer present

[29] Marin County Parks. 2023. Bowman Canyon Serpentine Grassland Rare Plant Survey

impacts to biological resources. The RTMP Policies and BMPs are provided, in their entirety, in Appendix A. With implementation of these BMPs, the proposed project would not have a substantial adverse effect, either directly or through habitat modifications, on any special-status plant species.

Figure 17 shows occurrences of Special-status plant species

Invasive species of concern documented include barbed goatgrass (*Aegilops triuncialis),* tocalote *(Centaurea melitensis*), medusahead (*Elymus caput-medusae),* French broom (*Genista monspessulana*), yellow star thistle (*Centaurea solstitialis*), and Italian thistle (*Carduus pycnocephalus*), which occur in patches and along disturbed trail segments.

Special-Status Wildlife

The presence of special-status wildlife species on MCOSD lands has been well documented through focused surveys, and other observations made by MCOSD staff and the public. In addition to the Baseline Aquatic Wildlife Survey Report which identified potentially occurring special status aquatic wildlife, the Bowman Canyon Property Special-Status Ground-Nesting Bird Habitat Assessment was conducted by Nomad in March 2019. Occurrence records for special-status ground nesting birds in the proposed project vicinity were gathered from California Natural Diversity Database, MCOSD's *Draft Vegetation and Biodiversity Management Plan,* Marin County Breeding Bird Atlas, eBird.org, and staff observations. The records were used to identify seven species of special-status ground nesting birds, two mammals, and one amphibian that were considered to have at least some potential to occur in Bowman Canyon.

It should be noted that the project area was determined to be not suitable for Northern spotted owl *(Strix occidentalis caurina)* by Point Blue Conservation Science. In their 2023 surveys of the project area, which consisted of three night surveys, Northern spotted owls were not detected though other owl species including barn, great horned, and Western screech were. Additional surveys for Northern spotted owl were not recommended.

California Horned Lark (*Eremohila alpestris actia*)
Listing Status: California Species of Special Concern

California horned lark inhabits open grasslands, particularly those with sparse vegetation and bare ground. The subspecies *actia* is endemic to coastal and lowland California and is sensitive to habitat loss and fragmentation. Nest sites are built on bare ground often next to tufts of grass or stones and breeding begins in late February.

During the 2019 bird surveys, multiple individuals were observed by Nomad using serpentine grassland habitats near the Bowman ridgeline. These areas provide ideal nesting conditions, including low vegetation height and minimal shrub cover.

Grasshopper Sparrow (*Ammodramus savannarum*)
Listing Status: California Species of Special Concern

Grasshopper sparrow is a grassland bird species that prefers dense, ungrazed herbaceous cover for nesting and open space for foraging. They may nest in the short grasslands throughout the site, though the steeper slopes in the southern portion may be less suitable than the gentler slopes in the north. They may also nest in open spaces between shrubs in areas where coastal scrubs begin to thin out and transition into grassland. A singing male was recorded during the 2019 surveys, indicating active territory establishment within the central serpentine grassland zone and high potential to nest and forage within the project area.

Northern Harrier (*Circus hudsonius*)
Listing Status: California Species of Special Concern

Northern harrier is a raptor that nests in dense wetland or grassland vegetation and forages over open fields. They are listed due to nesting habitat loss and human disturbance.

Individuals were observed foraging over open grassland in the project area during multiple surveys, though no nests were detected. The project area provides suitable wintering and potential breeding habitat.

Western Burrowing Owl (*Athene cunicularia)*
Listing Status: California Species of Special Concern

Western burrowing owls occupy grassland habitats in California and are also known to breed in sage brush and parklands. Nesting owls are typically found at lower elevations under 200 ft above sea level with short grass of less than six inches around burrows. No owls were observed, but habitat with abundant burrows - especially active ground squirrel and badger burrows - was mapped in 2019. The area may support wintering burrowing owls, though nesting is unlikely due to slope, vegetation, and human use levels.

Short-Eared Owl (*Asio flammeus)*
Listing Status: California Species of Special Concern

Short-eared owls prefer open landscapes with dense herbaceous cover and are often active at dusk. They are more numerous in winter, with migrating birds arriving in September and October and leaving in April. Nests are built on the ground in tall stands of grasses in lowland habitats near hunting grounds in marshes, meadows, and even agricultural fields. While the short grasslands and abundance of slopes present at the project area may deter short-eared owls from nesting and therefore no individuals were observed during surveys, they may occur sporadically onsite during fall and winter migration periods.

Bryant's Savannah Sparrow (*Passerculus sandwichensis alaudinus*)
Listing Status: California Species of Special Concern

Bryant's savannah sparrow primarily inhabits coastal tidal marshes but is also known to utilize coastal and inland grasslands, particularly during the non-breeding season. The dry grasslands within the Bowman Canyon project area may provide marginal nesting habitat for this subspecies, although the absence of marsh-associated features likely limits its suitability. While the species was not detected during surveys, limited nesting use may occur along open grassland slopes. Based on habitat conditions and regional distribution, the likelihood of occurrence is considered low.

Cooper's Hawk (*Accipiter cooperi*)
Listing status: California Species of Special Concern

Cooper's hawks occur year-round throughout much of California. They occur in varied habitats including deciduous, mixed, and evergreen forests, and riparian woodlands. They can nest in extensive forests and in isolated trees in more open areas. Nests are typically in more mature trees which have relatively more

canopy cover. The forested areas of the Bowman Canyon project area could support their nesting, and the forest edges and open woodlands offer hunting habitat. They are known to occur at the adjacent Mt. Burdell preserve.

American Badger (*Taxidea taxus*)
*Listin*g status: California Species of Special Concern

Americ*an badgers are most abundant in drier open stages of most shrub, forest, and grassland habitats with fria*ble soils, open ground, and an abundant source of prey such as California ground squirrels. Badgers are typically solitary and nocturnal, digging burrows to provide refuge during daylight hours. During burrow surveys, badger burrows were detected throughout the grassland areas along in association with all other burrows, with the highest concentration along the summit of Thirteen Oaks Road.

Pallid Bat (*Antrozous pallidus*)
*List*ing status: California Species of Special Concern

Pallid bats are found in a variety of habitats ranging from grasslands to mixed forests, favoring open and dry, rocky areas. Roost sites include crevices or hollows in tree snags, cavities, rock outcrops and cliffs, caves, and various manmade structures such as bridges, barns, and buildings (including occupied buildings). They are very sensitive to disturbance of roosting sites. The open woodlands provide features that could be used for day roosting, but are likely too small and close to trails to be used by colonies. Pallid bats are known to occur at the adjacent Mt. Burdell preserve.

California Giant Salamander (*Dicamptodon ensatus*)
Listing status: California Species of Special Concern

*Califo*mia giant salamanders primarily occupy moist coniferous and mixed forests, but are also found along streams and riparian habitat in woodland, chaparral, and foothill areas. Adults are largely terrestrial and fossorial, but can be active near the surface in wet conditions. Breeding occurs in permanent or semi-permanent streams, and larvae typically remain aquatic for over a year before metamorphosing. In 2025, MCOSD staff observed an adult California giant salamander about one mile away from Dry Lake Pond at the adjacent Mt. Burdell preserve.

Non-Special-Status Wildlife Species

Several species of non-special-status ground-nesting birds were observed on site during Nomad's site visits, including dark-eyed junco (*Junco hyemalis*), lark sparrow (*Chondestes grammacus*), wild turkey (*Meleagris gallopavo*), and spotted towhee (*Pipilo maculatus*). Additional ground-nesting species that were not observed but may still occur on site include California quail (*Callipepla californica*), California towhee (*Melozone crissalis*), western meadowlark (*Sturnella neglecta*), killdeer (*Charadrius vociferus*), mourning dove (*Zenaida macroura*), Wilson's warbler (*Wilsonia pusilla*), and common poorwill (*Phalaenoptilus nuttallii*).

Additionally, a pair of nesting turkey vultures was observed in a tree hollow near Thirteen Oaks Road by MCOSD biologists in June of 2022. They are cryptic nesters, known to scrape out a spot in the soil of rock crevices, caves, hollow logs or trees. Turkey vultures prefer to nest away from human disturbances, Taking this into consideration, realignment of this section will provide protection to this sensitive species as visitor use increases.

Numerous common wildlife species were also observed incidentally or are expected to utilize the site regularly. These species are ecologically important as prey, pollinators, seed dispersers, or indicators of ecosystem health.

Black-tailed deer (*Odocoileus hemionus*)
Dusky-footed woodrat (*Neotoma fuscipes*) – Two active nests observed.
Botta's pocket gopher (*Thomomys bottae*)
Acorn woodpecker (*Melanerpes formicivorus*)
Oak titmouse (*Baeolophus inornatus*)
Red-tailed hawk (*Buteo jamaicensis*)
American crow (*Corvus brachyrhynchos*)
Wild turkey (*Meleagris gallopavo*)
Spotted towhee (*Pipilo maculatus*)
California scrub-jay (*Aphelocoma californica*)
Western bluebird (*Sialia mexicana*)
California newt (*Taricha torosa*)
Sierran treefrog (*Pseudacris sierra*)
Dark-eyed junco (*Junco hyemalis*)
Lark sparrow (*Chondestes grammacus*)
Wild turkey (*Meleagris gallopavo*)
Spotted towhee (*Pipilo maculatus*)
California quail (*Callipepla californica*)
California towhee (*Melozone crissalis*)
Western meadowlark (*Sturnella neglecta*)
Killdeer (*Charadrius vociferus*)
Mourning dove (*Zenaida macroura*)
Wilson's warbler (*Wilsonia pusilla*)
Common poorwill (*Phalaenoptilus nuttallii*)
California ground squirrel (*Otospermophilus beecheyi*)
Turkey vulture (*Cathartes aura*)
Common raven (*Corvus corax*)
Steller's jay (*Cyanocitta stelleri*)
Pine siskin (*Spinus pinus*)
Lesser goldfinch (*Spinus psaltria*)
Red-winged blackbird (*Agelaius phoeniceus*)
Bullock's oriole (*Icterus bullockii*)
Northern mockingbird (*Mimus polyglottos*)
Chestnut-backed chickadee (*Poecile rufescens*)
Northern flicker (*Colaptes auratus*)
Nuttall's woodpecker (*Dryobates nuttallii*)
White-breasted nuthatch (*Sitta carolinensis*)
European starling (*Stumus vulgaris*)
Anna's hummingbird (*Calypte anna*)
American robin (*Turdus migratorius*)
Ash-throated flycatcher (*Myiarchus cinerascens*)
Western fence lizard (*Sceloporus occidentalis*)

Cultural and Historical Resources Studies

Tom Origer and Associates prepared a Cultural Resources Study (CRS) for the proposed project in 2024.[30] The study included a cultural resources literature search completed at the Northwest Information Center of the California Historical Resources Information System (CHRIS), examination of the library and files of Tom Origer and Associates, records search for historic maps and aerial photos, and other sources

[30] Barrow, E., Tom Origer and Associates. 2024. *Cultural Resources Study for the Bowman Canyon Road and Trail Improvement Project, Marin County, California.*

of ethnographic literature, initial Native American Consultation with the Native American Heritage Commission, and an archaeological survey of the project area.

Archival research found that a very small portion of the project area had been previously subject to a formal survey by an archaeologist, and no resources have been recorded within the project area. Archival research also found that three cultural resources studies have been conducted within a quarter-mile of the project area and that two cultural resources have been documented within a quarter-mile of the project area with the closest resource recorded just outside the northeastern boundary. Review of historic maps concluded that there were no buildings within the project area.

Tom Origer & Associates conducted an intensive field survey on April 17, 18, and 22, 2024. The surface conditions were examined and hoes were used to expose the ground surface. While steeper slopes were noted as a hindrance, field conditions were clear, warm, and dry. No archaeological resources or site indicators were identified within the survey area. However, two segments of a stone fence were documented along a portion of the northeastern boundary of the Bowman parcel, outside of the proposed project disturbance area. The stone fence is estimated to date to the 1980s and was likely constructed to demarcate a property boundary. Tom Origer & Associates indicated that the fence may be eligible for inclusion in the California Register of Historical Resources should future project activities be proposed that could affect its integrity.

Geology

The geology in the vicinity of the project area consists primarily of Franciscan Complex Mélange (KJfm), Franciscan Complex schist, phyllite, and semischist (KJsch), and serpentinized ultra mafic rock.[31] [32] [33] The Franciscan Complex formations are an assemblage of several rock types that do not have any specific orientation due to their geologic history, which involved deep subduction and plastic deformation. The United States Geological Survey (USGS)[32] describes this rock as follows:

> *Tectonic mixture of masses of resistant rock types including sandstone, altered mafic volcanic rock (greenstone), chert, gabbro, exotic metamorphic rocks embedded in a sheared, shaley matrix.*

A fault is located near the northern boundary of the Bowman parcels along Bowman Creek and the contact between Franciscan Complex schists and a large serpentinite block[32]. There are multiple landslides mapped on the Bowman parcels[i]. These slides radiate to the north, west and south within the project area. Wagner mapped the area on a 1: 24,000 scale. A historical USGS study of slope stability in the greater San Francisco Bay Area[34] mapped most of Marin County as unstable. However, the Nilsen study area was mapped on a larger 1:125,000 scale and therefore with less accuracy. Wentworth and Frizzell[35] completed a reconnaissance-level landslide map of the area at 1:24,000 scale. Their map is consistent with that produced by Wagner et al[32]. The MarinMap[33] Landslide layer also identifies the Bowman Canyon area as Mostly Landslides.

Smaller slides can occur within these areas during wet years, periods of intense rainfall and during large earthquakes when the soil is saturated. The depth of small slides, which may occur more frequently, are likely to be somewhat shallow and may be cleared relatively easily. Larger mapped slides may have

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31 Blake, M.C. Jr., et al., 2000, *Geological map and map database of parts of Marin, San Francisco, Alameda, Constra Costa, and Sonoma Counties, California,* U.S. Geological Survey Miscellaneous Field Studies Map MF-2337, ver. 1.0, scale 1:75:000.

32 Wagner, D.L., et al., 2002, *Geological map of the Petaluma River 7.5' quadrangle, Marin and Sonoma Counties, California,* California Geological Survey, scale 1:24,000.

33 Marin Map, web accessed March 4 2024.

34 Nilsen, T.H., et al., 1979, *Relative slope stability and land-use planning in the San Francisco Bay region, California,* U.S. Geological Survey Professional Paper 944.

35 Wentworth, C.M., and Frizzell, V.A., 1975, *Reconnaissance landslide map of parts of Marin and Sonoma Counties, California,* U.S. Geological Survey Open-File Report 75-281.

deeper slide planes and could result in significant damage or slow creep if they are active on that scale. It is difficult to predict such a large-scale movement which may only occur every few decades and only then during extreme soil saturation or combined conditions of soil saturation and ground shaking.

Figure 18 shows a map of geology features within the project area

Soils

The soils within the Project Area consist of Tocaloma McMullin Complex 50-75% Slopes, Henneke Stony Clay Loam 15 – 50 percent, Saurin Bonnydoon Complex 50 – 70 percent slopes, and Bonnydoon-Gilroy-Typic Argixerolls 50 – 75 percent slopes.

- Tocaloma soils are found on hills. The soils formed in material weathered from strongly weathered highly fractured sandstone and shale. The soils are well-drained with slow to very rapid runoff and moderately rapid permeability.
- McMullin soils are found on uplands. The soils formed in material weathered from shale, sandstone, basic igneous and metamorphic rocks. The soils are well and somewhat excessively drained with medium to very rapid runoff and moderate permeability.
- Henneke soils are found on hillslopes. The soils formed in material weathered from serpentinite and peridotitie. Rock outcrops, stones and cobbles are common and occupy 5-60% of the surface. The soils are well drained with medium to very high runoff, and moderately slow to slow permeability.
- Saurin soils are found on hills. The soils formed in material weathered from fractured soft sandstone and shale. The soils are well drained with slow to very rapid runoff, and moderate permeability.
- Bonnydoon soils are found on uplands. They formed in material weathered from sandstone and shale. They are somewhat excessively drained with medium to very rapid runoff and moderate permeability.
- Gilroy soils are found on hills and mountains. They are formed from material weathered from basic igneous and metabasic rocks. They are well drained with medium to rapid runoff and moderately slow permeability.

Figure 19 shows a map of soil matrix within the project area

Soil Limitation Rating

The soil matrix present within the project area includes Tocaloma-McMullin Complex, 50 to 75 percent slopes; Henneke-Stony Clay Loam, 15 to 50 percent slopes; and Saurin-Bonnydoon Complex, 50 to 75 percent slopes. The distribution of the soil matrix and individual components is displayed in Figure 19.

Figure 19: Soil Matrix within the Project Area

The Natural Resource Conservation Service (NRCS) provides ratings based on a soil's limitations for certain anthropogenic activities. Soil ratings were obtained through the Web Soil Survey.[36] The ratings are based on the soil properties that affect trafficability and erodibility. These properties are stoniness, depth to a water table, ponding, flooding, slope, and texture of the surface layer.

[36] Natural Resource Conservation Service (NRCS), U.S. Department of Agriculture. 2008. Web Soil Survey. Available online at: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed 12/18/2024.

Ratings are categorized as *Not Limited, Somewhat Limited and Very Limited*. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The soil limitation ratings indicate that all of the soil types within the project area are Very Limited due to steepness of slope. The slopes within the project area range from 15-75 percent, with the majority of slopes within the project area exceeding 50 percent. In some places constructing sustainable trails on these slopes would require fill slope and cutbank retaining walls to achieve desired widths. The soils within the project area are also somewhat limited due to the development of dust. Dust is caused by the pulverization of soil particles on the trail tread by visitor use. Trail areas limited by dust may be overcome through the surfacing of the trail tread with aggregate base rock.

MCOSD Authority, Mission, and Leadership

The MCOSD is an independent legal entity and a special district operating pursuant to the California Public Resources Code. Marin County Parks (MCP) oversees the management of the county parks system and provides public information on behalf of the MCOSD to fulfill the following mission:

> *We are dedicated to educating, inspiring, and engaging the people of Marin in the shared commitment of preserving, protecting, and enriching the natural beauty of Marin's parks and open spaces, and providing recreational opportunities for the enjoyment of all generations.*

A five-member Board of Directors oversees MCOSD operations. A seven-member Parks and Open Space Commission advises the MCOSD Board of Directors on policy matters related to acquisition, development, funding, management, and operation. The MCOSD's Director and General Manager oversees the day-to-day operations.

MCOSD Governing and Guidance Documents

The MCOSD is subject to the following governing and guidance documents:

- Marin County Strategic Plan, 2001
- Policy Review Initiative, 2005
- Marin Countywide Plan, 2007
- Marin County Department of Parks and Open Space Strategic Plan, 2008
- Marin County Fire Management Plan, 2008
- Marin County Integrated Pest Management Ordinance, 2009
- MCOSD Road and Trail Management Plan, 2014
- MCOSD Vegetation and Biodiversity Management Plan, 2015
- MCOSD Inclusive Access Plan, 2016

Road and Trail Management Plan (RTMP)

On December 16, 2014, the MCOSD Board of Directors approved the Road and Trail Management Plan (RTMP) and certified its program Environmental Impact Report (EIR)[37]. The RTMP is a science-based comprehensive management plan to guide the MCOSD in the:

1. Establishment and maintenance of a sustainable system of roads and trails;
2. Reduction of environmental impact from roads and trails on natural resources; and
3. Improvements to visitor experience and safety.

The RTMP incorporates existing policies from the Countywide Plan and the MCOSD's Policy Review Initiative. Consistency with the RTMP assumes consistency with the Countywide Plan. Additionally, it identifies 34 new policies that govern the MCOSD's road and trail system. The intent of these policies is to reduce the environmental impact from the roads and trail system and to improve the recreational experience. In addition to these policies, the RTMP defined several best management practices (BMPs) to reduce resource effects from any road and trail projects. Appendix A includes the RTMP Policies and BMPs. Within the body of the CEQA Checklist, the specific RTMP BMPs applicable to implementation of the proposed Project are identified.

The RTMP covers six regions within Marin County, and 34 open space preserves. Region 4, which includes the project site, covers the open space preserves listed below:

- Mount Burdell
- Rush Creek
- Little Mountain
- Verissimo Hills
- Indian Tree
- Deer Island

The MCOSD developed the RTMP over the course of four years based on extensive outreach and public input. After adoption of the plan and consistent with the RTMP's *Policy SW.2: System Roads and Trails*, the MCOSD initiated a process to designate a system of roads and trails in all existing open space preserves. The roads and trails eligible for consideration must have existed as of November 2011, which is when the MCOSD completed a report on the condition of the existing roads and trails. The designation of a formal road and trail system is proceeding on a regional basis.

The road and trail designation for Region 4 occurred in 2017. The Region 4 Designation Workshop was held on May 13, 2017. Following the workshop, the public had an opportunity to view and comment on the proposed road and trail system for Region 4.

Figure 20 shows the MCOSD Preserves by RTMP Region

Figure 21 shows the Region 4 trail designations

The MCOSD is exempt from land use/development code permit requirements pursuant to Municipal Code Section 22.06.050: Exemptions from Land Use Permit Requirements because the RTMP is the MCOSD document that governs as an extension of the Marin Countywide Plan.

Inclusive Access Plan (IAP)

The Inclusive Access Plan (IAP) was finalized in July 2016. The IAP is a guidance document focused on improving the MCOSD trail accessibility and increase the equitability of access to visitors of all abilities, developed with a public engagement process that included open houses, focus groups, workshops, and

[37] County of Marin, 2014, *Marin County Open Space District's Road and Trail Management Plan,* State Clearinghouse Number 2011012080

review of the IAP. The IAP is a supplement to the RTMP and helps to guide the accessibility component of trail-planning efforts. It includes:

- An evaluation of the existing inventory of pedestrian trails, the identification of an initial system of Access and Discovery Trails, providing access for users of all abilities to experiences in a variety of natural settings and a framework for expanding an Improved Access Trail system
- A review of and recommendations for policies and procedures, including the use of service animals, mobility devices, and visitor amenities in MCOSD open space preserves
- Recommendations for methods of communicating information about trails and trail conditions
- Design guidelines and standards that incorporate inclusive design principles and accessible elements in new construction and reconstruction of existing open space trails

As required by the IAP for trail redevelopment projects, MCOSD completed a Trail Accessibility Standards analysis for the proposed project relative to the applicability of accessibility standards as defined by the Architectural Barriers Act Accessibility Guidelines for Outdoor Developed Areas. The conclusion of this analysis was that 0.5 miles of the road and trail network in the proposed project would meet the accessibility trail design guidelines.

The proposed project area is constrained by excessive slopes, geologic and hydrologic impediments (landslides and steep drainages), and sensitive animal and vegetation communities. These constraints limit the ability to construct all the planned road and trail network at widths and gradients that are fully compliant with the MCOSD's Inclusive Access Plan (IAP). However, the proposed project would upgrade approximately 0.5 miles of the network to meet full IAP compliance. Approximately 3.2 additional miles of the proposed project trails would meet the clear width parameters described in the IAP.

Vegetation and Biodiversity Management Plan

The MCOSD developed the Vegetation and Biodiversity Management Plan (VBMP) in April 2015 to be implemented along with the RTMP. Its primary prupose is to provide comprehensive, long-term guidance for a new science-based approach to vegetation management that will:

1. Maintain the natural biodiversity of the vegetation within the preserves
2. Maintain patrol, emergency and public access, and
3. Manage fuel loads to reduce the threat of natural and human-caused fires.

The VBMP is not a prescriptive plan but rather it is a tool for decision-making associated with vegetation management projects on MCOSD lands. As part of this effort, the MCOSD classified vegetation within each of the 34 preserves into four management zones based on the ecological and/or cultural importance of distinctive vegetation types, the condition of resources in particular locations, and the proximity of particular locations to urban or suburban areas. The four management zones include:

Legacy Zone. The legacy zone includes lands that support unique or irreplaceable remnants of natural biological diversity, along with other vegetation types with high biological value. The habitats for plants that have been identified as threatened, endangered, or rare in the world, the nation, the state of California, or Marin County are included in this zone, along with wetlands and selected upland vegetation types, including redwood forest, serpentine grasslands, and chaparral. Also included are habitats and vegetation types that are at the boundaries of their geographic distributions and that may be important to detecting, and managing for adaptation to, the effects of climate change. Native vegetation in this zone remains largely intact and free of invasion by nonnative plants. Because of their rarity and ecological importance, many species and vegetation types within this zone are protected by federal and state laws and regulations, or by other initiatives, such as the Upland Habitat Goals Project. The legacy zone will serve as a sanctuary for natural resources that otherwise could be permanently lost from Marin, California, and the world.

Sustainable Natural Systems. The sustainable natural systems zone includes lands that are valuable for ensuring the ecological resiliency of natural systems and the associated character of Marin County. Lands in this zone, which generally form a natural buffer around lands in the legacy zone, include corridors supporting wildlife movements and potentially the movements of species adapting to climate change, areas of refuge for species living within or migrating through Marin County, and vegetation types that are not considered as biologically valuable as those included in the legacy zone, but that are still considered “hot spots” in terms of relatively high species diversity. Lands in this zone contain only minimal infrastructure, and the vegetation types are relatively free of invasive species.

Natural Landscape Zone. The natural landscape zone includes lands that support native plants and natural vegetation types that are typical of Marin County landscapes. These common vegetation types, while not legally protected or recognized as rare, provide valuable habitat for a diversity of local native species. They contribute to the beauty of Marin County landscapes and add to the ecologically rich natural communities and scenic vistas that define the MCOSD preserves. Vegetation within the natural landscape zone often provides important common oak and other woodland vegetation types, and coastal scrub. While this zone is more infested with invasive plants than the legacy and sustainable natural systems zones, it still provides valuable connectivity and important habitat for common wildlife and plants.

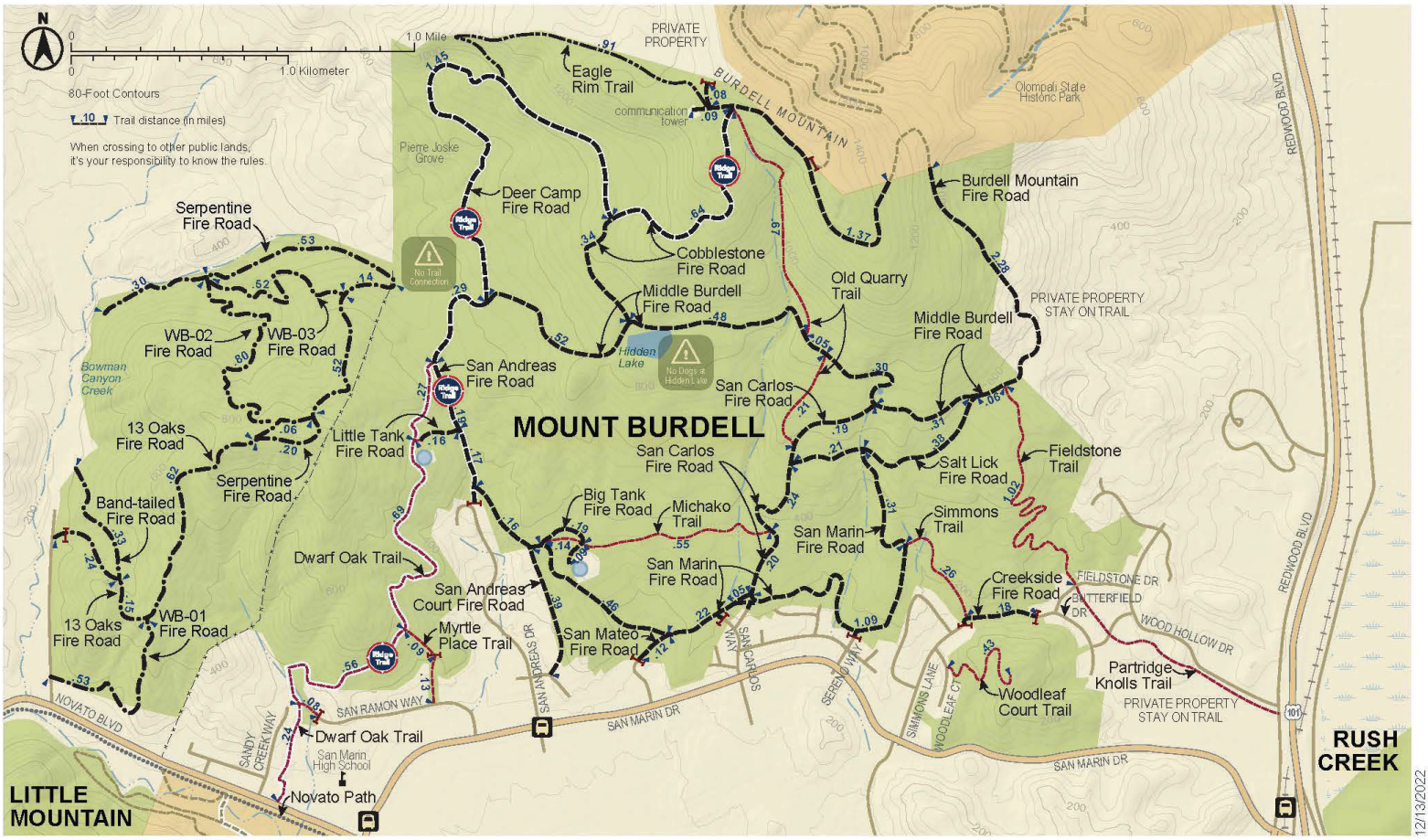
Highly Disturbed Zone. The Highly Disturbed Zone includes lands that provide essential services, such as fire protection, access to the MCOSD open space lands, and in many cases is within the state defined Wildland Urban Interface. While these lands are also important to the enjoyment and protection of the natural diversity of Marin County, their management is influenced by their role in preventing the movement of fire between residences and open space lands, transmitting utilities, such as electrical power and water lines, to nearby communities, and facilitating visitor access. Due to high human use and disturbance, this zone is prone to invasive plant infestations; plant diseases and pathogen outbreaks; and neighboring land influences, such as trespass, predation by domestic pets, green waste dumping, and the introduction of garden plant escapees.

Mount Burdell Open Space Preserve is classified as consisting of all four management zones: Legacy Zone, Sustainable Natural Systems Zone, Natural Landscape Zone, and Highly Disturbed Zone. Upon acquisition of the proposed project parcels, MCOSD contracted Nomad to map legacy zones for the project. The proposed project area includes 69 acres of Legacy Zone, 187 acres of Sustainable Natural Systems Zone, 150.7 acres of Natural Landscape Zone, and 15 acres of Highly Disturbed Zone

Figure 22 shows the Region 4 VBMP classification

FIGURES

Figure 1: Existing Trail Map for Mount Burdell Open Space



MARIN COUNTY PARKS
OPEN SPACE DISTRICT

FIRE ROAD AND TRAIL USES

FIRE ROAD — — — Hikers/Bikes/Horses (voice control)

TRAIL — · — · — Hikers/Bikes (on leash)

FIRE ROAD — · — · — Hikers/Bikes/Horses (on leash)

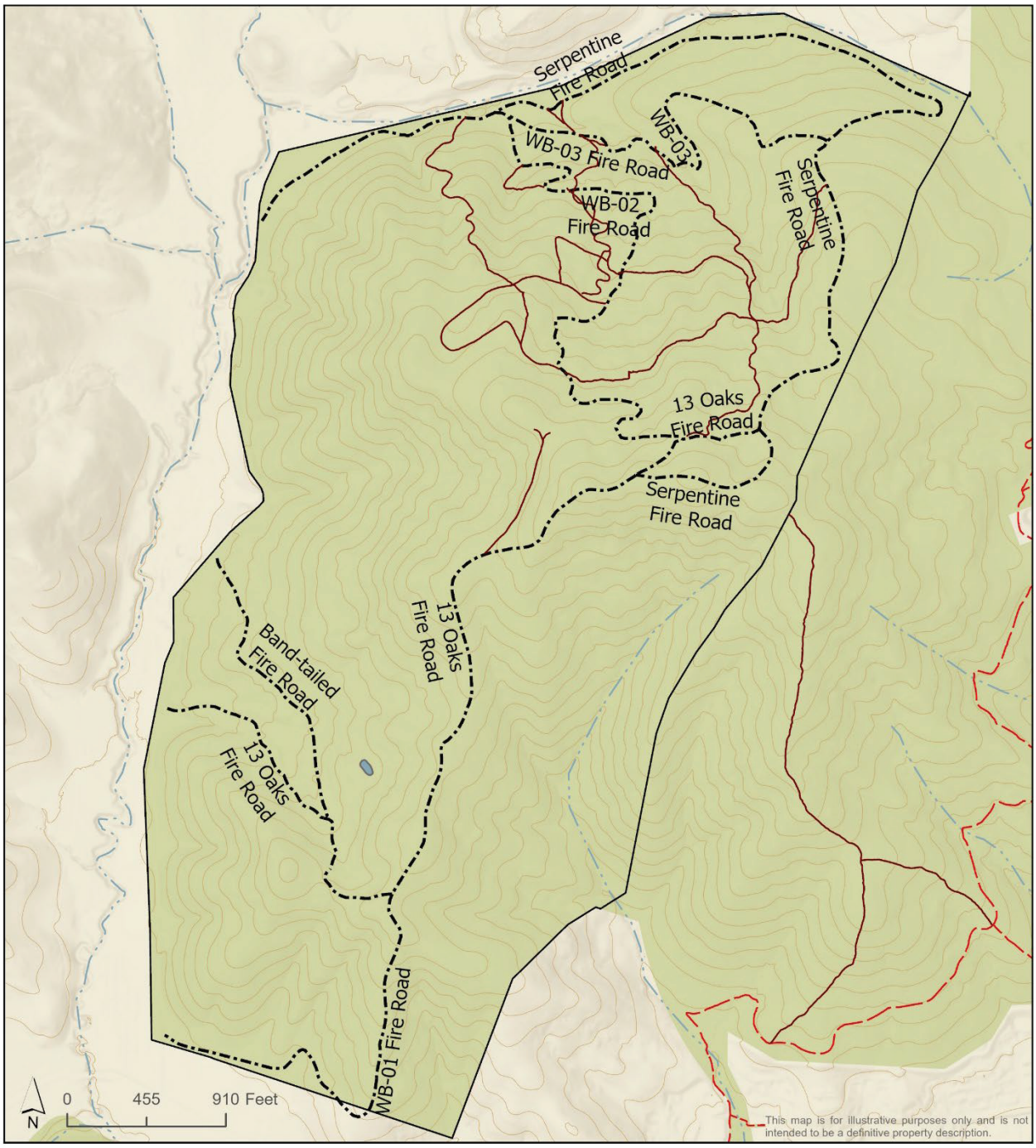
TRAIL ------- Hikers/Horses (on leash)

SYMBOLS

- Marin County Open Space District Preserve
- Other Public Lands
- Multiuse Pathway
- Trail (Non-MCOSD)
- Bay Area Ridge Trail
- .21 Distance (miles)
- Gates
- Creeks & Streams
- Water Tank
- Public Transit

marincountyparks.org

Figure 2: Existing Trail Map for Bowman Canyon, Mount Burdell Open Space



Legend

- Project Area
- Social Trails
- Fire Road (Hikers, Bikes, Horses, On Leash)
- Trail (Hikers, Bikes, Horses, On Leash)
- Trail (Hikers, Bikes, On Leash)
- Trail (Hikers, Horses, On Leash)
- Trail (Hikers, On Leash)

Figure 2

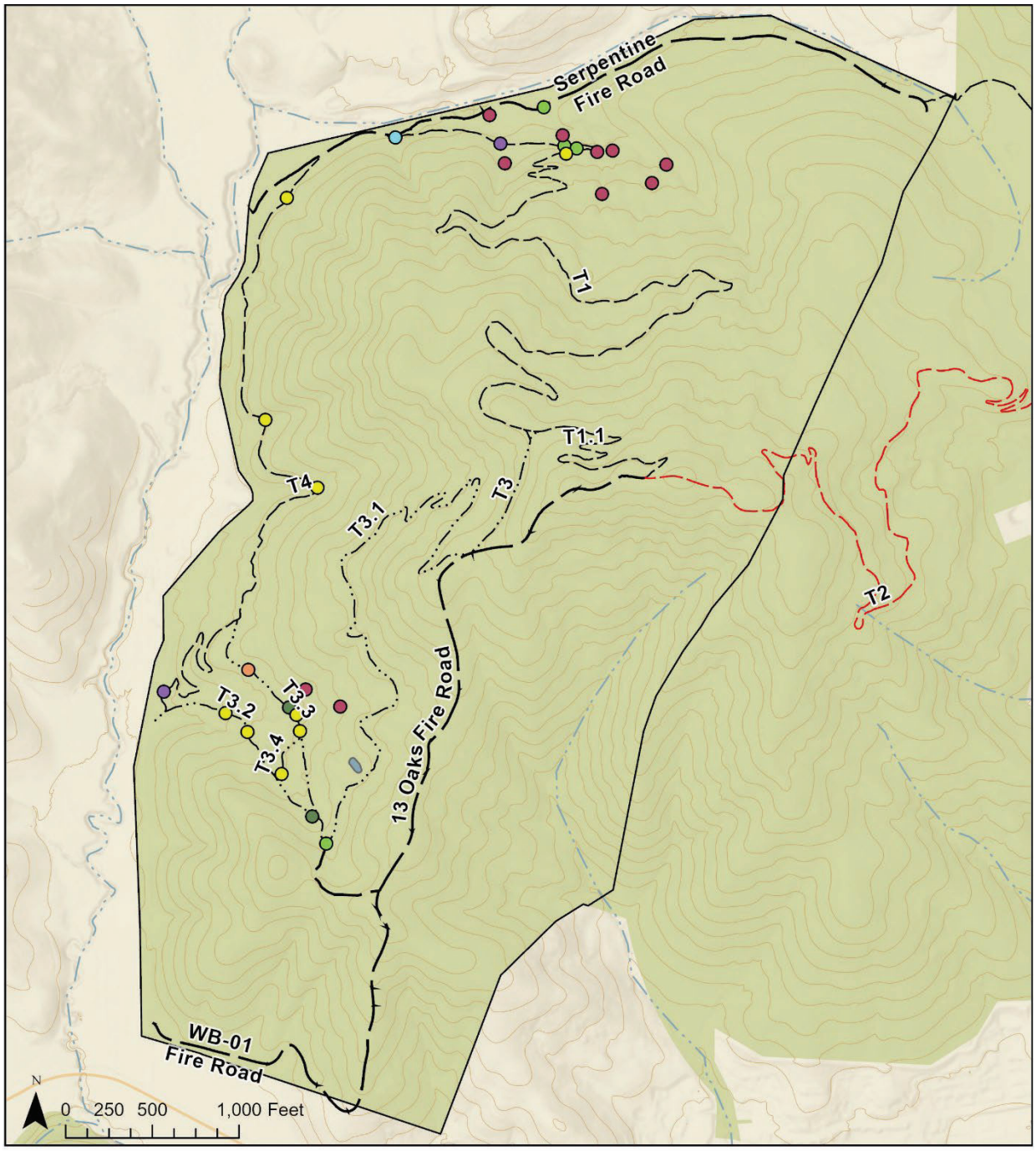
Existing Roads and Trails

Bowman Canyon Habitat Protection and Public Access Improvement Project

Marin County Open Space District

Date Exported: 2/19/2026 12:08 PM
Sources: MCGIS (parcels), GGNPC (imagery)

Figure 3a: Location of the Proposed Road and Trail Elements



Legend

- Project Area
- Fire Road (Hikers, Bikes, Horses, Voice Control)
- Trail (Hikers, Bikes, Horses, On Leash)
- Trail (Hikers, Bikes, On Leash)
- Trail (Hikers, Horses, On Leash)
- Armored dip
- Armored ford
- Causeway
- Culvert
- Puncheon
- Restored to natural grade
- Trail bridge

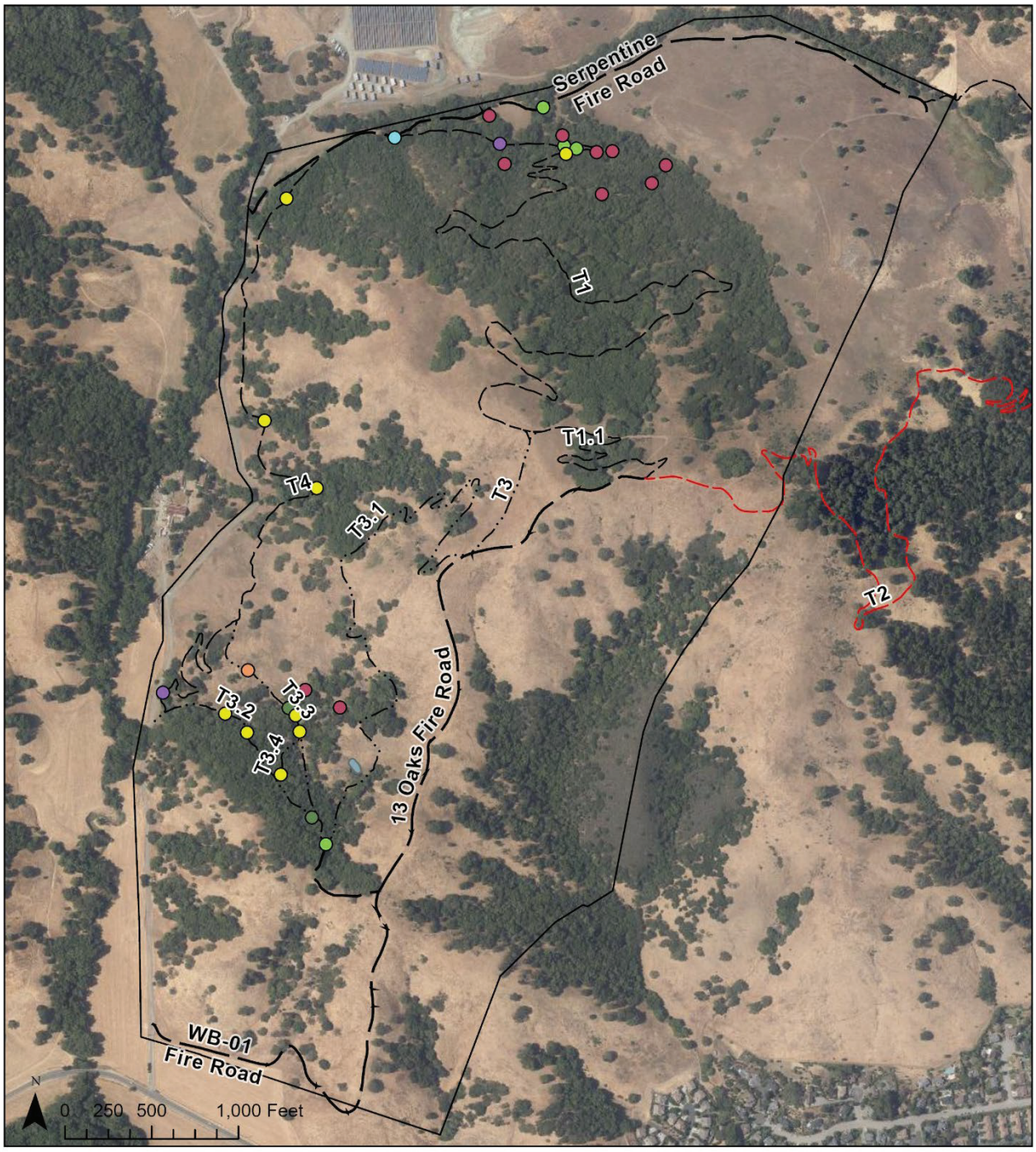
Figure 3a
Proposed Road and Trail Elements

Bowman Canyon Habitat Protection and Public Access Improvement Project

Marin County Open Space District

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Sources: MCGIS (parcels), GGNPC (imagery)

Figure 3b: Location of the Proposed Road and Trail Elements in Aerial View



Legend

- Project Area
- Fire Road (Hikers, Bikes, Horses, Voice Control)
- Trail (Hikers, Bikes, Horses, On Leash)
- Trail (Hikers, Bikes, On Leash)
- Trail (Hikers, Horses, On Leash)
- Armored dip
- Armored ford
- Causeway
- Culvert
- Puncheon
- Restored to natural grade
- Trail bridge

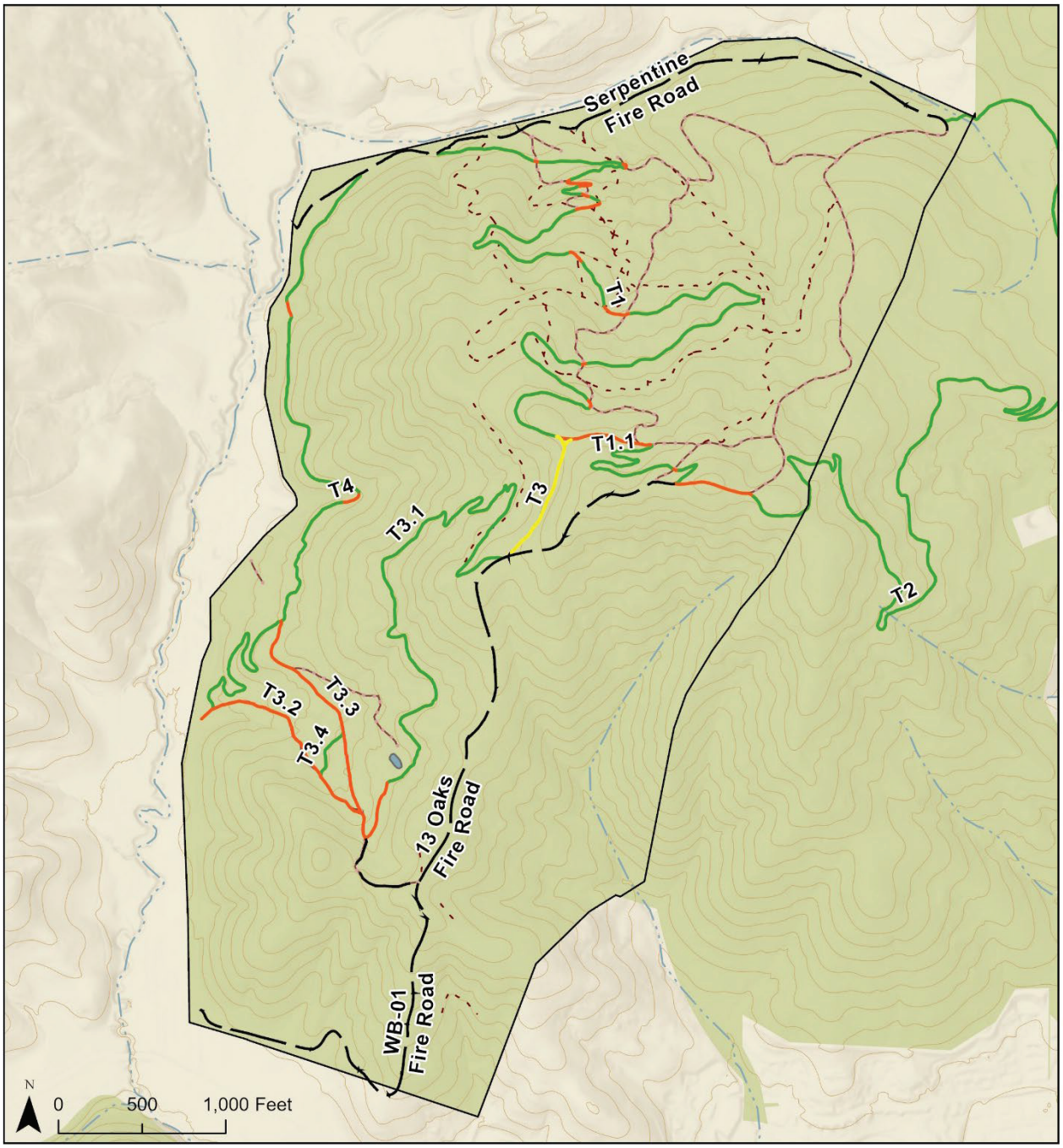
Figure 3b
Proposed Road and Trail Elements (aerial)

Bowman Canyon Habitat Protection and Public Access Improvement Project

Marin County Open Space District

Date Exported: 2/19/2026 11:45 AM
Sources: MCGIS (parcels), GGNPC (imagery)

Figure 4a: Location of Proposed Road and Trail Treatment Types



This map is for illustrative purposes only and is not intended to be a definitive property description.

Legend

- Project Area
- Trail Decommissioning
- Road Decommissioning
- Road Adoption
- New Trail
- Road to Trail Conversion
- Social Trail Adoption

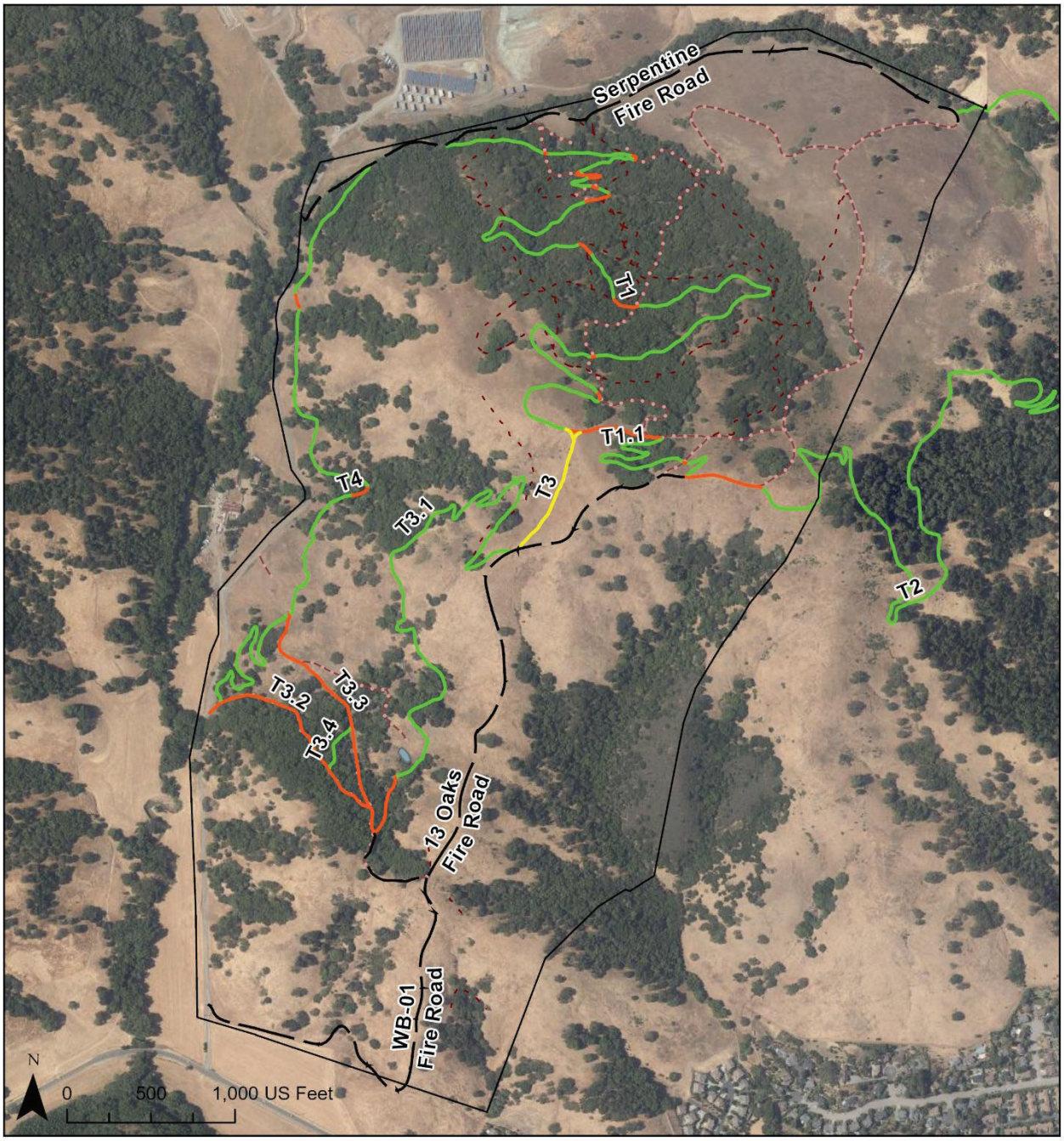
Figure 4a
Proposed Road and Trail Treatments

Bowman Canyon Habitat Protection and Public Access Improvement Project

Marin County Open Space District

Date Exported: 2/19/2026 11:42 AM
Sources: MCGIS (parcels), GGNPC (imagery)

Figure 4b: Location of Road and Trail Treatment Types in Aerial View



This map is for illustrative purposes only and is not intended to be a definitive property description.

Legend

- Project Area
- Trail Decommissioning
- Road Decommissioning
- Road Adoption
- New Trail
- Road to Trail Conversion
- Social Trail Adoption

Figure 4b

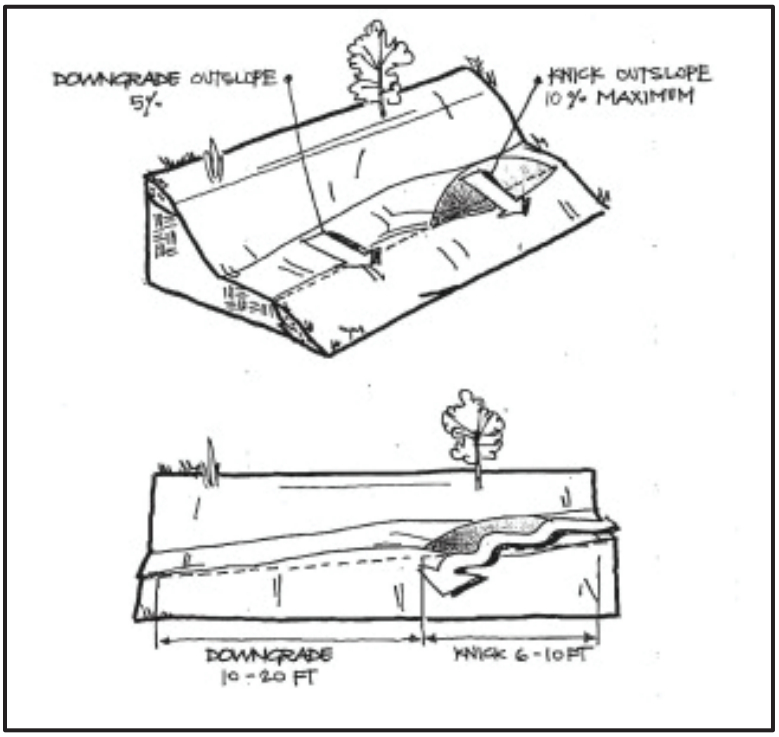
Proposed Road and Trail Treatments (Aerial)

Bowman Canyon Habitat Protection and Public Access Improvement Project

Marin County Open Space District

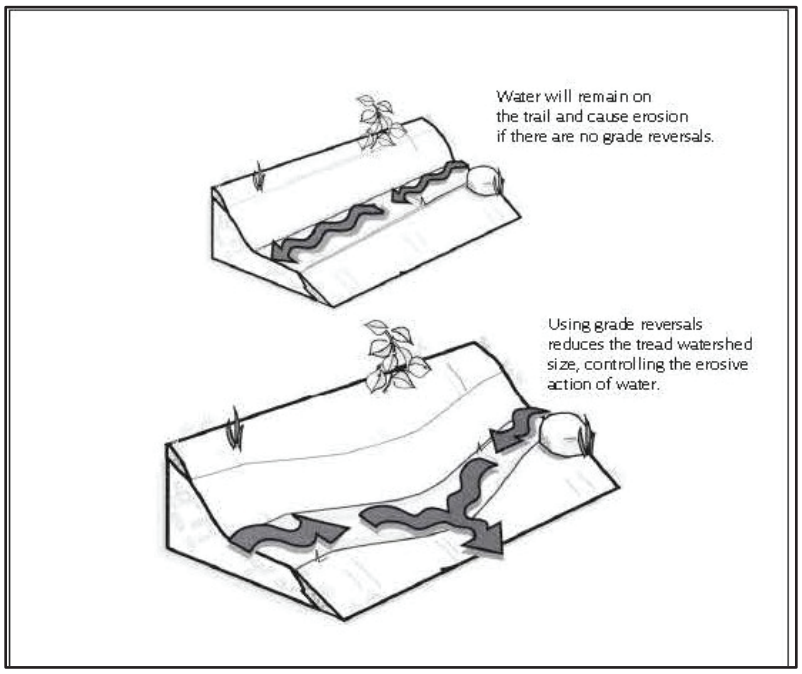
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Sources: MCGIS (parcels), GGNPC (imagery)

Figure 5: Typical Rolling Drainage Dips for Trail Drainage



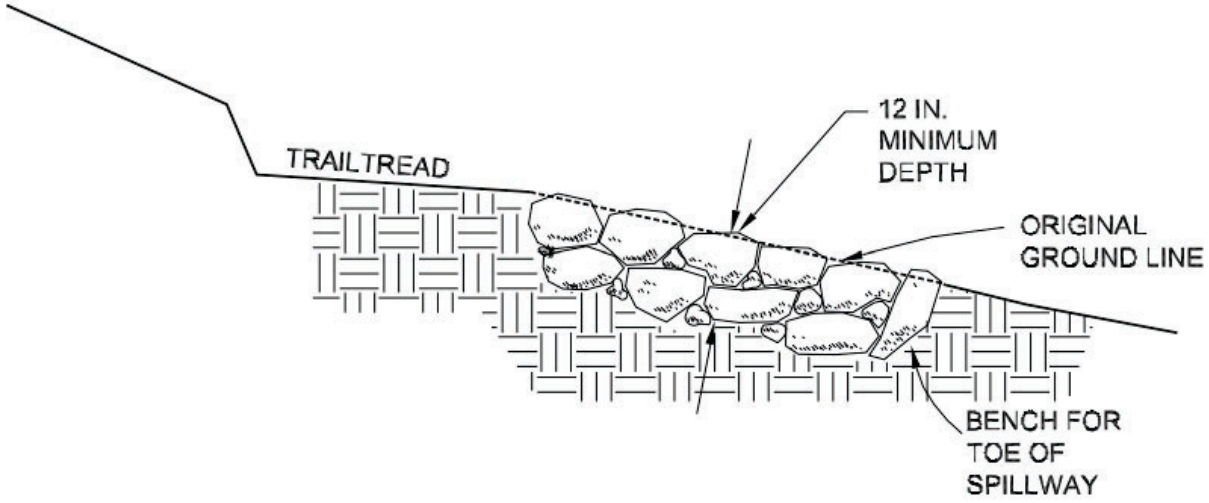
Source: LA County Trails Manual

Figure 6: Typical Grade Reversal for Trail Drainage



Source: LA County Trails Manual

Figure 7: Typical Rock Spillway for a Drainage Dip or Cross Drain



Source: LA County Trails Manual

Figure 8: Typical Outsloped Trail

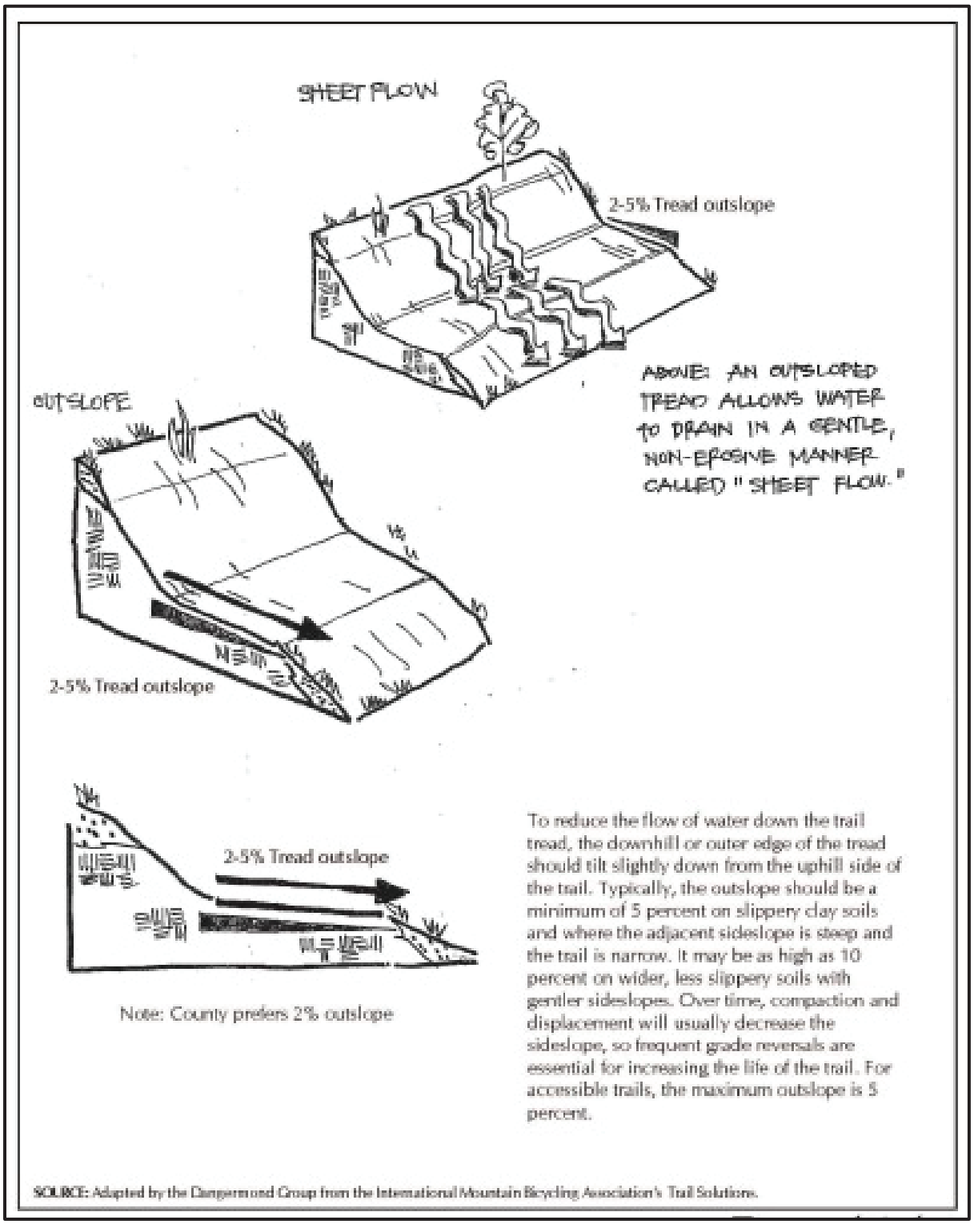


Figure 9: Typical Insloped Turn

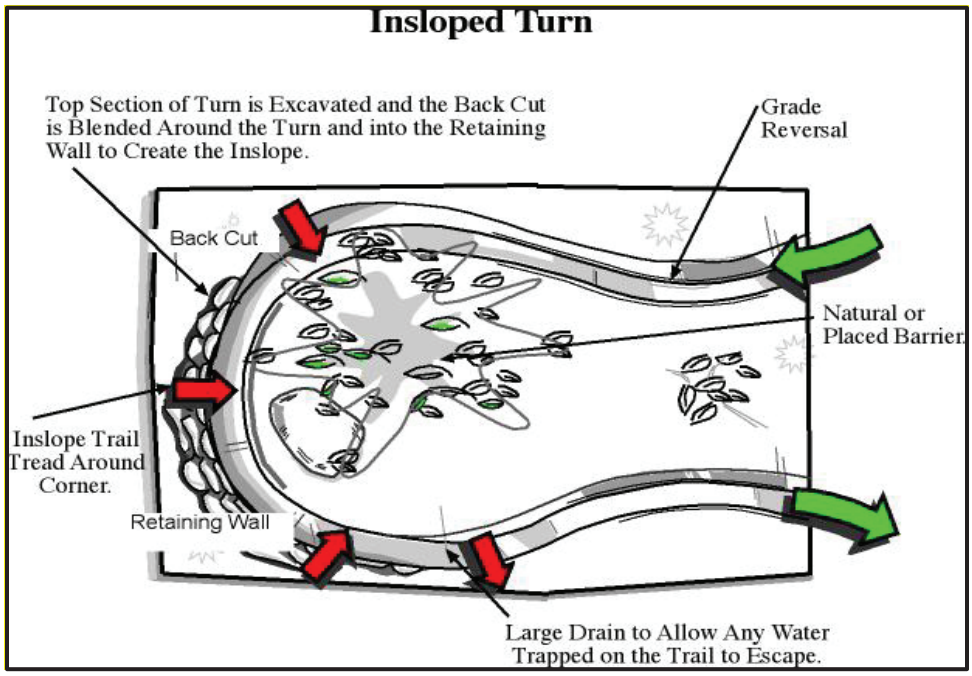
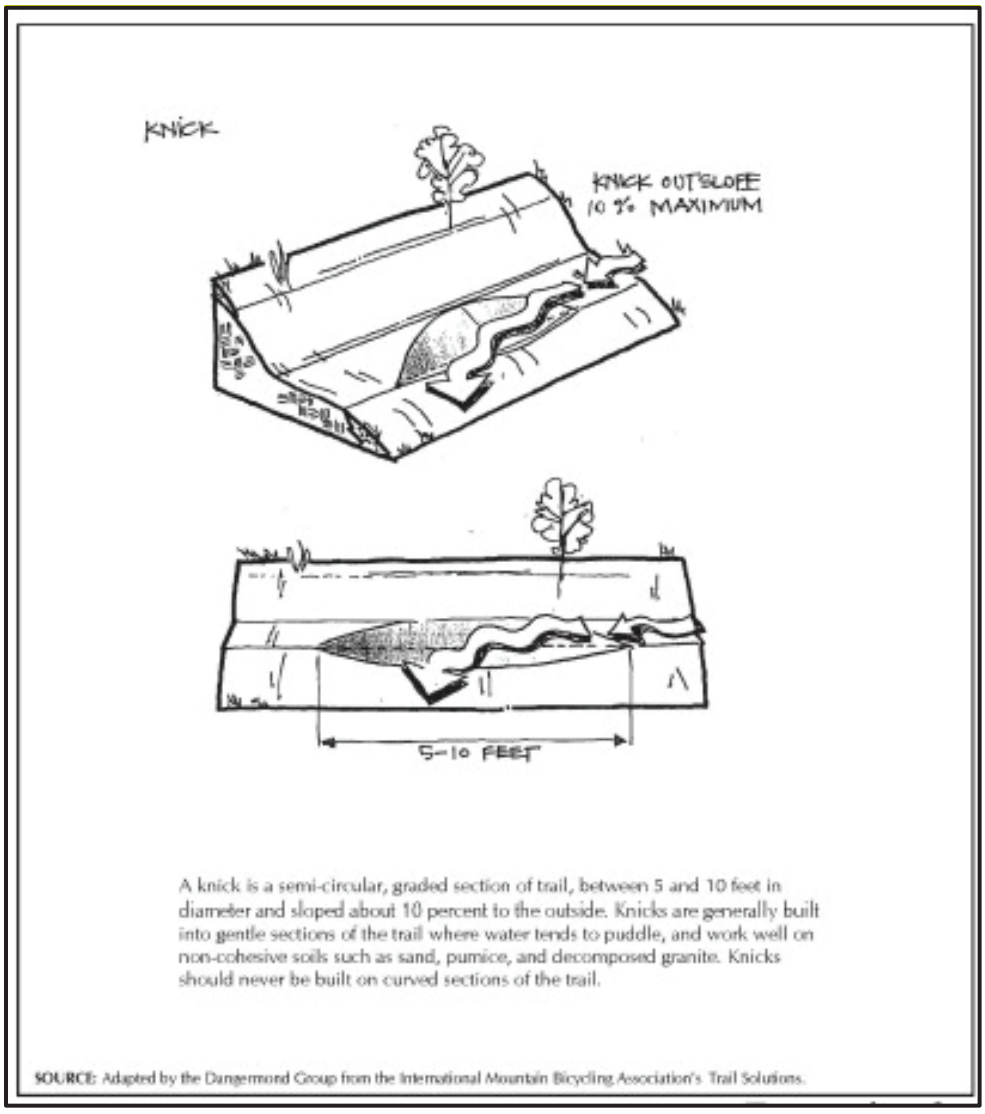


Figure 10: Typical Knicks for Trail Drainage



A knick is a semi-circular, graded section of trail, between 5 and 10 feet in diameter and sloped about 10 percent to the outside. Knicks are generally built into gentle sections of the trail where water tends to puddle, and work well on non-cohesive soils such as sand, pumice, and decomposed granite. Knicks should never be built on curved sections of the trail.

SOURCE: Adapted by the Dangermond Group from the International Mountain Bicycling Association's Trail Solutions.

Figure 11: Typical Rock Spillway for a Culvert Outlet

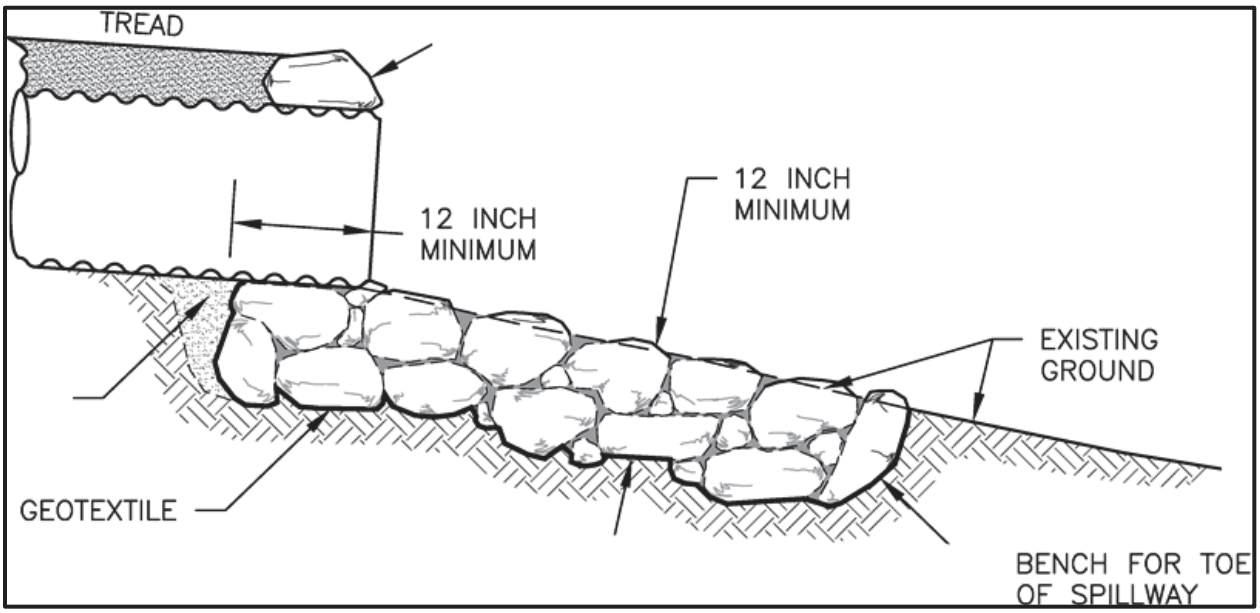
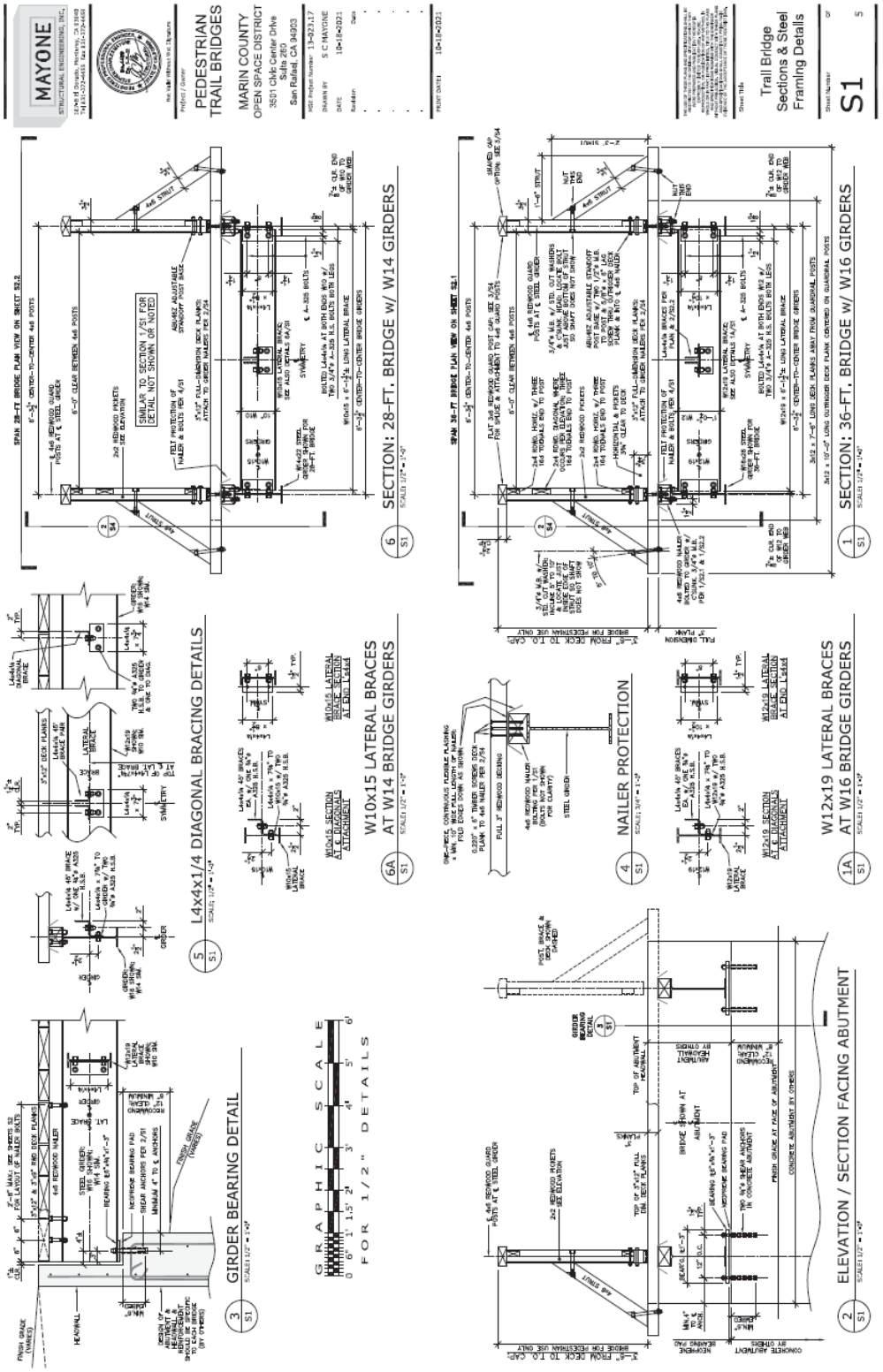
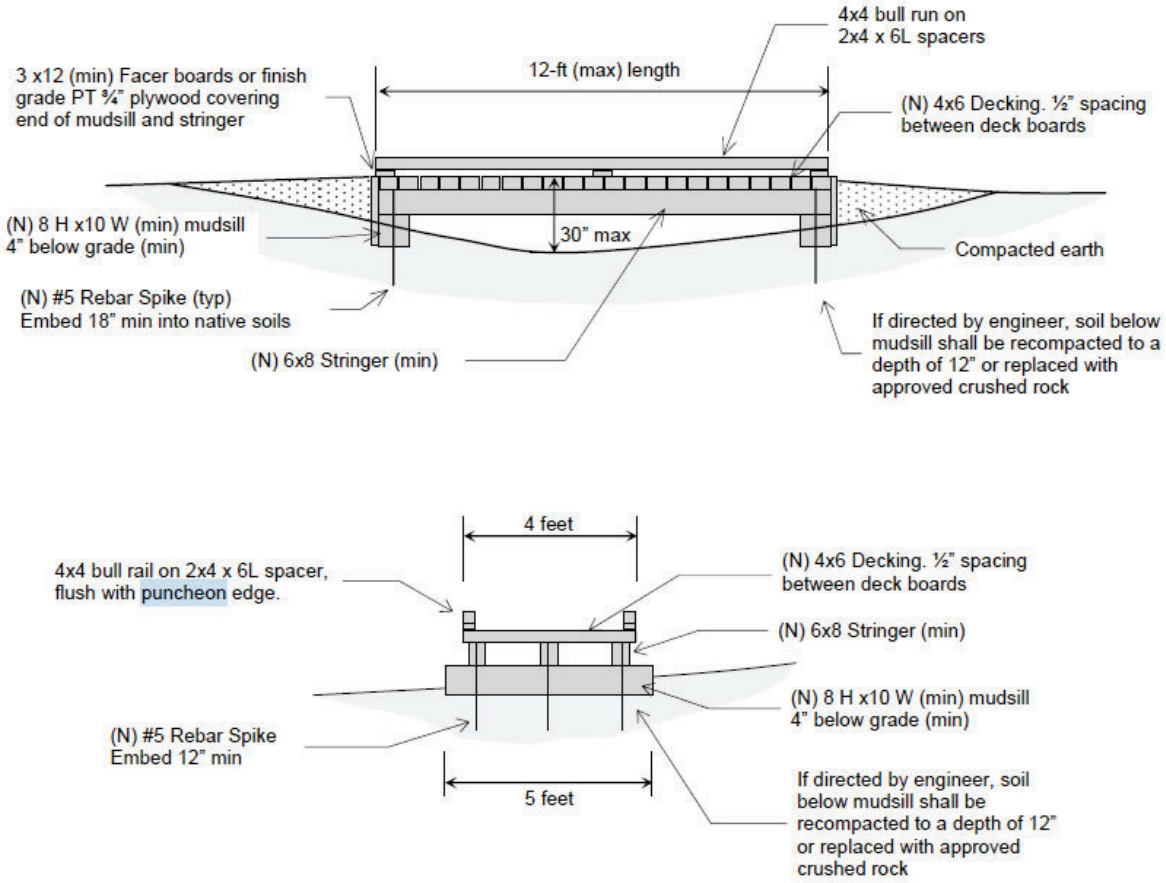


Figure 12: Typical Recreational Trail Bridge Standard Design



Source: Mayone Structural Engineering, Inc

Figure 13: Typical Trail Puncheon



Source: Timothy C. Best

Figure 14: Typical Armored Ford

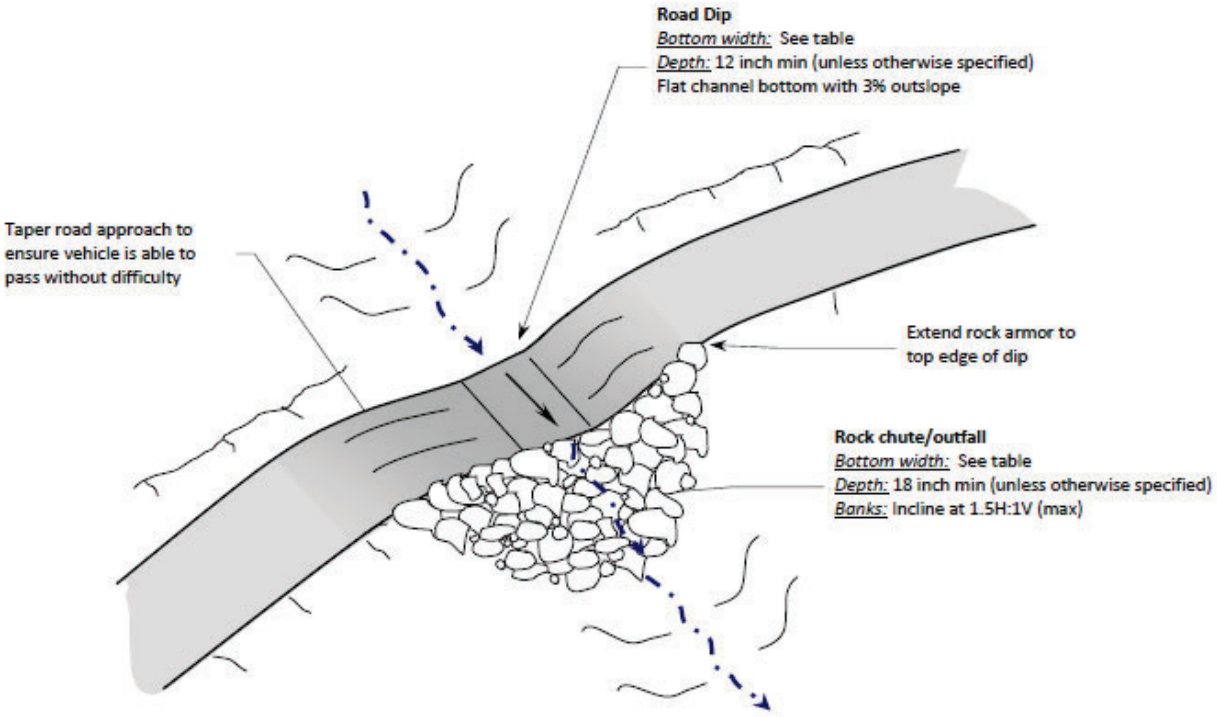
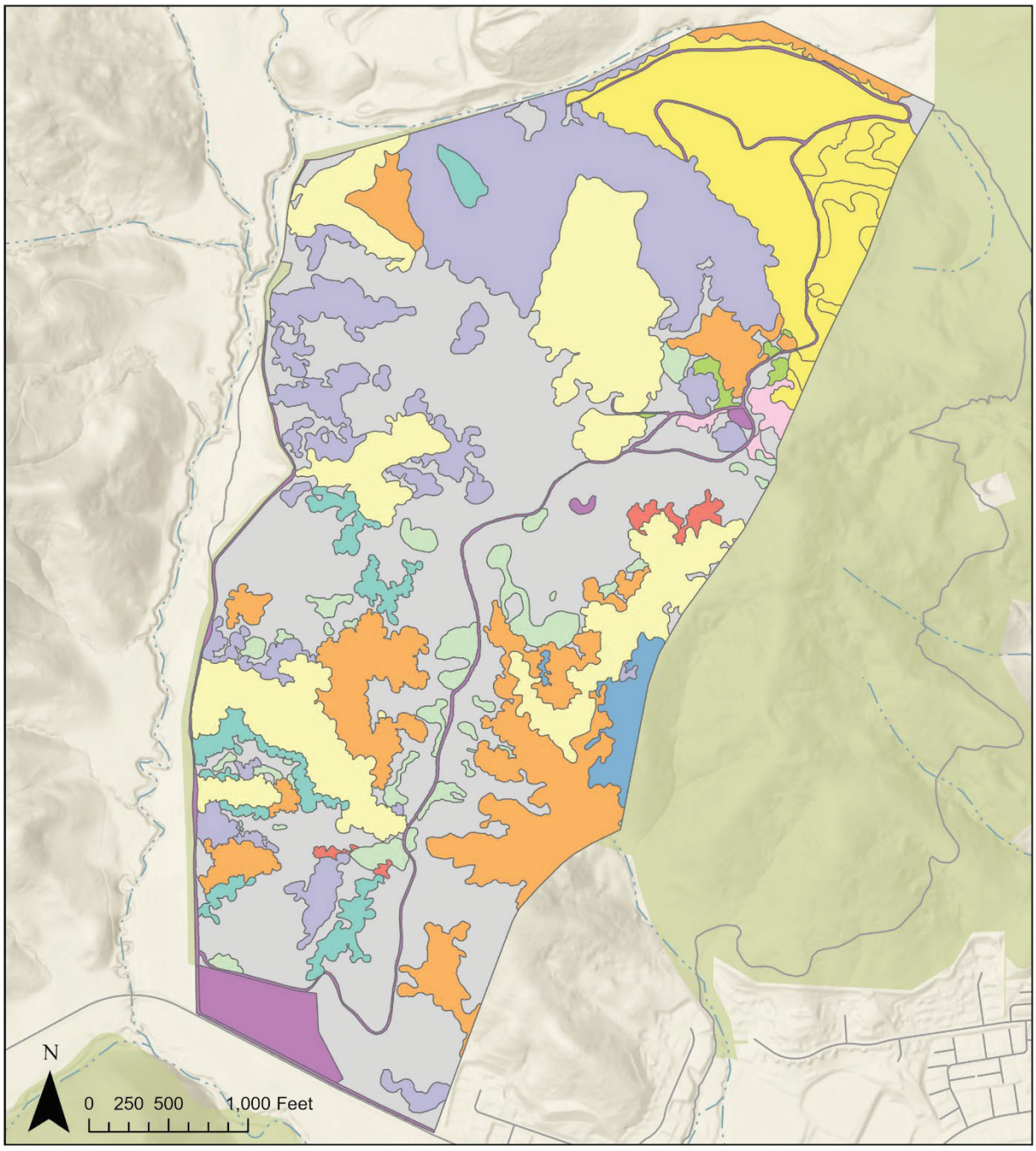


Figure 15: Vegetation Types within the 2021 Study Area



Legend

- Black Oak Forest / Woodland
- California Bay Forest
- California Bay and Coast Live Oak
- California Sagebrush
- Chamise Chaparral
- Coast Live Oak
- Coyote Brush
- Coyote Brush and Native Grassland
- Non-Native Grassland
- Road/Ruderal/Invasive
- Native Grassland
- Serpentine Grassland
- Valley Oak
- Wet Meadows

Figure 15
Vegetation Types
(2021)

Bowman Canyon Habitat Protection and Public Access Improvement Project

Marin County Open Space District

Date Exported: 2/27/2026 3:15 PM
Sources: MCGIS (parcels), GGNPC (imagery)

Figure 16: Proposed Project Relative to Watersheds



This map is for illustrative purposes only and is not intended to be a definitive property description.

Legend

- Perennial Streams
- Intermittent Streams
- Ephemeral Streams
- USGS Watershed Boundary (HUC12)
- Project Area
- Marin County Open Space

Figure 16

Proposed Project Relative to Watersheds

Bowman Canyon Habitat Protection and Public Access Improvement Project

Marin County Open Space District

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Sources: MCGIS (parcels), GGNPC (imagery), USGS

Figure 17: Occurrences of Special-status Plant Species

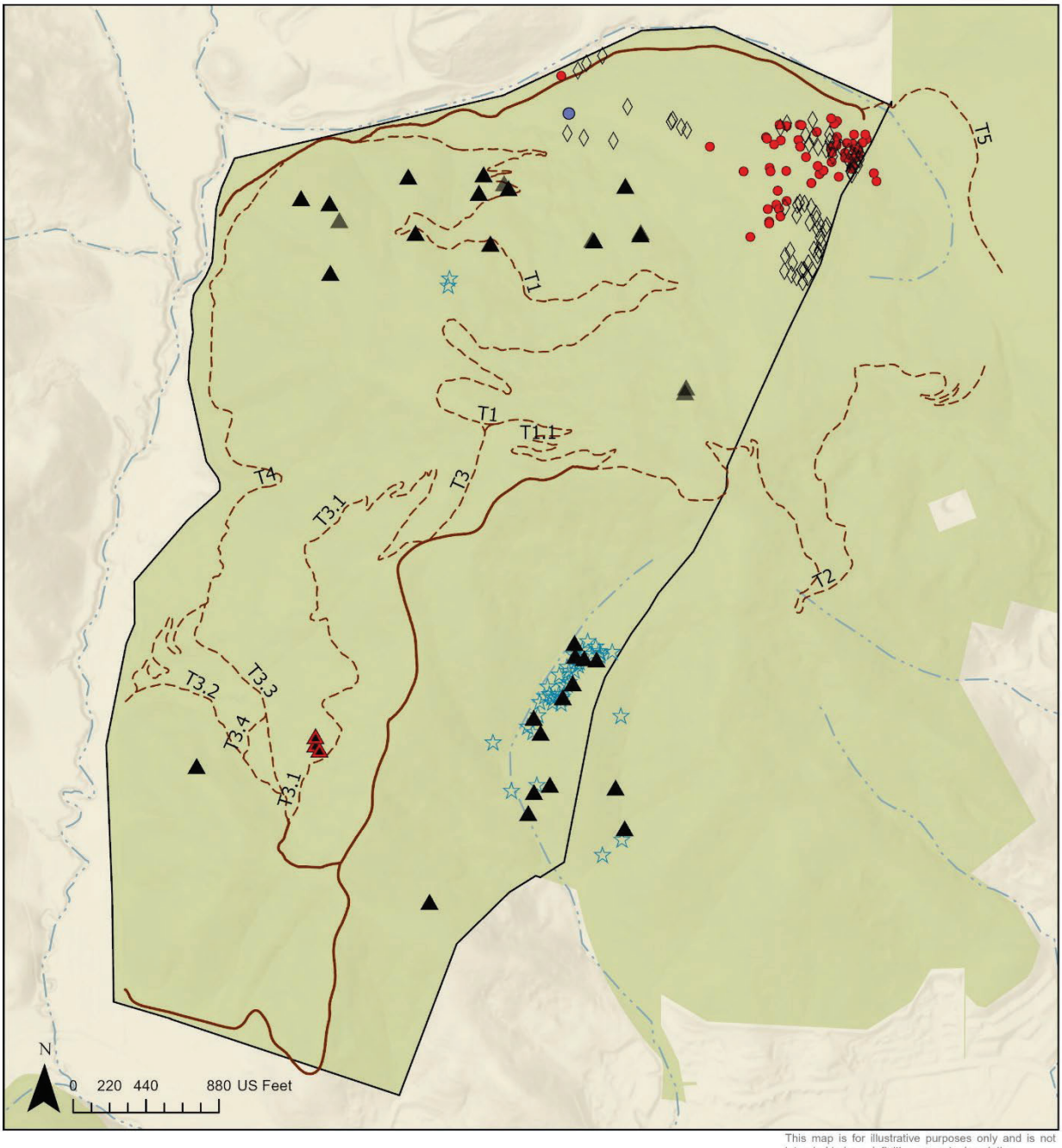
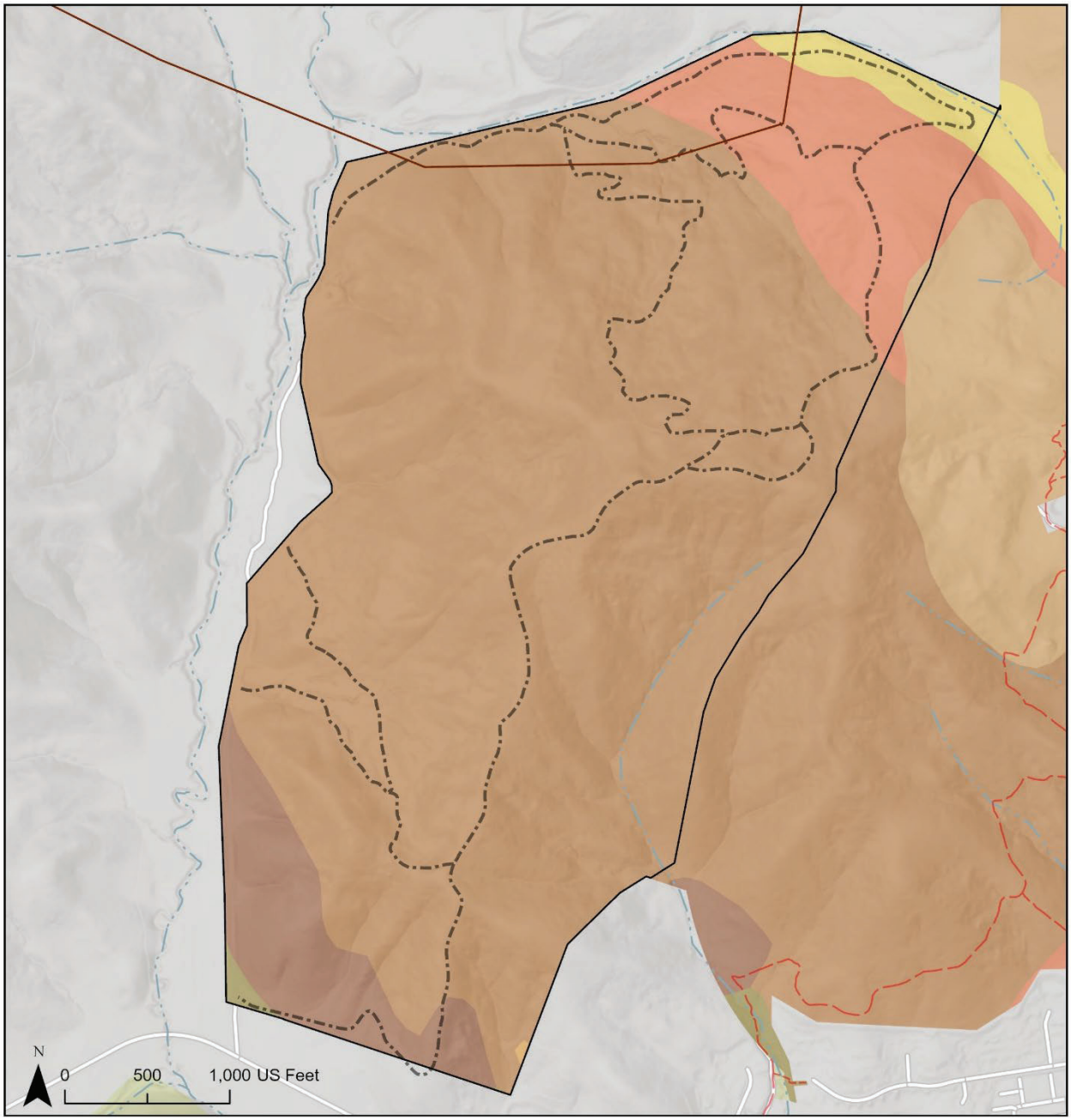


Figure 18: Geology Features within the Project Area



This map is for illustrative purposes only and is not intended to be a definitive property description.

Legend

Geology
- Alluvium (Holocene or Pleistocene)
- Coast Range ophiolite, serpentinite (Late and Middle Jurassic)
- Franciscan complex, melange
- Franciscan complex, meta-greenstone (Jurassic)
- Franciscan complex, metachert (Jurassic)
- Franciscan complex, metagraywacke and metamorphics (Cretaceous and Jurassic)
- Landslide deposits (Holocene and late Pleistocene)

- Unnamed Fault
- Bowman Project Area

Figure 18
Geology Features

Bowman Canyon Habitat Protection and Public Access Improvement Project

Marin County Open Space District

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Sources: MCGIS (parcels), USGS (geology)

Figure 19: Soil Matrix within the Project Area

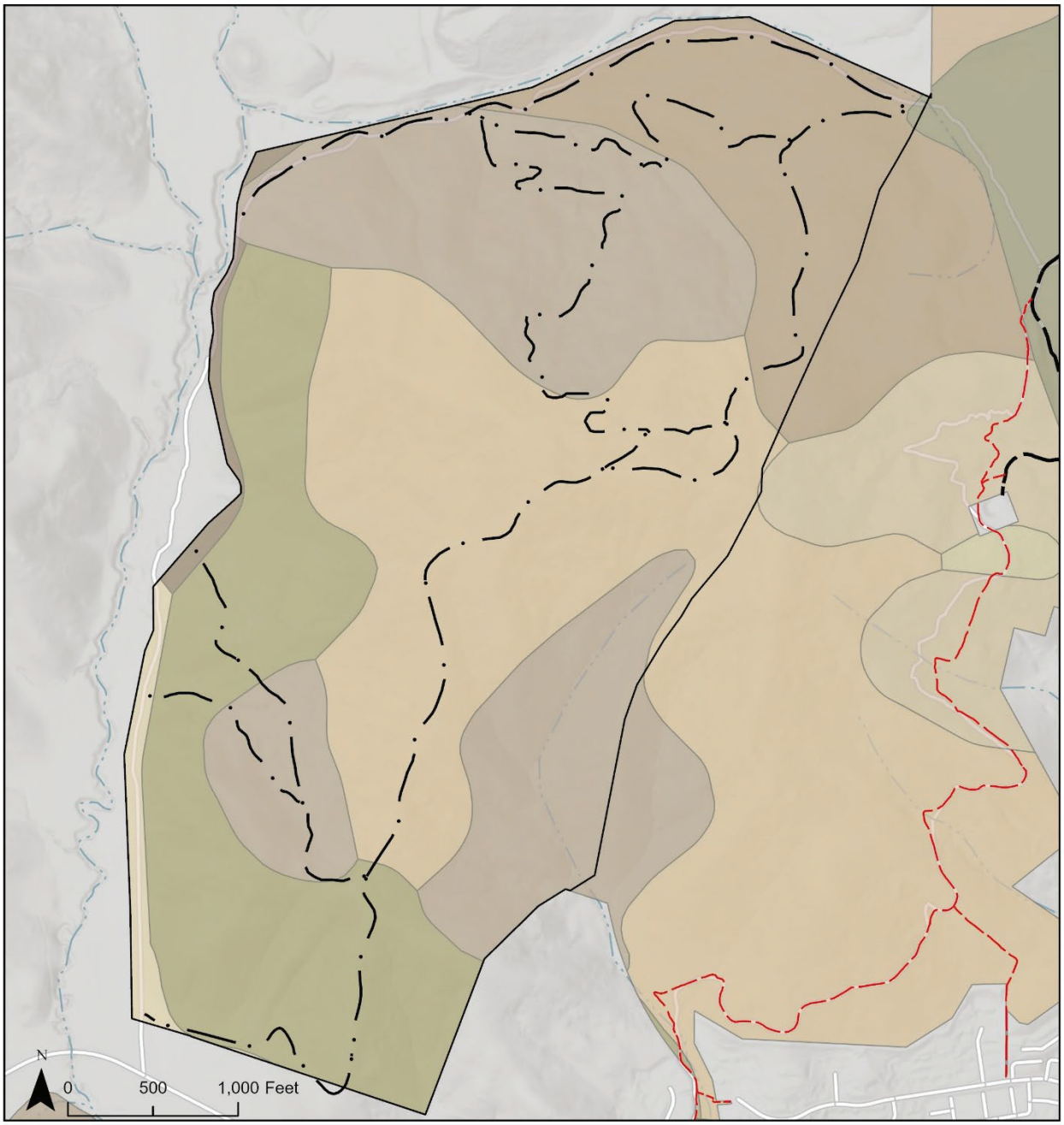


Figure 20: MCOSD Preserves by RTMP Region

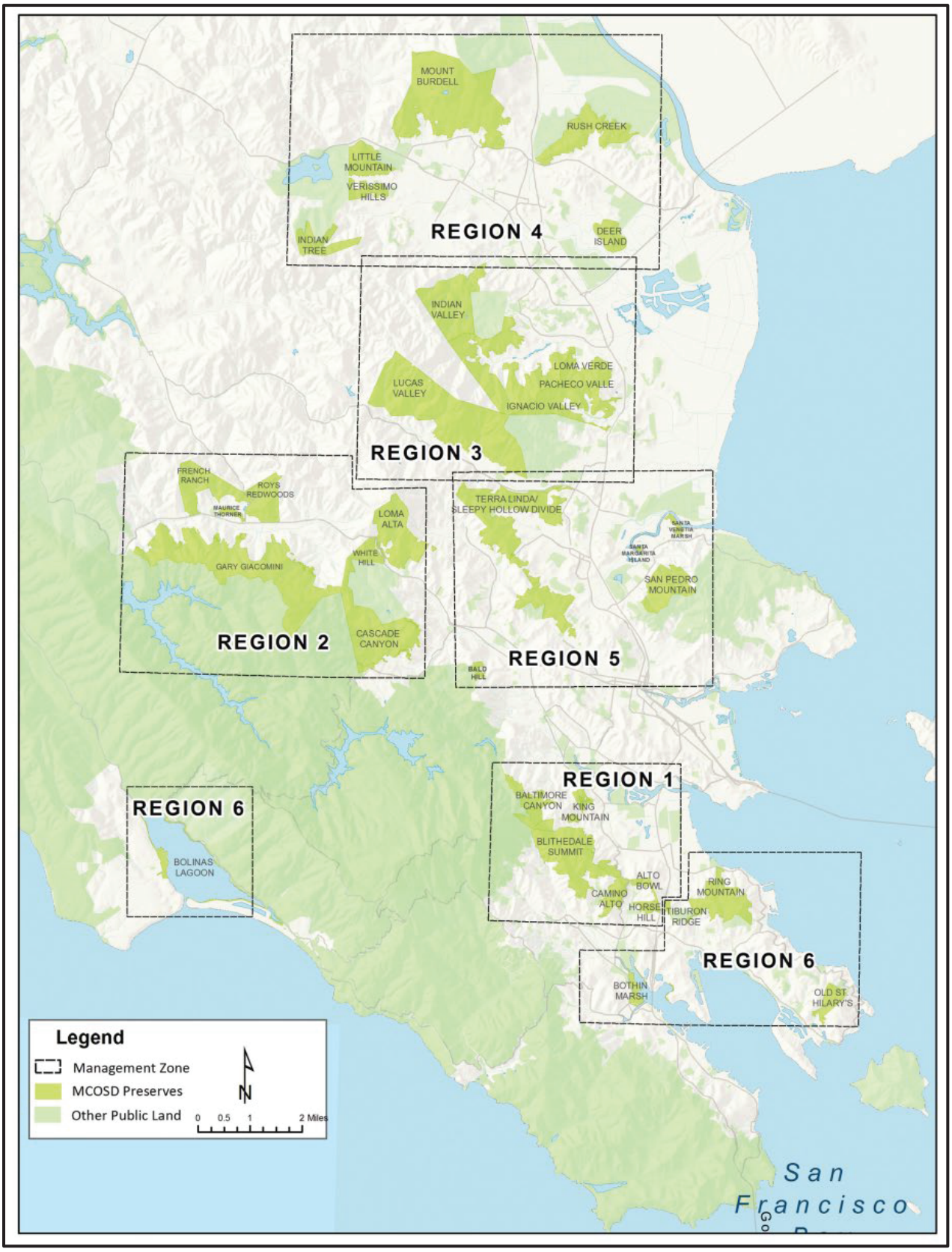


Figure 21: Region 4 Trail Designations

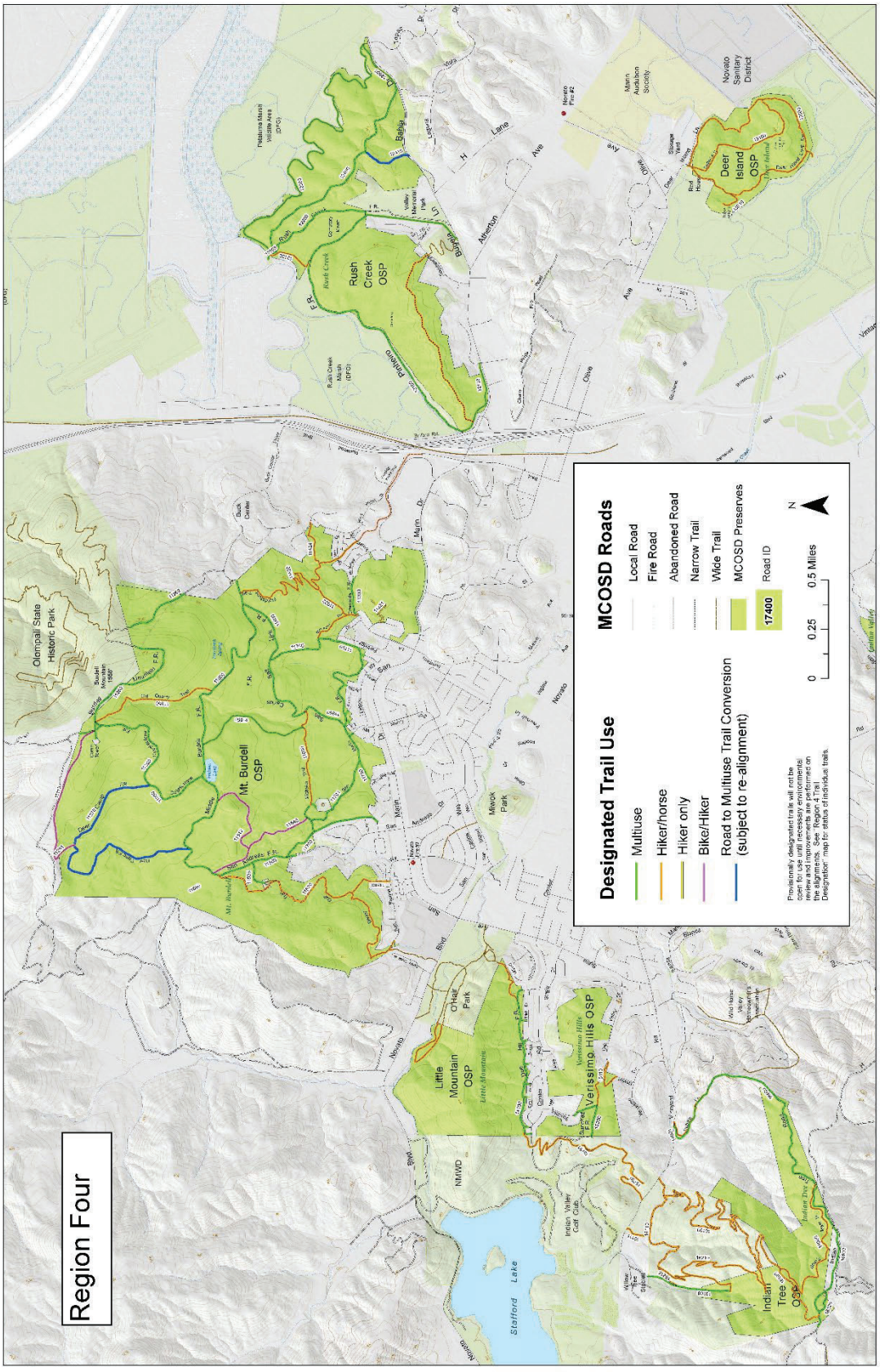


Figure 22: Region 4 VBMP Classifications

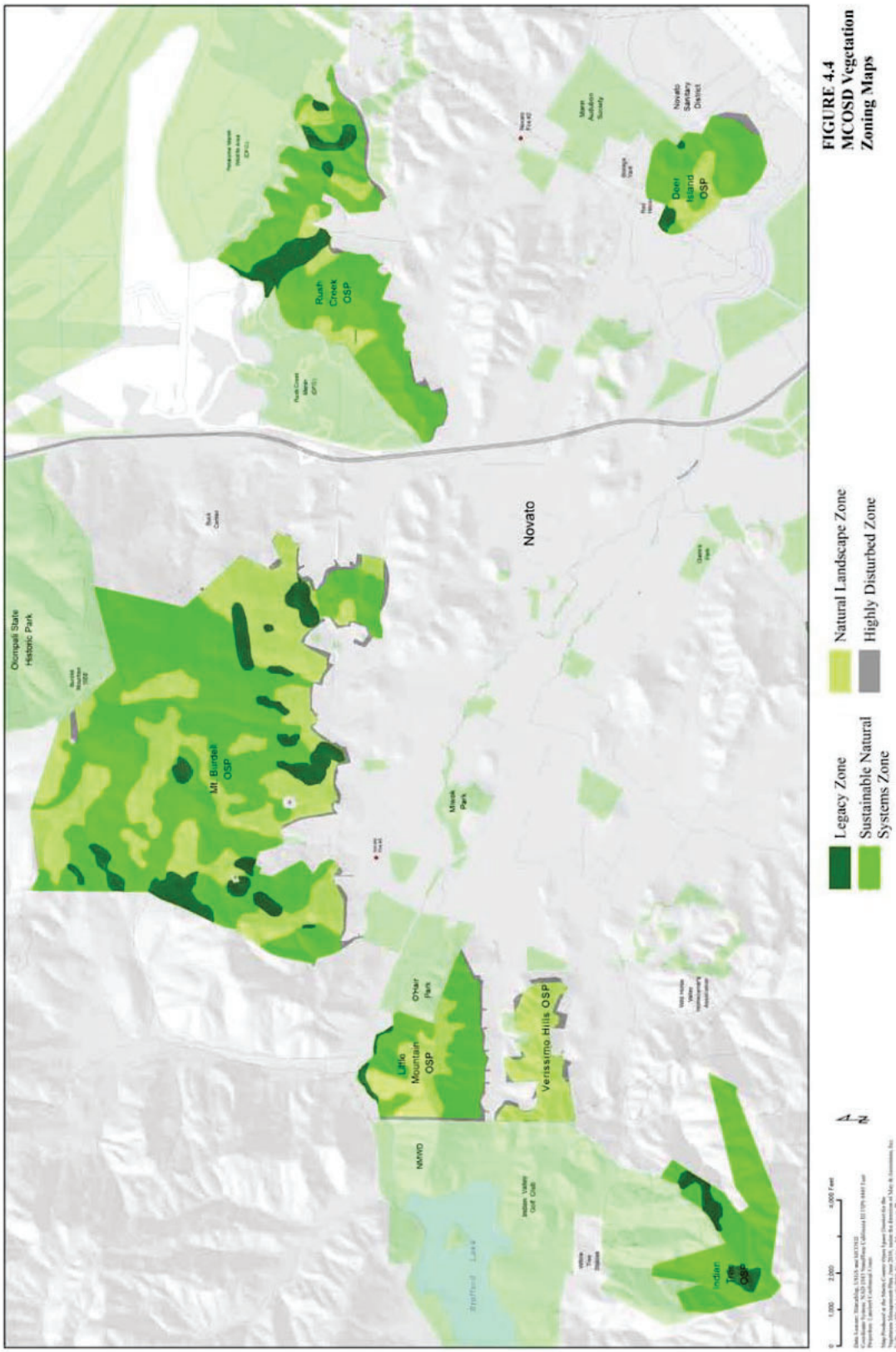


Figure 23: Fire Safe Marin Evacuation Route for the neighborhoods Adjacent to the Project Area

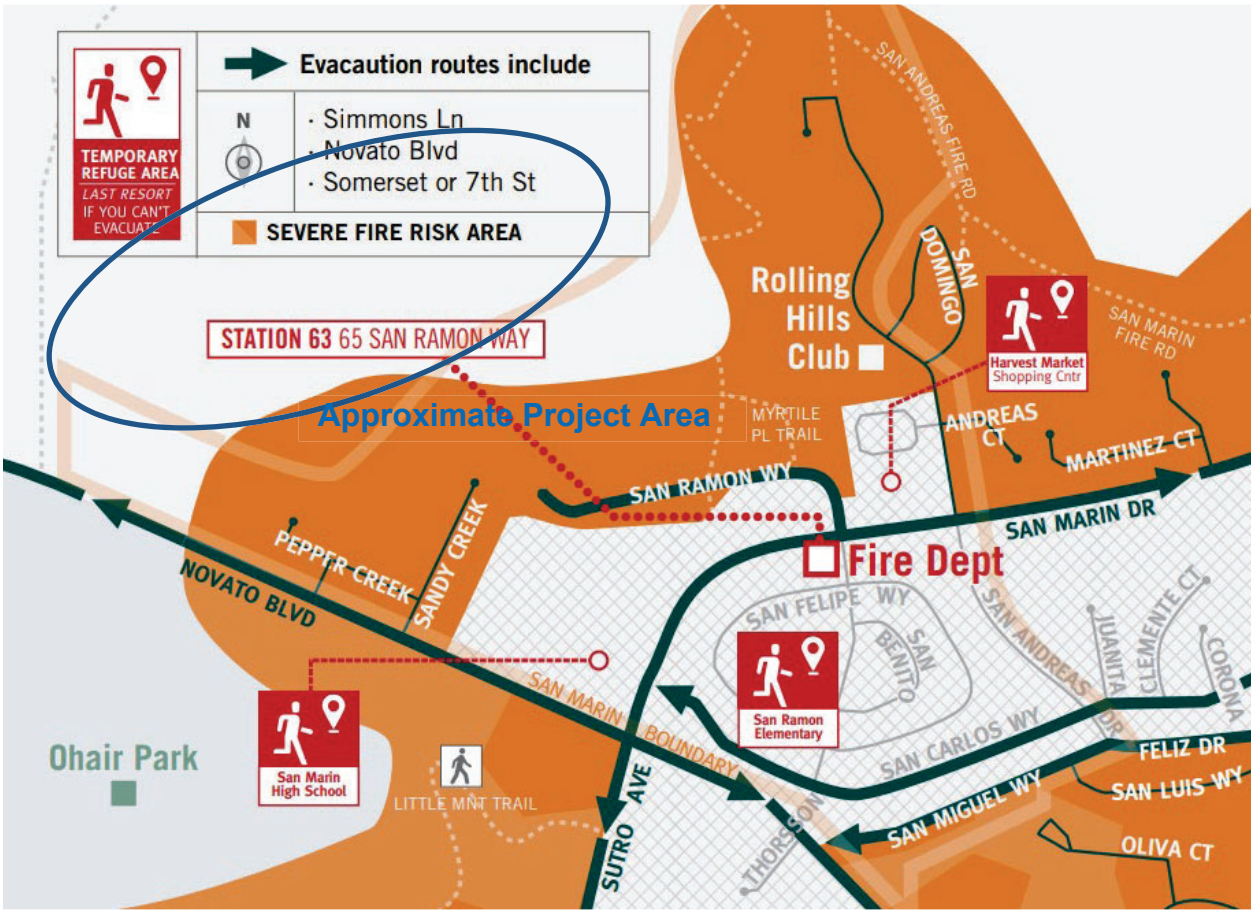
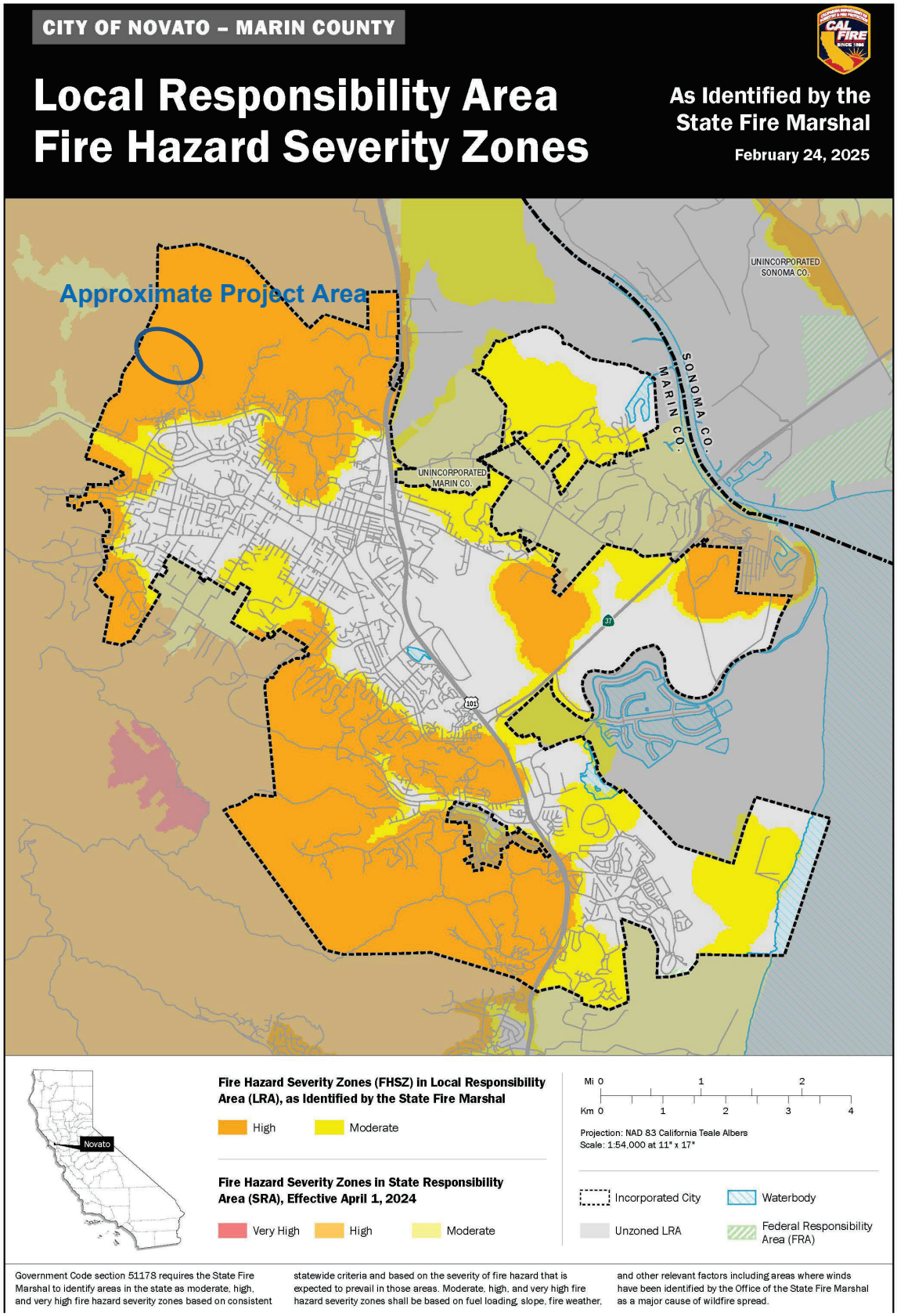


Figure 24: Fire Hazard Severity within the Project Area and Adjacent Neighborhoods



PHOTOS



Photo 1. Steep fall-line social trail with gradient exceeding 40%



Photo 2. Ridgetop segment of Thirteen Oaks Road



Photo 3. Lower Serpentine Road at its upper terminus



Photo 4. Watercourse crossing 3 (WC-03)



Photo 5. Watercourse crossing 5 (WC-05)



Photo 6. Looking up Road WB-01 from WC-01



Photo 7. Looking upslope at axis of WC-01 on Road WB-01



Photo 8. Looking down Road WB-01



Photo 9. Looking upslope at axis of WC-02 on Road WB-01



Photo 1. Looking down Road WB-01 from WC-02



Photo 11. Upper Serpentine Road spring site at WC-07



Photo 2. Fall-line through-cut segment of Upper Serpentine Road



Photo 3. Steep segment of Road WB-02 with gradients of 30%.



Photo 4. Road WB-02 at WC-8, showing stream flows currently diverted down the road.



Photo 5. Road WB-02 looking down natural channel at OBF. Flows are being diverted down the left road approach instead of flowing into channel.



Photo 6.WC-9 in Road WB-02, proposed for removal and restoration

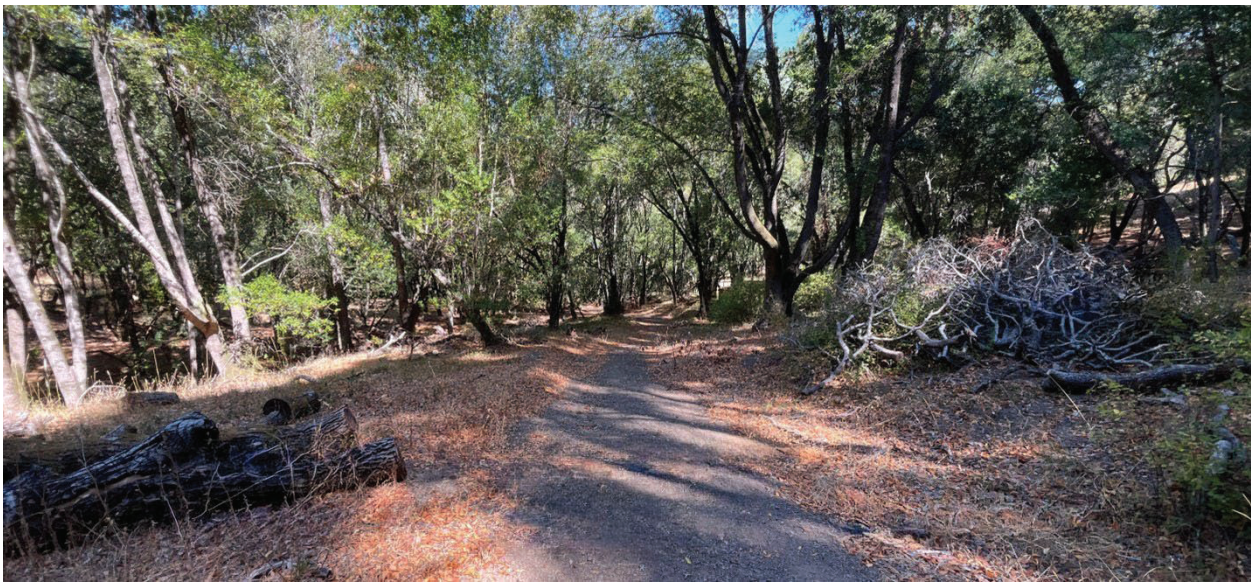


Photo 7. Road WB-02.

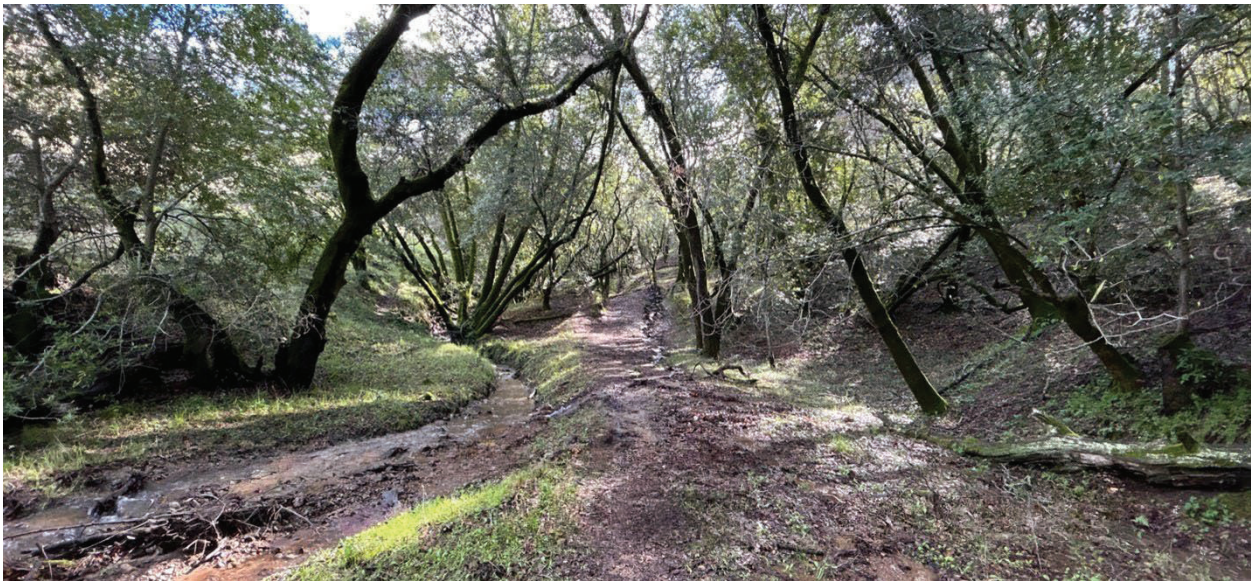


Photo 8. Road WB-03.



Photo 9. WC-10, proposed for removal and restoration



Photo 10. WC-11, proposed for removal and restoration



Photo 11. WC-12, proposed for removal and restoration



Photo 12. WC-13, proposed for removal and restoration



Photo 13. WC-15, proposed for removal and restoration



Photo 14. Stock pond. Road WB-05.



Photo 15. Road WB-05 at WC-16, proposed for removal and restoration

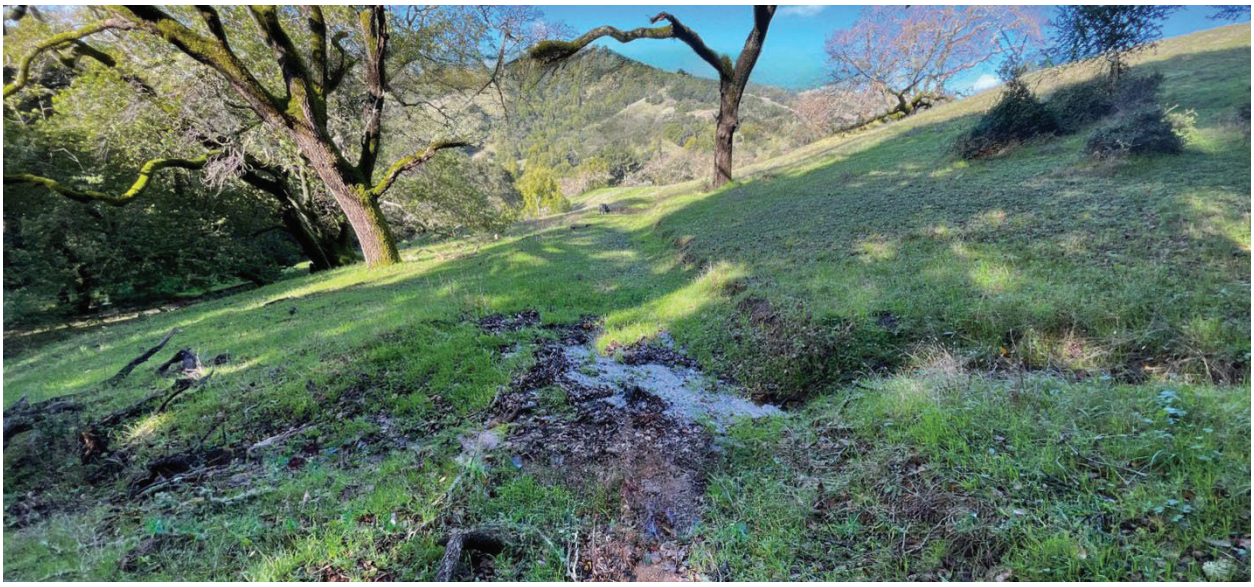


Photo 16. Road WB-05 at WC-17, proposed for removal and restoration



Photo 17. Location of proposed 18-foot trail bridge at WC-18.



Photo 18. Location of proposed armored ford at WC-19



Photo 19. Location of proposed armored for at WC-20.

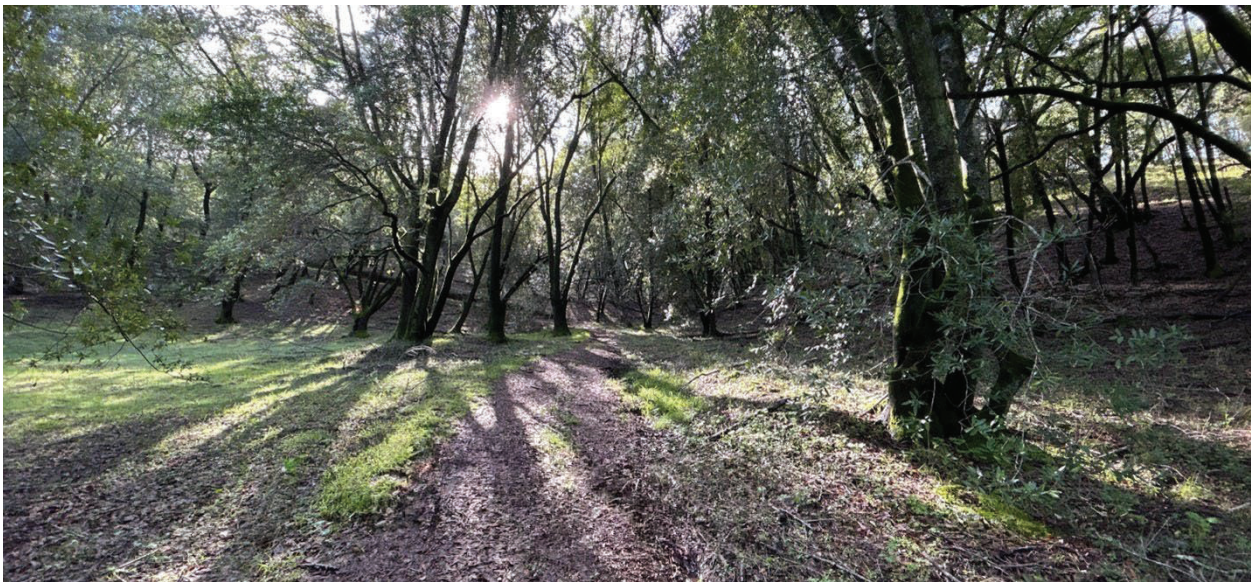


Photo 20. Intersection of T-1 Trail and WC-21 on Road WB-02, where an armored dip is proposed.



Photo 31. WC-21 on alluvial deposits in meadow looking upslope at ephemeral change, and Road WB-02 cutting across the footslope from upper left to lower right.



Photo 32. Proposed T-2 trial alignment through swale feature.

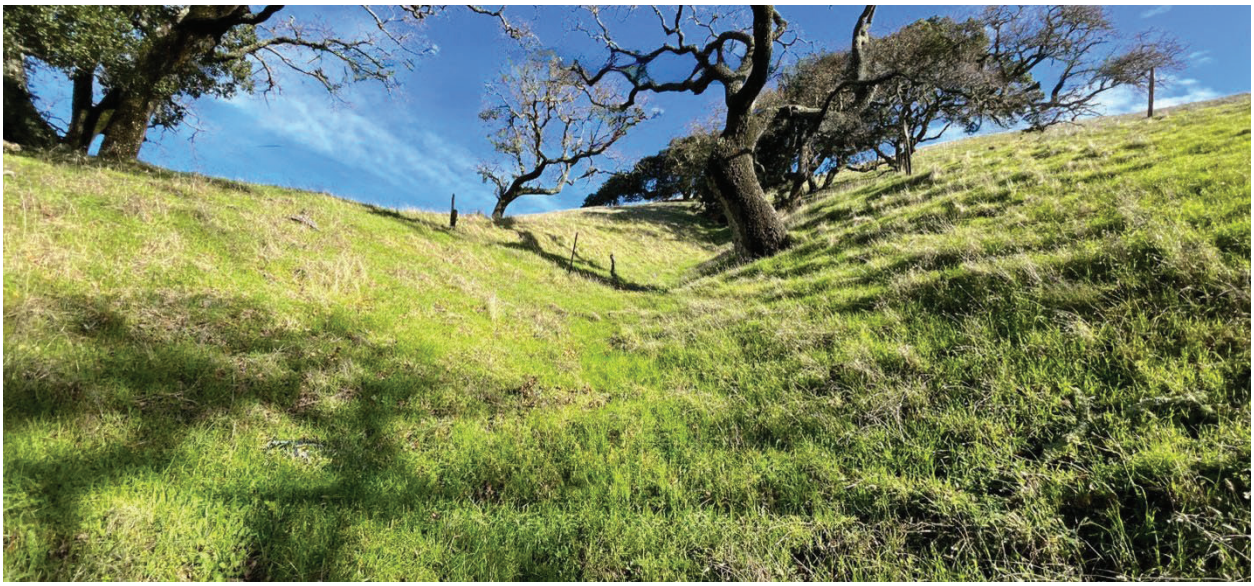


Photo 21. Looking upslope in axis of swale along the proposed alignment of T-3.1 Trail.



Photo 22. Location of proposed armored ford through WC-22, at the current intersection of WB-05 and Thirteen Oaks Road.



Photo 23. Location of proposed puncheon at WC-23.



Photo 36. Location of proposed trail bridge at WC-24.



Photo 24. Location of proposed trail bridge at WC-25.



Photo 38. Location of proposed trail bridge at WC-31.



Photo 39. Looking upstream at WC-32

CEQA FRAMEWORK

This Initial Study has been prepared in compliance with the California Environmental Quality Act (CEQA) and the State CEQA Guidelines. The basic purposes of CEQA are to:

1. Inform governmental decision makers and the public about the potential significant environmental effects of proposed activities;
2. Identify ways that environmental damage can be avoided or significantly reduced;
3. Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible; and
4. Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

The purpose of this Initial Study is to disclose information obtained during the analysis of environmental effects that could result from implementation of the proposed project, including construction, operation, and maintenance, that has a potential for resulting in a direct physical change in the environment or a reasonably foreseeable indirect physical change in the environment. The conclusions of the Initial Study have been utilized to determine whether a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report should be prepared. This determination depends on the conclusions of the Initial Study regarding potentially significant environmental impacts, based on substantial evidence:

Negative Declaration

The Initial Study concludes no potentially significant environmental impacts would occur from implementation of the proposed project and no mitigation measures are required.

Mitigated Negative Declaration

The Initial Study concludes that potentially significant environmental impacts could occur from implementation of the proposed project. Mitigation measures are included to reduce potentially significant environmental impacts to a less than significant level.

Environmental Impact Report

The Initial Study concludes that potentially significant environmental impacts could occur from implementation of the proposed project. Mitigation measures are included to reduce potentially significant environmental impacts to a less than significant level, but potentially significant environmental impacts could still result.

The MCOSD is the CEQA Lead Agency for the proposed project, meaning that the MCOSD has the principal responsibility for carrying out or approving a project, including the decision of which environmental document should be prepared.

SUMMARY OF THE CEQA ANALYSIS

The Initial Study utilized the Checklist included as Appendix G of the State CEQA Guidelines. The Checklist topic areas are presented in alphabetical order

- Aesthetics
- Agriculture and Forest Resources
- Air Quality
- Biological Resources
- Cultural Resources
- Energy
- Geology and Soils
- Greenhouse Gas Emissions
- Hazards and Hazardous Resources
- Hydrology and Water Quality

- Land Use and Planning
- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation
- Tribal Cultural Resources
- Utilities and Service Systems
- Wildfire
- Mandatory Findings of Significance

For each topic area, the Checklist includes specific questions. Each question is answered by evaluating all phases of the proposed project, including construction and post-construction use, in consideration of the potentially significant environmental impacts that could occur for any phase of the proposed project. For each question, one of the four following conclusions is provided with supporting information:

No Impact

The proposed project will not have the impact described.

Less than Significant Impact

The proposed project may result in the impact described, but at a level that is less than significant. Mitigation is not required, however, may still be included.

Potentially Significant Unless Mitigated

The proposed project may result in the impact described at a level that is potentially significant. The incorporation of proposed mitigation measures would reduce the potentially significant impact to a less than significant level. For these responses, proposed mitigation measures are included after the discussion of the potential impact. In order to adopt a Mitigated Negative Declaration, the Lead Agency must agree to incorporate all mitigation measures into the project as approved and a Mitigation Monitoring and Reporting Program must be adopted by the Lead Agency at the time of project approval.

Potentially Significant Impact

The proposed project may have the impact described at a level that is potentially significant. The potentially significant impact cannot be reduced to a less than significant level even with the incorporation of proposed mitigation measures, requiring preparation of an Environmental Impact Report.

The Initial Study concluded that implementation of the proposed project would not result in any potentially significant Impacts that could be mitigated to a less than significant level. Most questions were answered with a No Impact or Less than Significant Impact response.

RTMP BMPs and Proposed Mitigation Measures

The Initial Study incorporates applicable policies and Best Management Practices (BMPs) from the MCOSD's Road and Trail Management Plan (RTMP). The intent of the RTMP policies and BMPs is to reduce the environmental impact from the roads and trail system, reduce resource effects from road and trail projects, and to improve the recreational experience. In each of the Initial Study resource areas, the applicable RTMP Policies and BMPs are listed. Appendix A includes all of the adopted RTMP Policies and BMPs.

Mitigation Measures have been included in the Biological Resources section of the Initial Study Checklist to address the specific potentially significant impacts associated with implementation of the proposed project and/or augment the broader RTMP BMPs. The proposed Mitigation Measures are provided

beginning on the next page and within the Biological Resources section of the Initial Study Checklist topic area.

With implementation of the RTMP Policies and BMPs and these mitigation measures, potentially significant environmental impacts would be reduced to a less than significant level.

PROPOSED MITIGATION MEASURES

Applicable RTMP Policies and BMPs would be implemented to minimize potential impacts on biological resources however, the implementation of the proposed project could result in potential impacts to nesting birds and California red-legged frogs. The following mitigation measures augment the applicable RTMP policies and BMPs.

Nesting Birds

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to minimize or avoid potential environmental impacts to biological resources, including special-status and nesting birds. Mitigation Measure BIO-1 clarifies how RTMP BMP Special-Status Wildlife-3: Seasonal Restrictions During Bird Nesting Season would be implemented and would supersede the buffers included in the RTMP BMPs. Implementation of Mitigation Measure BIO-1, along with implementation of applicable RTMP BMPs, would reduce potential impacts on special-status and nesting birds to a less than significant level.

Mitigation Measure BIO-1: Special-status and Nesting Birds

The MCOSD shall implement the following seasonal restrictions to protect nesting birds. If work will occur outside the nesting bird window of January 1 to July 31, surveys and avoidance measures shall not be necessary for special-status and nesting birds. The broadest nesting bird window based on Table BIO-1: Guideline Buffers by Species or Guild would be January 1 – October 31. The project area does not include habitat for double-crested cormorant, herons, egrets, or bitterns and these species would not be affected by implementation of the proposed project. The project area was determined to be not suitable for Northern spotted owl by Point Blue Conservation Science during their 2023 surveys of the project area. For these reasons, the nesting bird window of January 1 – July 31 is appropriate for the proposed project.

- Surveys shall be conducted within 7 days of the start of active ground-disturbing activities within the general buffers identified in Table BIO-1: Guideline Buffers by Species or Guild. If the work area is left unattended for more than 7 days following the initial surveys, additional surveys shall be completed. This timing is standard protocol based on common knowledge of avian biology. Ongoing construction monitoring of active nests shall occur to ensure no nesting activity is disturbed.
- If the biologist finds no active nesting or breeding activity, work can proceed without restrictions.
- If active raptor or owl nests or active nests of other special-status birds are identified within the buffer area guidelines included in Table BIO-1: Guideline Buffers by Species or Guild, a qualified biologist shall determine whether construction activities may impact the active nest or disrupt reproductive behavior. If it is determined that construction would not affect an active nest or disrupt breeding behavior, construction can proceed without restrictions. The determination of disruption shall be based on the species' sensitivity to disturbance, which can vary among species; the level of noise or construction disturbance; and the line of sight between the nest and the disturbance. If the biologist determines activities would be detrimental to the species nest, the buffer area guidelines identified in Table BIO-1: Guideline Buffers by Species or Guild would be established until the nest has been vacated, meaning that the chicks have fledged.
- If state and/or federally listed birds are found breeding within the construction area, activities shall be halted until the chicks have fledged. If construction activities must continue and would incur take of the listed species, MCOSD would consult with the CDFW and USFWS prior to the initiation of work that would result in take. If construction activities must continue and would not incur take of the listed species, MCOSD would establish the buffer area

guidelines included in Table BIO-1: Guideline Buffers by Species or Guild, until the nest has been vacated, meaning that the chicks have fledged.

TABLE BIO-1: GUIDELINE BUFFERS BY SPECIES OR GUILD

Species/Guild	Recommended Buffer meters/feet	Nesting Season
Diurnal Raptors (i.e.: Cooper's hawk)	76 meters (250 feet)	January 01 – July 31
Owls (except northern spotted owl)	50 meters (160 feet)	January 01 – July 31
Northern Spotted Owl	402 meters (1,320 feet or ¼ mile)	February 01- July 31
Double-crested Cormorant	50 meters (160 feet)	March 01 – October 31
Herons/Egrets/Bitterns	100 meters (330 feet)	January 01 – September 30
Waterfowl (Ducks/Geese/Swans)	30 meters (100 feet)	March 01 – July 31
California Black Rail	213 meters (700 feet)	February 01 – August 31
Ridgway's Rail	213 meters (700 feet)	February 01 – August 31
Larger Passerines: Corvids (crows, jays), Thrushes	20 meters (65 feet)	March 01 – July 31
Most Songbirds	10 meters (30 feet)	March 01 – July 31
Hummingbirds	10 meters (30 feet)	January 01 – July 31
Woodpeckers	15 meters (50 feet)	March 01 – July 31
Band-tailed Pigeon (BTPI)	30 meters (100 feet)	March 01 – July 31
Pigeons/Doves (except BTPI)	20 meters (65 feet)	March 01 – July 31
Species of Special Concern (olive-sided flycatcher, grasshopper sparrow, San Pablo song sparrow)	22 meters (75 feet)	March 01 – July 31
Blackbirds (tri-colored and red-winged)	30 meters (100 feet)	March 01 – July 31
Turdidae (robins, thrushes)	20 meters (65 feet)	March 01 – July 31
Killdeer	22 meters (75 feet)	March 01 – July 31

California Red-Legged Frog

Implementation of the proposed project has the potential to result in impacts to California red-legged frogs due to construction activities occurring within and adjacent to Stream Segments A and B, which provide potentially suitable non-breeding aquatic habitat. To reduce the potential for impacts, construction activities would occur during the dry season when of California red-legged frogs are not expected to be present. The following avoidance would be implemented to supplement the RTMP BMPs required by the RTMP:

Mitigation Measure BIO-2: California Red-Legged Frog Avoidance Measures

The qualified biologist(s) conducting surveys/inspections for California red-legged frog and monitoring construction activities shall be approved to conduct these tasks by the CDFW.

- Prior to construction, the CDFW-approved qualified biologist shall conduct surveys for California red-legged frogs using a CDFW approved methodology. The results of the surveys shall be provided to CDFW prior to construction. If California red-legged frogs or evidence of their presence is found, CDFW shall be notified immediately, and construction shall not occur without written approval from CDFW allowing the project to proceed. Presence of California red-legged frogs may require a CESA ITP before project activities may commence.
- The required worker's awareness training will be provided by a CDFW-approved biologist. All persons employed on the project must complete the training before working on the project site. Instruction shall consist of a presentation by the designated qualified biologist that includes a discussion of the biology and general behavior of California red-legged frogs and any other sensitive species which may be in the area, how they may be encountered within the work area, and procedures to follow when they are encountered. The status of state and federally listed species including legal protection, penalties for violations and project-specific protective management measures shall be discussed. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to on-site project activity. Upon completion of the program, employees shall sign an affidavit stating they attended the program and understand all protection measures.
- The work area and nearby vicinity shall be inspected daily by the qualified biologist before work begins and during construction each day. This shall include searching cavities under rocks, within vegetation such as sedges and other clumped vegetation, and under undercut banks. If California red-legged frogs are encountered during project activities, all work shall cease and CDFW shall immediately be notified. Work shall not recommence without written approval from CDFW.
- Any erosion control materials used shall not entrap animals. Jute mesh, loose, open weave textile fiber netting, burlap or non-binded materials such as rice straw shall be used for erosion control or other purposes. Tightly woven fabric such as jute should have mesh size of less than one centimeter while loosely woven materials should be greater than six centimeters to avoid entrapment. No plastic mono-filament matting shall be used for erosion control.
- To prevent the spread of diseases and pathogens to amphibian populations such as the chytrid fungus (*Batrachochytrium dendrobabdis*), all who enter suitable California red-legged frog habitat shall sterilize boots and any equipment used, scrubbing off surfaces with a 70 percent ethanol solution or a 3 to 6 percent sodium hypochlorite solution and rinsing clean with sterilized water before entering the creek. Staff shall avoid cleaning equipment in the immediate vicinity of the creek.

DETERMINATION

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

CEQA Checklist Topic Areas

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☒ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities/Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial evaluation:

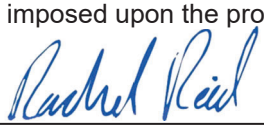
☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

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

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

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

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



Rachel Reid, Environmental Planning Manager
Marin County Community Development Agency

AESTHETICS

TABLE 2: AESTHETICS CHECKLIST QUESTIONS

	Except as provided in Public Resources Code Section 20199, would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less-than-Significant Impact	No Impact
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? *(Public views are those that are experienced from publicly accessible vantage points)*. If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

Setting

The aesthetics of the project area are characterized by the rolling hills, oak-bay woodlands, serpentine grasslands, and expansive viewsheds from the ridgelines of the Mount Burdell Open Space Preserve. The 409-acre Bowman Canyon addition to the Mount Burdell Open Space Preserve rises in elevation from lower slopes and drainages to steep ridgelines and summits. These landscape elements provide a scenic, undeveloped visual backdrop of public open space and contribute to the region's aesthetic value.

Vegetation communities within the project area are diverse and include grasslands, oak woodlands, coastal scrub, and several sensitive plant communities such as Purple Needlegrass Grassland, Valley Oak Woodland, and California Bay Forest and Woodland. These vegetation communities create distinct textural and color patterns across the terrain, contributing to the seasonal variation in the visual landscape. In particular, the serpentine grasslands, which support unique endemic plant species, add visual interest through patchwork groundcover and open expanses on moderate slopes.

The project area features a mix of historical ranch roads and informal social trails, some of which are eroded or overgrown, which informally provide access for hikers, equestrians, and cyclists. The surrounding land uses include private ranch lands to the west and north and suburban residential areas to the south and east, framing the Preserve within a transitional zone between undeveloped open space and developed urban areas. Expansive views of San Pablo Bay, Stafford Lake, and surrounding open space preserves are visible from several high points along the trail network, including the Bowman Canyon summit and ridgeline trails. The Bowman Canyon parcels form a critical western extension of the 2,035-acre Mount Burdell Open Space Preserve.

The photos in the graphics section of this document are representative of the views within the project area.

Applicable RTMP Policies and BMPs

The RTMP does not include Policies and BMPs specific to Aesthetics. The RTMP Policies and BMPs and are provided, in their entirety, in Appendix A.

CEQA Context

Potentially significant environmental impacts associated with aesthetics can be subjective in nature because the response to aesthetics varies from person to person. In terms of methodology, potentially significant environmental impacts to aesthetics have been determined by identifying whether project elements would result in the loss or degradation of a scenic attribute or in a demonstrable negative effect to overall visual quality.

a) Would the Project have a substantial adverse effect on a scenic vista?

Less Than Significant Impact

A scenic vista can be defined as a public viewpoint that offers expansive views of a visually valued landscape for the benefit of the general. There are no officially designated scenic vistas in the project area. Mount Burdell Open Space Preserve includes several non-designated scenic vistas and implementation of the proposed project would not affect these existing scenic vistas.

The proposed project has been designed to avoid removing trees and minimal vegetation removal would occur in the various plant communities to prevent damage during installation of the bridges. Vegetation removal and tree pruning would not result in a substantial adverse effect on scenic vistas because the entire project area is heavily vegetated and in context, the pruning would not result in a substantial adverse effect on a scenic vista. Please see the Biological Resources section of this CEQA Checklist for additional discussion regarding the potential impacts associated with vegetation removal.

Construction activities including staging, grading, and tree trimming could temporarily alter views within the project area. These disruptions would be temporary in nature, limited to the area of construction only, and would not result in a substantial adverse effect on scenic vistas. For these reasons, implementation of the project would result in less than significant impact to scenic vistas.

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

No Impact

Scenic resources can be defined as those landscape patterns and features that are visually or aesthetically pleasing. These include, but are not limited to, trees, rock outcroppings, and historic buildings. Scenic areas, open spaces, rural landscapes, and vistas also contribute to a net visual benefit for the viewer. The California Department of Transportation (Caltrans) manages the California Scenic Highway Program to protect State highways located in areas of outstanding natural beauty. The state legislature created the California's Scenic Highway Program in 1963 to protect and enhance the natural scenic beauty of California highways and adjacent corridors, through special conservation treatment. There are no designated scenic highways in Marin County and the project contains no structures, historic or otherwise.[38][39] There are no state highways within or within viewing distance of the project area. Furthermore, no trees, rock outcroppings, or historic buildings would be affected by implementation of the proposed project. For these reasons, implementation of the proposed project would have no impact to scenic resources within a state scenic highway.

c) In non-urbanized areas, would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings? *(Public views are those that are*

[38] California Department of Transportation (Caltrans), 2019. California Scenic Highway Mapping System. https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways

[39] California Department of Transportation (Caltrans), 2015. Officially Designated Scenic Highways. https://dot.ca.gov/-/media/dot-media/programs/design/documents/od-county-scenic-hwys-2015-a11y.pdf

***experienced from publicly accessible vantage points)*. If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?*)**

Less than Significant Impact

Visual character can be defined as the perceived contrast between the existing visual elements of an area and how the area will look after the project is implemented, as a measure of how compatible the project will be with the existing visual environment after it is implemented. The proposed project is located within an open space preserve, which is accessed by the public for outdoor recreation. Publicly accessible vantage points would be from the existing trails.

Implementation of the proposed project would result in nominal changes in the visual character of the project area. The proposed trail decommissioning and trail improvements have been designed to blend into the existing visual character of the project area. Minor vegetation removal is not expected to substantially degrade the existing visual character or quality of public views of the project area and surroundings, particularly because substantial vegetation would remain. Implementation of the proposed project would include small modifications to the visual environment from the trail re-routes and decommissioning of trail segments. Trail improvements are not expected to change the visual character of these areas.

Given the design of the changes to be generally compatible with semi-natural areas, their location in the visual setting, and the limited scale compared to the entire preserve, implementation of the proposed project would result in a less than significant impact on visual quality and character of public views.

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

No Impact

New sources of light and glare can occur from lighting associated with buildings and from exterior light sources such as street lighting, building illumination, security lighting, and landscape lighting. Glare is an objectionable brightness, the effect usually created by the reflection of sunlight or artificial light from highly polished surfaces, including windows and automobile glass during the daytime. During nighttime, glare is usually the result of the viewer being within the line of sight of a bright source of light, such as from a building or vehicle headlamps that contrast with surrounding low-ambient light conditions. Light pollution is an unwanted consequence of outdoor lighting and includes such effects as sky glow, light trespass, and glare. Light trespass is light cast where it is not wanted or needed, such as light from a streetlight or a floodlight that illuminates a neighbor’s bedroom at night making it difficult to sleep.

The Mount Burdell Open Space Preserve does not contain any sources of light or glare. However, local area roads adjacent to the preserve may have some lighting, and minor amounts of offsite lighting from neighboring residences may affect the preserve at night.

The proposed project would not include any new sources of light or glare and, therefore, the project would not create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. For these reasons, the proposed project would result in no impact on new sources of light or glare.

AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

TABLE 3: AGRICULTURE AND FORESTRY RESOURCES CHECKLIST QUESTIONS

	Would the Project:	**Potentially Significant Impact**	**Less than Significant with Mitigation**	**Less-than-Significant Impact**	**No Impact**
a)	Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b)	Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c)	Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined by Public Resources Code §4526), or timberland zoned Timberland Production (as defined by Government Code §51104(g))?	☐	☐	☐	☒
d)	Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e)	Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Setting

The California Department of Conservation's Farmland Mapping and Monitoring Program (FMMP) provides a classification system based on technical soil ratings and current land use. The FMMP is an informational service only and does not have regulatory authority over local land-use decisions. The minimum land use mapping unit is ten acres unless specified; the map incorporates smaller units of land into the surrounding map classifications. Pursuant to CEQA Guidelines Appendix G, the term "Farmland" refers to FMMP map categories Prime Farmland, Unique Farmland, and Farmland of Statewide Importance (hereafter collectively referred to as "Farmland"). Generally, any conversion of land from one of these categories to a lesser quality category or a non-agricultural use would be an adverse impact. These map categories are as follows:

Prime Farmland: Land which has the best combination of physical and chemical characteristics to produce crops. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods.

Unique Farmland: Land of lesser quality soils used to produce specific high economic value crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming methods. It is usually irrigated but may also include non-irrigated orchards or vineyards.

Farmland of Statewide Importance: Land that is like Prime Farmland but with minor shortcomings, such as greater slopes or less ability to hold and store moisture.

Mount Burdell Open Space Preserve does not contain any prime, unique, or important farmland. The California Department of Conservation maps this area as "Grazing"[40]. The private ranch immediately north of the project area utilizes the project area for grazing four to six months annually, typically between the months of January to June. Adjustments to the grazing timeframe are dependent on forage availability which is driven by weather and herd size.

Applicable RTMP Policies and BMPs

The RTMP does not include Policies and BMPs specific to Agriculture and Forestry Resources. The RTMP Policies and BMPs and are provided, in their entirety, in Appendix A.

CEQA Context

A project would normally result in a significant impact to agriculture and/or forestry resources if the Project will alter existing agricultural land uses or land use designations. Generally, any conversion of land from one of the Farmland categories to a lesser quality category or a non-agricultural use would be a potentially significant impact.

a) Would the Project convert prime farmland, unique farmland, or farmland of statewide importance (Farmland) as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to a non-agricultural use?

No Impact

As discussed above, the project area does not contain agricultural use and the use of the project area would remain as open space preservation and recreation. For these reasons, implementation of the proposed project would result in no impact to farmland because it would not convert any farmland to a non-agricultural use.

[40] California Department of Conservation, 2018. Marin County, Important Farmland Data Availability https://www.conservation.ca.gov/dlrp/fmmp/Pages/Marin.aspx

b) Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact

All of the parcels comprising the site are designated A60, Agriculture and Conservation uses. The proposed project would not conflict with this zoning designation as the proposed project's primary purpose is to protect sensitive habitats, reduce erosion, and improve public access through sustainable trail planning, which are consistent with the conservation goals of the A60 zoning. There are no Williamson Act contracted parcels on the site. For these reasons, implementation of the proposed project would result in no impact to existing zoning for agricultural use or a Williamson Act contract.

c) Would the Project conflict with existing zoning for, or cause rezoning of, forest land *(as defined in Public Resources Code §12220(g)),* timberland *(as defined by Public Resources Code §4526),* or timberland zoned Timberland Production (as defined by Government Code §51104(g))?

No Impact

In accordance with the definition provided in California Public Resources Code Section 12220(g), "forest land" is land that can support, under natural conditions, 10 percent native tree cover of any species, including hardwoods, and that allows for the preservation or management of forest-related resources, such as timber, aesthetic value, fish and wildlife, biodiversity, water quality, recreational facilities, and other public benefits. "Timberland" means land, other than land owned by the federal government and land designated as experimental forest land, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees.

The proposed project is located exclusively within the Mount Burdell Open Space Preserve, which is zoned as Agriculture and Conservation by the County of Marin. The open space land use designation and zoning of all of the parcels is intended to support conservation of nature preserves and the proposed project supports and continues that use. The project area does not include lands with forest land, timberland, or timberland production. For this reason, implementation of the proposed project would result in no impact to lands zoned as forest land, timberland, or timberland production.

d) Would the Project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact

As described above, the Mount Burdell Open Space Preserve is used for preservation and outdoor recreation, does not contain zoned forest land, and is not used for any timber related activities. Implementation of the proposed project will require removal of some small brush and trees will be pruned to prevent damage during installation of the bridges and when large construction equipment accesses the project area. Vegetation removal and tree pruning would not result in the loss of forest land or conversion of forest land to non-forest use. For these reasons, implementation of the proposed project would result in no impact to forestland. Please see the Biological Resources section of this CEQA Checklist for additional discussion regarding the potential impacts associated with vegetation removal.

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

No Impact

Mount Burdell Open Space Preserve does not include farmland or forest land. Implementation of the proposed project would not convert farmland to a non-agricultural use of convert forest land to a non-forest use. For these reasons, implementation of the proposed project would result in no impact association with farmland or forest land conversion.

AIR QUALITY

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

TABLE 4: AIR QUALITY CHECKLIST QUESTIONS

	Would the Project:	Potentially Significant Impact	Less than Significant with Mitigation	Less-than-Significant Impact	No Impact
a)	Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b)	Result in a cumulatively considerable net increase of any criteria pollutant under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c)	Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
d)	Result in other emissions *(such as those leading to odors or dust)* adversely affecting a substantial number of people?	☐	☐	☐	☒

Setting

Air quality plans and standards set regarding criteria pollutants under applicable federal and state ambient air quality standards are related topics pertaining to ambient air quality and influenced by local, state, and federal regulations. Sensitive receptors to substantial pollutant concentrations refers to those facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. There are no air quality standards for odors.

Ambient Air Quality and Climate

Ambient air quality conditions in an area are affected by the rate, quantity, and source location of air pollutant emissions and by natural factors that affect the transport, dilution, and dispersal of air pollutant emissions including topography, air temperature, wind speed and direction, atmospheric stability, and sunlight. Ambient concentrations of air pollutant emissions are determined by the amount of air pollutant emissions and the atmosphere's ability to transport and dilute these emissions. Air quality is described by the concentration of various pollutants in the atmosphere, or the emissions of a pollutant or contaminant. Units of concentration are generally expressed in parts per million (ppm) or micrograms per cubic meter ($\mu g/m^3$). Emissions are typically expressed as grams per mile, pounds per day, or tons per year.

Marin County is located within the nine-county San Francisco Bay Area Air Basin (Bay Area Air Basin), which encompasses Alameda, Contra Costa, Santa Clara, San Francisco, San Mateo, Marin, and Napa Counties, and the southern portions of Solano and Sonoma Counties. The Bay Area Air Basin is affected by proximity to San Francisco Bay and the Pacific Ocean, the coastal mountain ranges, inland valleys, and other topographical features that contribute to wind flow patterns and affect air quality. The Bay Area Air Basin is characterized by its Mediterranean type climate with warm dry summers and cool wet winters.

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, the one-mile-wide strait connecting San Francisco Bay and the Pacific Ocean, and on the north by the Petaluma Gap, which is a wind gap named after a coastal mountain opening that

stretches east from the Pacific Ocean through the town of Petaluma and then roars south to San Pablo Bay. Although there are a few mountains above 1,500 feet, most of the terrain is between 800 and 1,000 feet high. These features affect weather and air quality.

The west coast and southern portions are often subject to cool marine air and substantial fog due to closer proximity to the Pacific Ocean than the eastern side of Marin County, which is warmer and has less fog, due in part to further distance from the Pacific Ocean. The distance from the Pacific Ocean to eastern Marin County allows the marine air to be heated along the way, contributing to warmer average temperatures. In southern Marin the distance from the ocean is short and elevations are lower, resulting in higher incidence of maritime air in that area. In the winter, proximity to the ocean keeps the coastal regions relatively warm, with temperatures varying little throughout the year. The western side of Marin County has cooler weather than the eastern side because of its proximity to the ocean. The hills that separate eastern Marin from western Marin occasionally block the flow of the marine air, which also contribute to warmer temperatures. The temperatures of 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.

In Marin County, prevailing winds are generally from the northwest, with wind speeds highest along the west coast and average between 8 and 10 miles per hour. In the summer months, areas along the coast are usually subject to onshore movement of cool marine air. The complex terrain in central Marin creates sufficient friction to slow the air flow. Annual rainfall in the mountains is generally higher than in most parts of the Bay Area, averaging 37 to 49 inches. Most of the rainfall across the county occurs November through March.

Climate within the project area is a typical Mediterranean climate, with cool wet winters and warm dry summers. Average annual precipitation is 29 inches, occurring as rain predominantly between the months of October and May.

Air pollution potential is highest in eastern Marin County where most of Marin County's population lives in small, sheltered valleys that act like a series of miniature air basins. Air pollution potential is less along the Marin County coast and in southern Marin County, because the influence of marine air from the Pacific Ocean helps to keep air pollution at a minimum. Towards north Marin County, there is greater potential for air pollution to build up because the valleys are more sheltered from the sea breeze. While Marin County does not have many polluting industries, the air quality on its eastern side, especially along the U.S. 101 corridor, may be affected by emissions from increasing motor vehicle use within and through the county.

Applicable Air Quality Regulations

The federal Clean Air Act of 1970 directed U.S. Environmental Protection Agency (EPA) to establish national ambient air quality standards (NAAQS) at a level to provide an adequate margin of safety to protect public health for six air pollutants: ozone (O3), carbon monoxide (CO), sulfur dioxide (SO2), nitrogen dioxide (NO2), lead (Pb) and suspended particulate matter (PM). Particulate matter is further classified as PM10, which are respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less and PM2.5, which are fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less. These pollutants are commonly referred to as “criteria pollutants.” The state of California also establishes air quality standards, referred to as “state standards.” State standards are determined by the California Air Resources Board (CARB), based on technical input from the Office of Environmental Health Hazard Assessment (OEHHA). In many cases, state standards are more stringent than national standards.

The Bay Area Air Quality Management District (BAAQMD) maintains a network of air quality and meteorological monitoring stations within the Bay Area Air Basin that monitor air quality, compliance with applicable ambient standards, and atmospheric phenomena, especially weather and weather conditions. The BAAQMD measures levels of O3, CO, NO2, SO2, PM10, and PM2.5. The monitoring station closest to the project site is in San Rafael, approximately five miles to the east of the project area, at which all

criteria pollutants are measured except for SO2. Ambient concentrations of all six of the criteria pollutants have been greatly reduced in the Bay Area over the past four decades. The Bay Area Air Basin attains national and state standards for most criteria pollutants. While the Bay Area Air Basin has achieved reductions in ozone and particulate matter, all state and national standards have not yet been attained for these criteria pollutants. The Bay Area Air Basin is currently classified as a federal and state non-attainment area for ozone and national particulate matter ambient air quality standards. Ozone is primarily a problem in the summer, and PM2.5 pollution in the winter. Marin County in general does not experience problems with ozone, but the hilly terrain and colder winter temperatures can trap PM2.5 near the surface, resulting in air quality that exceeds health standards.[41]

Ground level ozone, often referred to as smog, is not emitted directly, but is formed in the atmosphere through complex chemical reactions. Fortunately, ozone is not a pollutant that adversely affects Marin County; however, emissions from motor vehicle use in Marin County contribute to high ozone levels in other parts of the Bay Area. Motor vehicles are the largest source of ozone precursor emissions, such as nitrogen oxides (NOx) and reactive organic gases (ROG), in the Bay Area.

Particulate matter is a complex mixture of microscopic particles of solid or liquid matter suspended in the air that originate from natural sources such as wildfire or human-caused sources such as burning fuel. They can impact climate and precipitation that result in adverse health implications. Exposure to particulate matter can result in short-term and long-term health impacts including irritation of the eyes, ears, and throat resulting in sneezing, coughing, and shortness of breath. Prolonged exposure can result in permanent respiratory problems including asthma, chronic bronchitis, and heart disease. These particles vary greatly in shape, size, and chemical composition, and can be made up of many different materials such as metals, soot, soil, and dust. Inhalable particulates come from smoke, dust, aerosols, and metallic oxides. Although particulates are found naturally in the air, most particulate matter found in the area is emitted either directly or indirectly by motor vehicles, industry, construction, agricultural activities, and wind erosion of disturbed areas. Particles 10 microns or less in diameter are defined as respirable particulate matter or PM10. There are many sources of PM10 emissions, including combustion, industrial processes, grading and construction, and motor vehicles. The greatest quantity of PM10 emissions associated with motor vehicle uses is generated by re-suspended road dust. Reductions in motor vehicle miles travelled can reduce PM10 emissions. PM2.5 refers to particles that have a diameter of less than 2.5 micrometers, which is more than 100 times thinner than a human hair. Due to its smaller size, PM2.5 can penetrate deeper into the lungs. These particulates can contribute significantly to regional haze and reduction of visibility and are the primary reason for the occurrence of smog. Most PM2.5 is comprised of combustion products such as smoke or formed in the atmosphere from regional emissions of NOx. Wood burning in fireplaces and stoves is another significant source of particulate matter, primarily PM2.5.

Applicable RTMP Policies and BMPs

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to minimize or avoid potential environmental impacts associated with air quality. The applicable RTMP Policies and BMPs are listed below and are provided, in their entirety, in Appendix A.

- Policy SW.29: Retrofit or Upgrade Construction Equipment
- Air Quality-1: Implement BAAQMD Measures
- Air Quality-2: Minimize Dust Control Emissions during Construction
- Air Quality-3: Enhanced Dust Control during Construction
- Air Quality-4: Dust Control During Construction in Sensitive Resource Areas

[41] Bay Area Air Quality Management District (BAAQMD). In Your Community – Marin County. http://www.baaqmd.gov/about-the-air-district/in-your-community/marin-county. Accessed July 2025.

CEQA Context

A project would normally result in significant impacts to air quality if changes to existing air quality would result from construction, operation, use, and/or maintenance activities from implementation of the project. The proposed project has been evaluated to determine if changes to existing air quality would result from construction, public use, operations, and/or maintenance.

a) Would the Project conflict with or obstruct implementation of the applicable air quality plan?
Less than Significant

The applicable air quality plan for the project is the BAAQMD's 2017 Clean Air Plan: Spare the Air, Cool the Climate (2017 CAP) adopted in April 2017, which provides a regional strategy to reduce air pollution and thereby protect public health and climate. The 2017 CAP describes how the BAAQMD will continue progress towards attaining all state and federal air quality standards and eliminating health risk disparities from exposure to air pollution among Bay Area communities. Regarding climate protection, the 2017 CAP focuses on achieving greenhouse gas reduction targets for 2030 and 2050, such as for methane and carbon dioxide. The 2017 CAP includes control measures designed to decrease emissions of air pollutants most harmful to Bay Area residents including ozone and particulate matter.

The BAAQMD published the CEQA Air Quality Guidelines in April 2022 (2022 BAAQMD CEQA Guidelines) to assist in evaluating air quality impacts of projects and plans proposed in the Bay Area Air Basin and provide BAAQMD-recommended procedures for evaluating potential air quality impacts during the environmental review process consistent with CEQA requirements. If the proposed project meets all screening criteria, its impact is considered to be less than significant and further detailed analysis of potential project emissions is not required. The following air quality analysis for the proposed project is consistent with the methods included in 2022 BAAQMD CEQA Guidelines. The methodology is described below:

1. Does the project meet all screening criteria? If the project does, then it would result in a less than significant impact. If the project does not, then an air quality analysis should be prepared using acceptable methods and compared to thresholds of significance.
2. If an air quality analysis is prepared, are the project's impacts less than the thresholds of significance? If they are, then the project would result in a less than significant impact. If the project's impact would exceed the thresholds of significance, then mitigation measures should be applied, and impact reductions calculated.
3. If the project's impacts are less than the thresholds of significance with the incorporation of mitigation measures, then the project's impact would be less than significant with mitigation. If the project's impact would still exceed the thresholds of significance after incorporation of mitigation measures, then the project's impact would be significant and unavoidable.

Below is the list of the construction criteria and determination of whether the proposed project meets these criteria.

1. The project size is at or below the applicable screening level size shown in Table 4-1.

Table 4-1 describes the single land use construction and operational criteria for air pollutant and precursor screening levels. There is not a specific land use category in Table 4-1 that would accurately describe the proposed project, so the criteria for the City Park category has been selected because it most closely matches the proposed project. In this category, the project size for construction is 10 acres and the project size for operation is 175 acres.

The project area is approximately 12.35 acres, of which approximately 8.2 acres would involve road equipment. Approximately 2.1 acres of trails would be developed utilizing mechanized trail equipment, consisting of the T1, T1.1, and T4 trails minus the area of incorporated road to trail

conversion. Approximately 1.3 acres of trail would be hand-built, consisting of the T2, T3, T3.1, and T3.4 trails. Approximately 0.75 acres of trails would be passively decommissioned, involving no tools or equipment. No heavy construction equipment would be utilized for implementation or operation of the proposed project. For the purpose of this analysis, the project area is 8.2 acres defined by the area that would involve road equipment, which meets the construction criteria. The operational area is 12.35 acres, which meets the operation criteria.

All best management practices (see Table 5-2 in Chapter 5, "Project-Level Air Quality Impacts") are included in the project design and implemented during construction.

All of the best management practices identified in Table 5-2 would be implemented during project implementation, which meets this criterion. The BMPs are listed below:

B-1: All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

B-2: All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

B-3: All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

B-4: All vehicle speeds on unpaved roads shall be limited to 15 mph.

B-5: All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

B-6: All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.

B-7: All trucks and equipment, including their tires, shall be washed off prior to leaving the site.

B-8: Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.

B-9: Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

2. Construction-related activities would not overlap with operational activities.

   Activities associated with project implementation would not overlap with operational activities; therefore, this criterion is met.

3. Construction-related activities would not include:
   - demolition,
   - simultaneous occurrence of two or more construction phases (e.g., paving and building construction would occur simultaneously),
   - extensive site preparation (e.g., grading, cut and fill, or earth movement),

   Implementation of the proposed project would not include demolition, simultaneous occurrence of two or more construction phases, or extensive site preparation; therefore, this criterion is met.

4. Extensive material transport (e.g., soil import and export requiring a considerable amount of haul truck activity), or

Implementation of the proposed project would not require extensive material transport. Construction of the project would require approximately 144 total haul trips for hauling construction materials and the import of soil, rock and aggregate totaling approximately 3,500 tons of material over the three-year project implementation period.

5. Stationary sources (e.g., backup generators) subject to Air District rules and regulation.

   Implementation of the proposed project would not require stationary sources, such as back-up generators, therefore this criterion is met.

The proposed project would not include any of the construction screening criteria, therefore a detailed assessment of the project's criteria air pollutant and precursor emissions is not required and the proposed project would have a less than significant effect regarding greenhouse gas emissions.

Construction would occur between April 1 and October 15, Monday through Friday, from 7:00 a.m. to 6:00 p.m. for approximately three construction seasons. Equipment would include a trail dozer, mini-excavators, compactors, cement mixers, rubber track carriers, generators, all-terrain vehicles (ATVs), jackhammers, power saws, and other hand tools. Construction of the project would require approximately six workers onsite. Construction of the project would require approximately 144 haul trips for hauling construction equipment, construction materials, and the import of soil, rock, and aggregate over three construction seasons. Construction staging areas would be restricted to existing MCOSD roads and trails or other areas that would avoid any significant impacts on sensitive natural resources. Access to the project site for construction vehicles and equipment would be from Bowman Canyon Road, a public road.

Construction activities would also temporarily generate fugitive dust, including PM10, from earthmoving and equipment use. The 2022 BAAQMD CEQA Guidelines consider these impacts to be less than significant if BMPs are employed to reduce these emissions. The proposed project would incorporate RTMP policy SW.29 and the Air Quality BMPs listed in the setting section which are consistent with BMPs included in the 2017 BAAQMD Guidelines. The proposed project would incorporate RTMP BMPs which are consistent with 2017 BAAQMD CEQA Guidelines BMPs. For these reasons, implementation of the proposed project would result in a less than significant impact associated with air quality as it pertains to fugitive dust.

b) Would the Project result in a cumulatively considerable net increase of any criteria pollutant under an applicable federal or state ambient air quality standard?

Less than Significant

The Bay Area Air Basin is currently designated as a non-attainment area for federal and state ozone standards and national particulate matter ambient air quality standards. This is primarily due to the region's development history. Past, present, and future development projects contribute to the Bay Area Air Basin's adverse air quality impacts on a cumulative basis and no individual project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, an individual project's emissions contribute to existing cumulatively significant adverse air quality impacts. If an individual project's contribution to the existing cumulative impact is considerable, then the project's impact on air quality would be considered significant.

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

Implementation of the proposed project would not result in a cumulatively considerable net increase of any criteria pollutant under an applicable federal or state ambient air quality standard. The proposed project does not include any new stationary sources of emissions or new development that could result in increased vehicle emissions. The proposed project will neither increase population nor employment, and therefore would not increase VMT for the region. Construction equipment that would be used during project implementation would result in criteria air pollutant emissions far below the BAAQMD thresholds of significance, which is shown in Table AQ-1 in answer to checklist question a. For these reasons, construction activities associated with implementation of the proposed project would result in a less than significant increase of ozone or particulate matter, the criteria pollutants for which the Bay Area Air Basin is in non-attainment under applicable federal and state ambient air quality standards.

After project implementation, on-going operations would remain similar to existing and therefore would not result in a potentially significant impact regarding air quality. Use of the project area for public recreation would continue similar to existing conditions, which is primarily local use for allowable recreational purposes. The proposed project does not include parking or other amenities that could contribute to an increase in visitors. Future increases in trail use are anticipated to be proportional with regional population growth. For these reasons, operational impacts associated with the proposed project would result in a less than significant increase of ozone and particulate matter, the criteria pollutants for which the Bay Area Air Basin is in non-attainment under applicable federal and state ambient air quality standards.

c) Would the Project expose sensitive receptors to substantial pollutant concentrations?

No Impact

Sensitive receptors to substantial pollutant concentrations refers to those facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of facilities include schools, hospitals, and residential areas.

The significance of impacts to sensitive receptors is dependent on the chance of contracting cancer from exposure to Toxic Air Contaminants (TACs) or of having adverse health effects from exposure to non-carcinogenic TACs. A project is considered to be significant if the incremental cancer risk at a receptor exceeds 10 in a million. The Office of Environmental Health Hazard Assessment (OEHHA) does not recommend assessing cancer risk for projects lasting two months or less[42]. Health risk is evaluated for sensitive receptors within a 1,000-foot radius of a project's impact area. Sensitive receptors within 1,000 feet consist of residential structures on Pepper Craft Way at a cul de sac, which is approximately 570 feet east of the southern-most portion of WB-01 Road. Approximately 1,100 feet of WB-01 Road is located within 1,000 feet of the nearest sensitive receptors. Proposed project related construction activities within this segment would be limited to minor drainage improvements such as berm breaches, knicks, road outsloping, or rolling dips, and the placement of approximately 153 cubic yards of Class II base rock to improve road stability and drivability. These light construction treatments would be short-term and localized, minimizing potential air quality impacts to nearby sensitive receptors.

Implementation of the proposed project would span three construction seasons, generally the dry months between April and October. Although the construction seasons would be up to seven months for each construction season, gas and diesel-powered equipment would be used intermittently during. Most of the proposed project construction-related activities would occur at a distance greater than 1,000 feet from the nearest residential structures. Due to the intermittent use of gas and diesel-powered equipment over the seven-month construction seasons and the distance of the project areas to the nearest potential sensitive receptor, cancer-risk assessment is not required for the proposed project. Furthermore, the proposed

[42] Office of Environmental Health Hazard Assessment (OEHHA). 2015. *Air Toxics Hot Spots Program, Risk Assessment Guidelines, Guidance Manual for Preparation of Health Risk Assessments*. https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf

project incorporates RTMP Air Quality BMPs 1 through 4 and RTMP Policy SW.29, which implements BAAQMD's 2017 CAP.

Implementation of the proposed project would not result in any long-term or chronic exposure to substantial pollution concentrations. For these reasons, implementation of the proposed project would be a less than significant impact associated with exposure of sensitive receptors to substantial pollution.

d) Would the Project result in other emissions, such as those leading to odors, adversely affecting a substantial number of people?

No Impact

There are no air quality standards for odors. Odor impacts are subjective as odor sensitivity varies from person to person. Odor impacts are related, to some degree, to the distance from the origin of the odor to the receptor. Offensive odors rarely impact public health however, they can cause headaches and on-going odors can result in a negative impact on quality of life. In general, the types of land uses that pose potential odor emissions include refineries, chemical plants, wastewater treatment plants, landfills, composting facilities, and transfer stations.

BAAQMD's Regulation 7 – Odorous Substances[43] places general limitations on odorous substances and specific emission limitations on certain odorous compounds. These substances and compounds include dimethylsulfide, ammonia, mercaptans calculated as methylmercaptan, phenolic compounds calculated as phenol, and trimethylamine. The proposed project would not utilize these substances or compounds during construction or operation and maintenance activities, and therefore the proposed project would be in compliance with this regulation.

Implementation of the proposed project would neither result in any major sources of odor nor introduce land uses that would pose potential odor emissions. Short-term construction equipment related emissions, including diesel exhaust and fuel vapors, have the potential to result in short-term generation of odor emissions. These odor emissions would be temporary and would dissipate rapidly in the air, decreasing with increasing distance from the source, thus minimizing potential exposure to persons utilizing open space near the project area. For these reasons, implementation of the proposed project would not result in odor emissions that would adversely affect a substantial number of people.

[43] Bay Area Air Quality Management District (BAAQMD), *Regulation 7: Odorous Substances. Accessed March 2024,* Bay Area Air Quality Regulation 7

BIOLOGICAL RESOURCES

TABLE 5: BIOLOGICAL RESOURCES CHECKLIST QUESTIONS

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

Setting

The project area is approximately 409 acres located within the Mount Burdell Open Space Preserve. The project area occupies the western flank of the Preserve, commonly referred to as Bowman Canyon, and is located in the upper Novato Creek watershed, northwest of the City of Novato. All drainages within the project area ultimately flow into Bowman Creek and then Novato Creek, which supports a steelhead run. The terrain is characterized by steep ridgelines, ephemeral drainages, and intermittent streams, with a central unimproved ranch road running along the main Bowman ridgeline providing primary access through the site.

Vegetation communities within the project area are diverse and include grasslands, oak woodlands, coastal scrub, and several sensitive natural communities. The slope north of the summit is north facing Serpentine Grassland with rock outcrops. The slopes on either side of the ridge are steep non-native grasslands and Purple Needle Grasslands becoming Oak Woodland and California Bay Forest at lower elevations. The slope east of the ridge descends into a canyon that carries a stream with seasonally wet pools and then back up in Chamise Chaparral at the far eastern boundary. These vegetation communities create distinct textural and color patterns across the terrain, contributing to the seasonal variation in the visual landscape. The surrounding land uses include private ranch lands to the west and north and suburban residential areas to the south and east, framing the Preserve within a transitional zone between undeveloped open space and developed urban areas.

The Bowman Canyon area provides a critical biological link between Mount Burdell and adjacent preserved lands, including regional wildlife movement corridors through Bowman Creek and its tributaries. The area supports diverse vegetation types and wildlife habitats, including several sensitive natural communities and known occurrences of special-status species.

Biological Resource Studies

To support trail planning and environmental review of the proposed project area, Marin County Open Space commissioned biological studies to evaluate existing habitat conditions and inform project design. These studies focused on characterizing the biological communities within the project area, identifying sensitive plant and wildlife resources, and assessing potential alternative to trail alignment and construction. These studies provide a comprehensive overview of the biological setting and habitat priorities within the Bowman Canyon addition to Mount Burdell Open Space Preserve.

Vegetation Types

Vegetation surveys were conducted in 2019[44], 2021[45], 2022[46], and 2023[47] [48] to document vegetation types and special-status species within the proposed project area. The baseline Botanical Resource Survey Report was prepared in 2019 following the initial 167-acre acquisition of Bowman Canyon in 2018. The survey covered a 167-acre study area and provided initial documentation of vegetation types within the preliminary project footprint. The Vegetation Management Zone Classification Memo prepared in 2021 expanded the study area to approximately 446 acres to capture the additional parcels acquired in 2020. The Draft Botanical Resources Survey Report prepared in 2023 surveyed approximately 97 acres within the project area, focusing on sensitive natural communities and previously identified special-status plant species along the proposed road and trail alignments and within the northern section of the project area.

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44 Nomad Ecology. 2019. Botanical Resource Survey Report, Bowman Canyon Baseline Surveys and Habitat Assessments.

45 Nomad Ecology. 2021. Vegetation Management Zone (VMZ) Review for Marin County Open Space District's Bowman Canyon Preserve, Marin County, California.

46 Marin County Parks. 2022. Bowman Canyon *Allium peninsulare* var. *franciscanum* Surveys.

47 Marin County Parks. 2023. Bowman Canyon Serpentine Grassland Rare Plant Surveys.

48 Nomad Ecology. 2023. Draft Botanical Resource Survey Report—Bowman Canyon Road and Trail Plan.

Vegetation types in the project area were mapped using the Manual of California Vegetation[49] classification system in all three botanical surveys. While the surveyed acreage varied among survey years to accommodate newly acquired parcels and an evolving project boundary, the findings are consistent in documenting the predominance of vegetation types. The 2021 memo, encompassing the wider 466-acre Bowman Canyon area, identified the following vegetation types in the study area:

Non-Native Grasslands – approximately 36 percent

Mixed Evergreen Forest (*Quercus agrifolia – Umbellularia californica)* – approximately 16 percent

California Bay Forest & Woodland (*Umbellularia californica*) - approximately 15 percent

Coast Live Oak Woodland (*Quercus agrifolia)* – approximately 11 percent

Serpentine Grasslands (*Stipa pulchra*) – approximately 11 percent

Purple Needlegrass Grasslands (*Stipa pulchra*)– approximately 3 percent

The following vegetation types are present in the study at less than 2 percent: Chamise Chaparral, Annual and Perennial Grassland, Coyote Brush, Black Oak Forest, Oregon White Oak Forest, Valley Oak Woodland, Seasonal Wetland.

Sensitive natural communities are defined as rare, limited in distribution, or declining within the state or region. The CDFW's List of California Terrestrial Natural Communities and the Manual of California Vegetation (MCV) indicate which vegetation types are sensitive within the State of California classification. Within the proposed project area, the 2019, 2021, and 2023 assessments identified eight sensitive plant communities currently recognized by CDFW:[50]

California Brome – Blue Wildrye Prairie (*Bromus carinatus) - Rank: S3/G4 (provisional)*

Cottonweed Patches (*Micropus californicus*) - *Rank: S2 (point occurrences)*

Purple Needlegrass Grasslands/Serpentine Grasslands (*Stipa pulchra*) - *Rank: S3/G3*

Northern Coyote Brush Scrub (*Baccharis pilularis / Nasella (Stipa) pulchra*) - *Rank: S3/G3*

California Bay Forest & Woodland (*Umbellularia californica*) - *Rank: S3/G4*

Mixed Evergreen Forest (*Quercus agrifolia – Umbellularia californica) – Rank S3/G3*

Valley Oak Woodland & Forest (*Quercus lobata) - Rank: S3/G4*

Oregon White Oak Woodland & Forest (*Quercus garryana) - Rank: S3/G4*

Bowman Creek and Riparian Habitat

The Mount Burdell Open Space Preserve lies within the upper portion of the Novato Creek Watershed, which drains into northwestern Marin County. Within the project area, the dominant hydrologic features include ephemeral tributaries of Bowman Canyon Creek and several seasonal or spring-fed surface water features. Bowman Canyon Creek is an intermittent stream that flows primarily during the winter and spring months, fed by stormwater runoff and groundwater seepage from upland slopes. The project area does not include a named perennial creek, but it supports riparian and wetland-edge habitats associated with these ephemeral flows.

Surface water in the project area is primarily present during the rainy season, with most drainages drying completely during summer and fall. One key feature is the spring-fed "Dry Lake Pond," which retains water longer into the dry season and serves as an important resource for wildlife. Another feature known as the "Road Wet Pool" forms seasonally near a low spot along a former ranch road and also provides temporary aquatic habitat.

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[49] Sawyer, J.O., Keeler-Wolf, T., and Evans, J.M., 2009. *A Manual of California Vegetation, Second Edition*. California Native Plant Society Press.

[50] California Department of Fish and Wildlife (CDFW). 2023. California Natural Community List, the Vegetation Classification and Mapping Program. California Natural Diversity Database. Biogeographic Data Branch.

The 2019 aquatic wildlife survey conducted by Nomad[51] described these aquatic features as small, shallow, and lacking defined channels in most areas. They are generally shaded and occur within grassland and oak woodland mosaics. Aquatic vegetation and riparian tree species were observed along their margins, including hydrophytic plants such as Juncus spp., spikerush (*Eleocharis macrostachya*), and rabbitsfoot grass (*Polypogon monspeliensis*). Although these features do not constitute extensive riparian corridors, they provide ecologically important habitat and may support amphibians, invertebrates, and wetland-associated plant species.

The ephemeral riparian zones also serve as travel corridors for amphibians and mammals and provide nesting and foraging resources for riparian bird species. These include habitat components critical to species such as western pond turtle and California red-legged frog, all of which have potentially non-breeding habitat conditions within or adjacent to riparian features on-site.

MCOSD Burrow Surveys

In addition to the Nomad assessments, MCOSD staff biologists conducted burrow surveys in the project area between February 19th and March 1st of 2019[52]. Of the 116 burrows surveyed in Bowman Canyon, 46 were presumably American Badger (*Taxidea taxus*), one coyote (*Canis latrans*), 16 small rodent, and 53 California ground squirrel (*Otospermophilus beecheyi*) burrows or burrow complexes. Twenty-four of the badger burrows were determined active and the one coyote burrow was inactive. No active burrowing owl burrows were detected. Signs of badger foraging were seen at some of the smaller burrows, indicated by large, wide but shallow holes with large aprons and smaller burrows inside and around the foraging area.

A high concentration of burrows, particularly badger burrows, was observed near the summit in the center of the study area, with additional burrows scattered from the northeast to southwest corners. The existing unimproved ranch road crosses the area of highest burrow density. While no burrowing owl burrows were detected, existing ground squirrel and badger burrows offer potential wintering habitat. Due to the areas' elevation and steep slopes, it is unlikely to support nesting burrowing owls, which prefer flatter, low-elevation terrain. However, wintering burrowing owls have been documented in similar foothill habitats and may utilize Bowman Canyon. The abundance of burrows also highlights the area's importance as habitat for badgers and other fossorial mammals. Under existing conditions, Bowman Canyon sees little visitor use. When considering that use may increase in the future with new trails and greater public access, care was taken to mitigate impacts on local wildlife by avoiding construction of new trails through burrow-dense areas.

Special-Status Plants

Special-status plants include those species that are state or federally listed as Rare, Threatened or Endangered; federal candidates for listing; proposed for state or federal listing; or identified by the CNPS Inventory of Rare and Endangered Plants of California (CNPS Inventory) as Rank 1, 2, 3, or 4 species. Protocol-level botanical surveys were conducted by Nomad in 2019 and 2023, and Marin County Parks in 2022 and 2023 to identify special-status plant species within the project area. Surveys occurred across a 69-acre core study area and 6.67 miles of proposed trail corridors. A total of 247 plant taxa[53] were identified within the project area, of which the following six special-status species were observed within the project area:

Marin western flax (*Hesperolinon congestum*)
Franciscan onion (*Allium peninsulare var. franciscanum*)
Napa false indigo (*Amorpha californica var. napensis*)

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51 Nomad Ecology. 2019. *Baseline Aquatic Wildlife Survey Report.*

52 Marin County Parks. 2019. Burrow Report for Bowman Canyon at Mount Burdell Open Space Preserve.

53 In biology, a taxon is a group of one or more populations of an organism or organisms seen by taxonomists to form a unit. Taxa is the plural form of the word taxon.

Tiburon buckwheat (Eriogonum luteolum var. caninum)
Lobb's Aquatic Buttercup (Ranunculus lobbii)
Mount Burdell jewelflower *(Streptanthus anomalus)*

Nine additional locally rare plant species were recorded within the project area. While not listed under state or federal designations, they are considered regionally significant and contribute to biological diversity. These species were mostly observed in undisturbed serpentine grassland and woodland habitats. These species include:

Sonoma clarkia *(Clarkia gracilis ssp. sonomensis)*
Hooded coralroot (*Corallorhiza striata)*
Franciscan erigeron *(Erigeron foliosus var. franciscensis*)
Heterocodon *(Heterocodon rariflorum*)
Hare's ear *(Lagophylla ramosissima*)
California filago *(Logfia filaginoides*)
Oak mistletoe *(Phoradendron leucarpum ssp. tomentosum*)
Denseflowered rein orchid *(Piperia elongata*)
Thymeleaf mesa mint *(Pogogyne serpylloides*)

Special-Status Wildlife

The presence of special-status wildlife species on MCOSD lands has been well documented through focused surveys, and other observations made by MCOSD staff and the public. The Nomad Reports and Marin County Parks Burrow Survey evaluated data collected and maintained by the MCOSD, a review of the CNDDB, MCOSD's *Draft Vegetation and Biodiversity Management Plan*[54]*,* staff observations, and other sources. These sources collectively identified four special-status wildlife species that are known to occur within the project area and six special-status wildlife species that have the potential to occur within the project area, which are listed below and then described beginning on the next page.

Special-status wildlife species that are known to occur within the project area include:

American badger (*Taxidea taxus*)
California horned lark (*Eremophila alpestris actia*)
Cooper's hawk (*Accipiter cooperi*)
Grasshopper sparrow (*Ammodramus savannarum*)
Northern harrier (*Circus hudsonius*)

Special-status wildlife species that have the potential to occur within the project area include:

California giant salamander (*Dicamptodon ensatus*)
California red-legged frog *(Rana draytonii)*
Pallid bat (*Antrozous pallidus*)
Western pond turtle (*Actinemys marmorata*)
Western burrowing owl (*Athene cunicularia*)
Short-eared owl (*Asio flammeus)*
Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus)*

Applicable RTMP Policies and BMPs

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to minimize or avoid potential environmental impacts to biological resources. The applicable RTMP Policies and BMPs are listed below and are provided, in their entirety, in Appendix A.

- Policy SW.24: Minimize Intrusions into larger Contiguous Habitat Areas and Wildlife Corridors

[54] Marin County Open Space District. 2013. *Draft Vegetation and Biodiversity Management Plan.*

- General-1: Limit Work Area Footprints in Sensitive Resource Areas
- General-2: Modify Construction-related Vegetation Management Methods in and near Wetlands, Riparian Vegetation
- General-3: Minimize Potential for Erosion
- General-4: Control Food-related Trash.
- General-5: Modify Construction Methods Relating to Soil Disturbance, Restrict Use of Offsite Soil, Aggregate, or Other Construction Materials
- General-6: Prevent or Reduce Potential for Pollution
- General-7: Include Standard Procedures in Construction Contracts
- General-8: Control Noise
- General-9: Conduct Worker Training
- General-10: Road and Trail Inspections
- Construction Contracts-1: Standard procedures in Construction Contracts
- Sensitive Natural Resources-1: Modify Management Practices Near Sensitive Natural Resources
- Special-Status Wildlife-2: Preconstruction Surveys
- Special-Status Wildlife-3: Seasonal Restrictions During Bird Nesting Season
- Special-Status Wildlife-8: Worker Awareness Training
- Special-Status Wildlife-9: Construction Monitoring
- Special-Status Wildlife-10: Relocation of Special-Status Species
- Special-Status Wildlife-11: Noise Control
- Special-Status Wildlife-12: Trash Control
- Special-Status Wildlife-13: Road and Trail Inspections
- Special-Status Plants-1: Literature Reviews
- Special-Status Plants-2: Avoidance and Protection of Special-Status Plant Species near Road and Trail Management Projects
- Special-Status Plants-3: Ensure Proposed Actions are Consistent with Ongoing Special-Status Plant Management Programs
- Special-Status Plants-4: Earthwork Near Special-Status Plan Populations
- Special-Status Plants-5: Erosion Potential Near Special-Status Plants

Additionally, the relevant RTMP BMPs to prevent the spread of weeds, listed below, would be implemented:

- General-5: Modify Construction Methods Relating to Soil Disturbance, Restrict Use of Offsite Soil, Aggregate, or Other Construction Materials
- Special-Status Plants-6: Prevent or Reduce Potential for Pollution
- Invasive Plants-22: Herbicide Use Near Sensitive Natural Resources
- Invasive Plants-3: Survey and Control of Invasive Plants in Project Footprint
- Invasive Plants-4: Limited Soil Disturbance

- Invasive Plants-5: Cleaning of Heavy Equipment, Maintenance Tools, and Fire Management Vehicles
- Invasive Plants-6: Reducing Potential for Establishment of Invasive Plants on Disturbed Soil Surfaces
- Invasive Plants-7: Monitor and Control of Invasive Plants in Road and Trail Management Work Areas
- Invasive Plants-8: Protection of Streambanks and Water Quality During Invasive Plan Removal
- Invasive Plants-9: Road and Trail Inspections
- Invasive Plants-10: Monitoring of Decommissioned Areas

CEQA Context

A project would normally result in significant impacts to biological resources if it substantially modifies sensitive habitats, adversely affects wetlands, negatively affects endangered plant and/or animal species, or conflicts with established policies, ordinances, or plans associated with the protection of biological resources.

a) Would the Project 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 California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Less than Significant Impact with Mitigation

The primary focus of the proposed road and trail improvements is the conservation and protection of sensitive habitats and vegetation, rare plant species, wildlife habitat, and other ecological resources. Extensive biological assessments were conducted to fully investigate and document the ecology of the site. These assessments extended the planning process and informed a proposed road and trail improvement plan that prioritized the conservation of these resources, avoids sensitive natural resources, and minimizes recreational pressure in areas of significant ecological value. The proposed road and trail alignments have been designed to specifically avoid sensitive resources however, project implementation has the potential to result in potentially significant impacts to nesting and special status birds and to non-breeding habitat for California red-legged frogs. Mitigation measures have been proposed in addition to applicable RTMP policies and BMPs to reduce these significant environmental impacts to a less than significant level.

The botanical surveys conducted as part of the proposed project concluded that six special-status plant species were documented within the project area. Special-status plant species observed during botanical assessments include Marin Western flax *(Hesperolinon congestum)*, Franciscan Onion (*Allium peninsulare var. franciscanum*), Napa False Indigo (*Amorpha californica var, napensis*), Tiburon buckwheat *(Eriogonum luteolum var. caninum)*, Lobb's Aquatic Buttercup (*Ranunculus lobbii*), and Mount Burdell jewelflower *(Streptanthus anomalus)*. The proposed project does not include alterations to the seasonal wetland that supports Lobb's aquatic buttercup, and this population would not be affected by activities. Additionally, while Napa false indigo was observed near potential trail realignment areas, none of the mapped individuals occur within proposed trail disturbance footprints.

Upper Serpentine Road, which bisects a serpentine grassland that is considered a sensitive natural community and functions as a refuge for rare endemic plants and wildlife habitat, is proposed for decommissioning. Special-status serpentine-associated species documented in this area include Marin western flax (*Hesperolinon congestum*), Mount Burdell jewelflower (*Streptanthus anomalus*), and Tiburon buckwheat (*Eriogonum luteolum* var. *caninum*), as well as the locally rare Sonoma clarkia (*Clarkia gracilis*

ssp. *sonomensis*). Decommissioning and restoration of Upper Serpentine Road would remove the existing road footprint from this sensitive habitat and facilitate long-term habitat restoration.

Portions of existing roads WB-02 and WB-03 are also proposed for decommissioning. WB-02 and the western segment of WB-03 are located within bay forest habitat at the north end of Bowman Canyon, which supports the rare Franciscan onion (*Allium peninsulare* var. *franciscanum*). This population, identified and mapped during focused botanical surveys, represents the first documented occurrence of this species in Marin County. Bowman Canyon is currently the only known location for Franciscan onion in Marin, and this slope supports the densest population within the preserve. In addition, the eastern section of Road WB-03 crosses the slope immediately above a recently discovered population of Mount Burdell jewelflower, one of only three known occurrences of this species. Decommissioning and restoration of WB-02 and WB-03, along with removal of adjacent social trails, would allow for construction of a newly designed trail alignment specifically designed to avoid impacts to Franciscan onion, Mount Burdell jewelflower, and their associated habitats.

Decommissioning activities would include road surface decompaction, recontouring to match the natural hillslope, the removal of roadside berms, and the installation of cross drains. Although decommissioning is proposed serpentine grassland and bay forest habitats, restoration of the former road footprints through revegetation with locally collected native grass and forb seed would reduce recreation-related disturbance and invasive species pressure and improve habitat conditions for special-status plant species.

Recommendations from the botanical surveys have been incorporated into the project design and are included in the RTMP BMP's including Sensitive Natural Resources-1: Modify Management Practices Near Sensitive Natural Resources, Special-Status Plants-2: Avoidance and Protection of Special-Status Plant Species near Road and Trail Management Projects, and Special-Status Plants-3: Ensure Proposed Actions are Consistent with Ongoing Special-Status Plant Management Programs.

The Nomad Grassland Bird Habitat Assessment documented the occurrence of three special-status bird species within the project area: Northern harrier (*Circus hudsonius),* California horned hawk (*Eremophila alpestris actia)*, and Grasshopper sparrow (*Ammodramus savannorum).* Additional special-status bird species have been known to occur within the project area but were not found during Nomad's field surveys. The project area provides suitable habitat for these species and therefore there is potential for the species to exist within the project area even though Nomad did not document presence. These include Short-eared owl (*Asio flammeus*), Western burrowing owl (*Athene cunicularia hypugaea*), and Bryant's savannah sparrow (*Passerculus sandwichensis alaudinus).* For this reason, Mitigation Measure BIO-1 will be implemented to reduce potential impacts to special-status bird species.

In addition to the Nomad's Grassland Bird Habitat Assessment, MCOSD staff biologists conducted burrow surveys in project area between February 19th and March 1st of 2019. During the surveys, 116 burrows were observed and recorded. Of these, 46 were presumably American badger, one coyote (*Canis latrans),* 16 small rodent, and 53 California ground squirrel (*Otospermophillus beecheyi).* No signs of western burrowing owls were observed. The highest density of American badger burrows was located along Upper Serpentine Road, which is proposed to be decommissioned as a part of the proposed project. Recommendations from this assessment that were also implemented into the proposed project incorporating pre-construction surveys included in the RTMP BMP's.

An Aquatic Wildlife Survey Report was conducted by Nomad in 2019 to evaluate the potential for occurrence of California red-legged frogs, Foothill yellow-legged frogs, and Western pond turtles within two stream reaches (Stream A and Stream B), and two ponds (Dry Lake Pond and Wet Road Pond). Dry Lake Pond has potential to provide suitable breeding habitat[55] for California red-legged frogs and Western pond turtles, though this feature will not be altered as a result of the proposed project.

[55] *Aquatic Breeding Habitat:* Standing bodies of fresh water (salinities less than 7.0 ppt), including: natural and manmade (e.g., stock) ponds, slow-moving streams or pools within streams, and other ephemeral or permanent

The Nomad surveys did not detect California red-legged frogs within the study area. The two stream reaches are not expected to support breeding habitat due to their ephemeral or intermittent characteristics and instead provide potentially suitable non-breeding habitat[56] for California red-legged frogs. These stream segments intersect with proposed trail alignments T3.2, T3.3, and T3.4 (see Figure 3b) where installation of watercourse crossings would be required. As a result, project construction would occur in and adjacent to stream habitats that could support non-breeding individuals. Given the presence of suitable non-breeding habitat and the potential for direct or indirect disturbance associated with construction of stream crossings within that habitat, Mitigation Measure BIO-2 will be implemented to avoid and minimize potential impacts to California red-legged frogs to a less than significant level.

No trees would be removed to implement the proposed project. Trees and tree roots may be pruned to avoid damage when construction vehicles access the roads, when trail bridges are delivered and placed, and to implement proposed trail improvements. These standard trail construction methods would be implemented consistent with Internation Society of Arboriculture[57] practices and would not result in potentially significant impacts to trees or habitat modifications that could cause potential impacts to special-status tree species that are known to occur or have the potential to occur within the project area.

Implementation of the proposed project would include ground-disturbing activities associated with trail decommissioning utilizing active methods and implementation of trail improvements; however, this minimal disturbance would not result in habitat modifications that could cause potential impacts to special-status species that have the potential to occur within the project area. Construction of the proposed project would adhere to the Road and Trail Standards and BMPs listed under the Applicable RTMP Policies and BMPs subheading and included in Appendix A. Implementation of the proposed project would span three construction seasons, generally April through October. Construction would begin as soon as soil moisture conditions allow and after pre-construction surveys required by Mitigation Measure BIO-1 determine that sensitive species are not present in the project area. Construction related to water crossings and earthwork requiring use of equipment would be limited to the dry season as directed by the regulatory agencies, generally between May and September.

Construction would occur Monday through Friday, from 7:00 a.m. to 6:00 p.m. Equipment would include excavators, bulldozers, compactors, water trucks, trail dozers, mini-excavators, trail compactors, cement mixers, rubber track carriers, generators, ATVs, jackhammers, power saws, and other hand tools. Construction staging areas would be restricted to roads and trails or other areas that would avoid any significant impacts on sensitive natural resources. Access to the project site for construction equipment would be from Bowman Canyon Road.

After project implementation, on-going operations would remain similar to existing and therefore would not result in a potentially significant impact on visitation. Use of the project area for public recreation would continue similar to existing conditions, which is primarily local use for allowable recreational purposes. The proposed project does not include new designated parking or other amenities that would normally contribute to a significant increase in visitors, new types of visitors, or create a destination attraction. Future increases in trail use are anticipated to be proportional with regional population growth. For these reasons, increased visitor use would have no impact associated with substantial adverse effects on any species identified as a candidate, sensitive, or special status species in local or regional

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water bodies that typically become inundated during winter rains and hold water for a minimum of 20 weeks in all but the driest of years. (USFWS 2010)

56 *Non-Breeding Aquatic Habitat:* Freshwater and wetted riparian habitats, as described above, that may not hold water long enough for the species to hatch and complete its aquatic life cycle, but that provide shelter, foraging, predator avoidance, and aquatic dispersal for juvenile and adult California red-legged frogs. Other wetland habitats considered to meet these elements include but are not limited to: plunge pools within intermittent creeks; seeps; quiet water refugia during high water flows; and springs of sufficient flow to withstand the summer dry period. (USFWS 2010)

57 https://www.isa-arbor.com/

plans, policies, or regulations, or by CDFW or U.S. Fish and Wildlife Service either directly or through habitat modifications.

The biological resources assessments conducted by Nomad and MCOSD included several recommendations to minimize potential impacts to biological resources. Most of these recommendations have been incorporated into the project design or are included in the RTMP BMPs. MCOSD would implement applicable RTMP BMPs previously listed. Applicable RTMP Policies and BMPs to minimize potential impacts on biological resources however, the implementation of the proposed project could result in potential impacts to nesting birds. The following mitigation measure augments the applicable RTMP policies and BMPs.

Nesting Birds

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to minimize or avoid potential environmental impacts to biological resources, including special-status and nesting birds. Mitigation Measure BIO-1 clarifies how RTMP BMP Special-Status Wildlife-3: Seasonal Restrictions During Bird Nesting Season would be implemented and would supersede the buffers included in the RTMP BMPs. Implementation of Mitigation Measure BIO-1, along with implementation of applicable RTMP BMPs, would reduce potential impacts on special-status and nesting birds to a less than significant level.

Mitigation Measure BIO-1: Special-status and Nesting Birds

The MCOSD shall implement the following seasonal restrictions to protect nesting birds. If work will occur outside the nesting bird window of January 1 to July 31, surveys and avoidance measures shall not be necessary for special-status and nesting birds. The broadest nesting bird window based on Table BIO-2 would be January 01 – October 31. The project area does not include habitat for double-crested cormorant, herons, egrets, bitterns, waterfowl, California black rail, or Ridgway's rail and these species would not be affected by implementation of the proposed project. The project area was determined to be not suitable for Northern spotted owl by Point Blue Conservation Science during their 2023 surveys of the project area. For these reasons, the nesting bird window of January 1 – July 31 is appropriate for the proposed project.

- Surveys shall be conducted within 7 days of the start of active ground-disturbing activities within the general buffers identified in Table BIO-1: Guideline Buffers by Species or Guild. If the work area is left unattended for more than 7 days following the initial surveys, additional surveys shall be completed. This timing is standard protocol based on common knowledge of avian biology. Ongoing construction monitoring of active nests shall occur to ensure no nesting activity is disturbed.
- If the biologist finds no active nesting or breeding activity, work can proceed without restrictions.
- If active raptor or owl nests or active nests of other special-status birds are identified within the buffer area guidelines included in Table BIO-1, a qualified biologist shall determine whether construction activities may impact the active nest or disrupt reproductive behavior. If it is determined that construction would not affect an active nest or disrupt breeding behavior, construction can proceed without restrictions. The determination of disruption shall be based on the species' sensitivity to disturbance, which can vary among species; the level of noise or construction disturbance; and the line of sight between the nest and the disturbance. If the biologist determines activities would be detrimental to the species nest, the buffer area guidelines identified in Table BIO-1: Guideline Buffers by Species or Guild would be established until the nest has been vacated, meaning that the chicks have fledged.
- If state and/or federally listed birds are found breeding within the construction area, activities shall be halted until the chicks have fledged. If construction activities must continue and

would incur take of the listed species, MCOSD would consult with the CDFW and USFWS prior to the initiation of work that would result in take. If construction activities must continue and would not incur take of the listed species, MCOSD would establish the buffer area guidelines included in Table BIO-1: Guideline Buffers by Species or Guild, until the nest has been vacated, meaning that the chicks have fledged.

TABLE BIO-1: GUIDELINE BUFFERS BY SPECIES OR GUILD

Species/Guild	Recommended Buffer meters/feet	Nesting Season
Diurnal Raptors (i.e.: Cooper's hawk)	76 meters (250 feet)	January 01 – July 31
Owls (except northern spotted owl)	50 meters (160 feet)	January 01 – July 31
Northern Spotted Owl	402 meters (1,320 feet or ¼ mile)	February 01- July 31
Double-crested Cormorant	50 meters (160 feet)	March 01 – October 31
Herons/Egrets/Bitterns	100 meters (330 feet)	January 01 – September 30
Waterfowl (Ducks/Geese/Swans)	30 meters (100 feet)	March 01 – July 31
California Black Rail	213 meters (700 feet)	February 01 – August 31
Ridgway's Rail	213 meters (700 feet)	February 01 – August 31
Larger Passerines: Corvids (crows, jays), Thrushes	20 meters (65 feet)	March 01 – July 31
Most Songbirds	10 meters (30 feet)	March 01 – July 31
Hummingbirds	10 meters (30 feet)	January 01 – July 31
Woodpeckers	15 meters (50 feet)	March 01 – July 31
Band-tailed Pigeon (BTPI)	30 meters (100 feet)	March 01 – July 31
Pigeons/Doves (except BTPI)	20 meters (65 feet)	March 01 – July 31
Species of Special Concern (olive-sided flycatcher, grasshopper sparrow, San Pablo song sparrow)	22 meters (75 feet)	March 01 – July 31
Blackbirds (tri-colored and red-winged)	30 meters (100 feet)	March 01 – July 31
Turdidae (robins, thrushes)	20 meters (65 feet)	March 01 – July 31
Killdeer	22 meters (75 feet)	March 01 – July 31

California Red-Legged Frog

Implementation of the proposed project has the potential to result in impacts to California red-legged frogs due to construction activities occurring within and adjacent to Stream Segments A and B, which provide potentially suitable non-breeding aquatic habitat. To reduce the potential for impacts, construction activities would occur during the dry season when of California red-legged frogs are not expected to be present. The following avoidance would be implemented to supplement the RTMP BMPs required by the RTMP:

Mitigation Measure BIO-2: California Red-Legged Frog Avoidance Measures

The qualified biologist(s) conducting surveys/inspections for California red-legged frog and monitoring construction activities shall be approved to conduct these tasks by the CDFW.

- Prior to construction, the CDFW-approved qualified biologist shall conduct surveys for California red-legged frogs using a CDFW approved methodology. The results of the surveys shall be provided to CDFW prior to construction. If California red-legged frogs or evidence of their presence is found, CDFW shall be notified immediately, and construction shall not occur without written approval from CDFW allowing the project to proceed. Presence of California red-legged frogs may require a CESA ITP before project activities may commence.
- The required worker's awareness training will be provided by a CDFW-approved biologist. All persons employed on the project must complete the training before working on the project site. Instruction shall consist of a presentation by the designated qualified biologist that includes a discussion of the biology and general behavior of California red-legged frogs and any other sensitive species which may be in the area, how they may be encountered within the work area, and procedures to follow when they are encountered. The status of state and federally listed species including legal protection, penalties for violations and project-specific protective management measures shall be discussed. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to on-site project activity. Upon completion of the program, employees shall sign an affidavit stating they attended the program and understand all protection measures.
- The work area and nearby vicinity shall be inspected daily by the qualified biologist before work begins and during construction each day. This shall include searching cavities under rocks, within vegetation such as sedges and other clumped vegetation, and under undercut banks. If California red-legged frogs are encountered during project activities, all work shall cease and CDFW shall immediately be notified. Work shall not recommence without written approval from CDFW.
- Any erosion control materials used shall not entrap animals. Jute mesh, loose, open weave textile fiber netting, burlap or non-binded materials such as rice straw shall be used for erosion control or other purposes. Tightly woven fabric such as jute should have mesh size of less than one centimeter while loosely woven materials should be greater than six centimeters to avoid entrapment. No plastic mono-filament matting shall be used for erosion control.
- To prevent the spread of diseases and pathogens to amphibian populations such as the chytrid fungus (*Batrachochytrium dendrobabdis*), all who enter suitable California red-legged frog habitat shall sterilize boots and any equipment used, scrubbing off surfaces with a 70 percent ethanol solution or a 3 to 6 percent sodium hypochlorite solution and rinsing clean with sterilized water before entering the creek. Staff shall avoid cleaning equipment in the immediate vicinity of the creek.

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

Less than Significant with Mitigation

The Mount Burdell Open Space Preserve is located within the Novato Creek Watershed, which drains a watershed of approximately 47.37 square miles.[58] Hydrology within the project area is influenced by a combination of precipitation, surface water runoff, underlying geologic stratigraphy, topography, soil permeability, and vegetative cover. No formally mapped streams pass directly through the project area. Obvious drainages within the project area include an unnamed creek in the southwest, and another unnamed creek on the eastern edge of the project area. Both unnamed creeks carry surface flows during

[58] California Department of Fish and Wildlife (CDFW). 2009. SF Bay Watersheds Stream Habitat Assessment Reports – Novato Creek.

spring but are dry by mid-summer, reflecting the strong seasonal precipitation patterns of the region. In addition to these creeks, the project area includes one small pond west of the ridge, and feeds into the drainage on the western side of the project area. This feature supports temporary ponding during the wet season, March through June, before drying later in the year. A freshwater seep is also present in the southwestern portion of the project area within grassland habitat, where it maintains localized surface moisture and supports wetland vegetation.

The term riparian woodland refers to woodland associated with a stream or its floodplain, which is typically distinct from surrounding upland vegetation types and considered to provide exceptionally valuable habitat for plant and animal species. Riparian woodland is considered a sensitive habitat by regulatory agencies. In the project area, riparian woodland is not present in the form of a mappable vegetation community.

The project area includes ephemeral streams that would be crossed using nine new trail bridges, three rock armored fords, two puncheons, and one causeway. The specific treatment was selected based on site-specific channel morphology and peak discharge, both of which affect visitor accessibility and safety. Implementation of the proposed watercourse crossings would result in an estimated area of disturbance of 0.0004 acres (17.4 square feet) in California Annual and Perennial Grassland, 0.0018 acres (78.4 square feet) in Oregon Oak Woodland (*Quercus garryana)*, 0.0033 acres (143.7 square feet) in Coast Live Oak Woodland (*Quercus agrifolia)*, and 0.0122 acres (531.4 square feet) in California Bay Forest and Woodland (*Umbellularia Californica)*. In total, the proposed watercourse crossings would result in an estimated 0.018 acres (784 square feet) area of disturbance. This level of disturbance would be minor and impacts to sensitive natural communities as a result of proposed watercourse crossings would be less than significant.

Vegetation types and special-status plants studies included the Botanical Resources Survey Reports (2019 and 2023) and the Vegetation Management Zone (VMZ) Classification Memo (2021). These surveys documented vegetation types, special-status species, and vegetation management zones within the project area, and analyzed potential effects of the proposed project implementation on these resources. The Botanical Resources Survey Reports and VMZ Memo mapped vegetation types and habitat types following commonly accepted nomenclature of the Manual of California Vegetation classifications.

Implementation of the proposed project would result in minimal overall disturbance to sensitive natural communities. New trail construction would create approximately 3.4 acres of new ground disturbance that has to be carefully designed to avoid sensitive habitat and aligned to avoid tree removals. This would include approximately 2.1 acres of machine-built trails consisting of the T1, T1.1, and T4 trails minus the area of incorporated road to trail conversion. Approximately 1.3 acres of trail would be hand-built, consisting of the T2, T3, T3.1, and T3.4 trails. Approximately 3.6 acres of ranch road segments and 1.1 acres of social trail decommissioning would offset these effects. These rough surfaces would be decompacted, recontoured with their natural slopes, and hydrologically disconnected from the stream system. In addition, the decommissioning process would include active restoration through seeding of locally collected native grass and forb seed and management of invasive species.

Road-to-trail conversions would further reduce the disturbance footprint by approximately 0.7 acres, primarily by narrowing former roads by 3 to 6 feet and allowing adjacent native vegetation to expand into the recovered area. Road adoption would involve improvements confined to existing road alignments, resulting in no additional disturbance beyond areas that are already compacted and disturbed.

When all actions are combined, the overall balance of new construction and disturbance reduction results in a net decrease of approximately one acre of disturbed areas across all vegetation types. The greatest reduction of the road and trail footprint would occur in California Bay Forest and Woodland and Mixed Evergreen Forest, where the majority of decommissioning and road to trail conversion would take place. In areas where disturbance will occur, roads and trails would be aligned such that ground disturbance

does not require tree removal to the extent possible. Given that the proposed project has a reduction in road and trail footprint through sensitive natural communities, the proposed project would have a less than significant impact on sensitive natural communities.

Implementation of the proposed project would include decommissioning of the 0.9-mile Upper Serpentine Road and the 0.7-mile of Road WB-03, both of which occur within or directly adjacent to serpentine grassland vegetation communities. Serpentine grasslands are considered significant as a sensitive natural community due to their limited distribution, unique soil chemistry, high native plant diversity, and function as refugia for rare endemic plant species and wildlife habitat. Upper Serpentine Fire Road bisects a serpentine grassland and WB-03 crosses the slope just above the recently discovered population of Mount Burdell jewelflower *(Streptanthus anomalus)*, which is one of only three known sites for this species. Removing and restoring the roads to their natural hillslope would reduce recreation and invasive species pressure in this area which will help to conserve these rare species. Decommissioning activities would include road surface decompaction, recontouring to match the natural hillslope, the removal of roadside berms, and the installation of cross drains. While decommissioning is proposed within serpentine grassland, the action of decommissioning would allow for MCOSD to actively restore the road by sowing locally collected native grass and forb seed.

Additionally, long-term management of invasive plant species would be implemented as a part of the proposed project. Early Detection and Rapid Response (EDRR) vegetation surveys would be integrated into all project activities ensuring an accurate inventory of invasive plant species and prompt management of any newly established populations of invasive plants. Of note is the population of invasive barbed goatgrass (*Aegilops triuncialis*) growing along the roadsides of Serpentine Road. Barbed goatgrass is a serpentine-tolerant invasive annual grass from the Mediterranean. Management of this species is a regional priority for land managers, and Marin County Parks has been removing this population by hand annually since 2020. The remaining trails proposed for decommissioning or improvement do not occur within serpentine grassland.

WB-02, the western section of WB-03, and associated road segments proposed for decommissioning occur within Bay Forest habitat at the north end of Bowman Canyon. This area supports a population of Franciscan onion (*Allium peninsulare* var. *franciscanum*), a rare plant species that was located and mapped during extensive botanical assessments of the project area. This population represents the first documented occurrence of Franciscan onion in Marin County, and Bowman Canyon is the only known location for this species within the county. The affected slope supports the densest known population within the preserve. Removing and restoring of these road segments and adjacent social trails would allow for the creation of a newly built trail that has been designed specifically to avoid impacts to Franciscan onion and its habitat, while reducing ongoing disturbance associated with informal trail use.

The proposed project includes decommissioning of Road WB-03.1, portions of Road WB-04, and Road WB-05. Road WB-03.1 would be decommissioned and hydrologically disconnected from the adjacent intermittent stream to the extent feasible, including removal and restoration of one watercourse crossing (WC-15) to its natural grade. The lower 0.06 mile of Road WB-04 would be decommissioned, while the upper 0.03 mile would be converted to a multi-use trail segment and incorporated into Trail T-4. Road WB-05 would be decommissioned and converted for incorporation into Trail T-3.1, with restoration of natural slope contours through the road prism and restoration of stream channels WC-16 and WC-17 to their natural grades. Decommissioned road segments would undergo restoration to match natural hillslope conditions, with passive restoration supplemented by active measures as needed to deter continued recreational use and support long-term ecological recovery.

The activities related to road decommissioning would primarily occur within existing disturbed road corridors and would eliminate ongoing sources of habitat degradation associated with recreation, erosion, and invasive species. Decommissioning and restoration of these roads would result in long-term habitat recovery and improved protection of serpentine grassland and bay forest communities that support

sensitive natural communities and special-status plant species. The project would not substantially reduce the extent, quality, or viability of these habitats. With implementation of project design features and restoration measures, impacts to sensitive natural communities and special-status plant species would be less than significant.

The proposed newly built trail network has been designed to avoid impacts to populations of sensitive natural communities and to minimize the impact to all vegetation communities. Trees may be pruned to avoid damage when construction vehicles access roads and when trail bridges are delivered and placed. This minimal vegetation removal would not result in habitat modifications that could cause potential adverse effects on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or U.S. Fish and Wildlife Service.

Prior to the commencement of project implementation, all required permits, agreements, and authorizations would be obtained from the United States Army Corps of Engineers (USACOE), the Regional Water Quality Control Board (RWQCB), and the CDFW. The MCOSD shall comply with all conditions of those permits. MCOSD would implement applicable RTMP BMPs listed under the subheading Applicable RTMP Policies and BMPs to minimize potential impacts on biological resources. These include BMPs to minimize potential impacts on riparian habitat or other sensitive natural communities. For these reasons, implementation of the proposed project would result in a less than significant impact associated with potential substantial adverse effects on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or U.S. Fish and Wildlife Service.

c) Would the Project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Less than Significant

Wetlands, creeks, streams, and permanent and intermittent drainages are subject to the jurisdiction of the USACOE under Section 404 of the Federal Clean Water Act (CWA). The CDFW generally has jurisdiction over creeks, streams, and drainages, together with other aquatic features that provide an existing fish and wildlife resource pursuant to Sections 1602-1603 of the California Fish and Game Code. The CDFW asserts jurisdiction to the outer edge of vegetation associated with a riparian corridor. Creeks and wetlands are subject to regulation of the RWQCB under both the federal CWA and the State of California's Porter-Cologne Water Quality Control Act (California Water Code, Division 7).

Hydrology within the project area is influenced by a combination of precipitation, surface water runoff, underlying geologic stratigraphy, topography, soil permeability, and vegetative cover. No formally mapped streams pass directly through the project area. Obvious drainages within the project area include an unnamed creek in the southwest, and another unnamed creek on the eastern edge of the project area. Both unnamed creeks carry surface flows during spring but are dry by mid-summer, reflecting the strong seasonal precipitation patterns of the region. The unnamed creek on the east side of the ridge flows east towards San Marin High School and the western creek flows west off the ridge and then south in Bowman Canyon for 0.4 miles, converging with Novato Creek on the other side of Novato Boulevard. An unnamed tributary to Bowman Canyon Creek is located immediately north of the project area.

In addition to these creeks, the project area includes one small pond west of the ridge, and feeds into the drainage on the western side of the project area. This feature supports temporary ponding during the wet season, March through June, before drying later in the year. A freshwater seep is also present in the southwestern portion of the project area within grassland habitat, where it maintains localized surface moisture and supports wetland vegetation.

The project area includes ephemeral streams that would be crossed using nine new trail bridges, three rock armored fords, two puncheons, and one causeway. The specific treatment was selected based on

site-specific channel morphology and peak discharge, both of which affect visitor accessibility and safety. Implementation of the proposed watercourse crossings would result in an estimated area of disturbance of 0.0004 acres (17.4 square feet) in California Annual and Perennial Grassland, 0.0018 acres (78.4 square feet) in Oregon Oak Woodland (*Quercus garryana)*, 0.0033 acres (143.7 square feet) in Coast Live Oak Woodland (*Quercus agrifolia)*, and 0.0122 acres (531.4 square feet) in California Bay Forest and Woodland (*Umbellularia Californica)*. In total, the proposed watercourse crossings would result in an estimated 0.018 acres (784 square feet) area of disturbance. This level of disturbance would be minor and impacts to sensitive plant communities as a result of proposed watercourse crossings would be less than significant.

Construction would occur between April 1 and October 15, Monday through Friday, from 7:00 a.m. to 6:00 p.m. for approximately three construction seasons. Construction would begin as soon as soil moisture conditions allow and after pre-construction surveys required by Mitigation Measure BIO-1 determined that sensitive species are not present in the project area. Construction related to water crossings and earthwork requiring use of equipment would be limited to the dry season as directed by the regulatory agencies, generally between May and September. Equipment would include intermittent use of trail dozers, mini-excavators, compactors, cement mixers, rubber track carriers, generators, ATVs, jackhammers, power saws, and other hand tools. Construction staging areas would be restricted to existing MCOSD roads and trails or other areas that would avoid any significant impacts on sensitive natural resources. Access to the project site for construction vehicles and equipment would be from Bowman Canyon Road.

Prior to the commencement of project implementation, all required permits, agreements, and authorizations would be obtained from the USACOE, the RWQCB, and the CDFW. The MCOSD shall comply with all conditions of those permits. MCOSD would implement applicable RTMP BMPs listed under the subheading Applicable RTMP Policies and BMPs to minimize potential impacts on biological resources. These include BMPs to minimize potential impacts on riparian habitat or other sensitive natural communities. For these reasons, implementation of the proposed project would result in a less than significant impact associated with potential substantial adverse effects on state or federally protected wetlands through direct removal, filling, hydrological interruption, or other means.

Implementation of the proposed project would substantially reduce the potential for accelerated erosion and sedimentation into the Novato Creek Watershed that could adversely impact water quality and listed aquatic species and their habitats by reducing overall road and trail footprint within sensitive habitats and developing crossings of the seasonal streams. This would result in a beneficial effect on jurisdictional waters.

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

Less Than Significant

Wildlife corridors are described as pathways or habitat linkages that connect discrete areas of natural open space otherwise separated or fragmented by topography, changes in vegetation, and other natural or manmade obstacles such as urbanization. They allow for the movement and migration of animals and plants, and are critical for the maintenance of ecological processes and viable populations of plants and animals by promoting (1) the continual exchange of genes between populations, which helps to maintain genetic diversity; (2) access to adjacent habitat areas that provide additional territory for foraging and breeding; (3) greater carrying capacity; and (4) routes for colonization of new habitat following locational population extinctions or habitat recovery from ecological catastrophes.

Habitat linkages are broader stretches of open space that allow for the movement of multiple species and maintenance of ecological processes. These linkages do not have to provide continuous habitat but could also be patches of suitable areas that support movement from one patch to another to allow dispersal and

migration. Habitat linkages reduce the adverse effects of habitat fragmentation that can lead to decreased gene flow for small animals, such as amphibians, reptiles, and rodents.

Native wildlife nursery sites are specific areas where certain species return yearly to breed, birth, and raise juveniles. For example, most salmonids require gravel beds in the upper reaches of a stream. There is a distinction between wildlife nursery sites and other breeding sites that do not have specific habitat conditions. In other words, a tree with a bird nest is not necessarily a wildlife nursery site.

The project area is located in an undeveloped area and is surrounded by large expanses of open space. Wildlife is expected to currently use the project area for local and regional movements. The proposed project does not include the construction of any structures that would inhibit wildlife movement. The proposed trail bridges and puncheons would span the creek and would not affect streamflow or wildlife movement within the creeks because the footings would be above the top of creek bank to avoid impact to the bed and bank. Implementation of the proposed project would not result in significant impacts on wildlife movement activity in the surrounding area because construction would take place during the day and would be temporary, ceasing after project construction. Trail improvements, including decommissioning 3.0 miles of roads and 3.1 miles of social trails, improving and adopting 2.5 miles of existing ranch roads and 0.2 miles of social trails, converting 1.2 miles of existing roads to trails, and developing 5.8 miles of new sustainable trails, are not expected to interfere with the movement of native resident or migratory fish or wildlife species, with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

Implementation of the proposed project would not 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 within the project area or the surrounding area. Under existing conditions, resident wildlife have likely habituated to human activity along the existing trail system. Visitation to the project area is not expected to increase after the proposed project is implemented because the existing limitation on parking would continue and the proposed project does not include increasing parking capacity.

Wildlife may leave the immediate area surrounding the trail during construction activities; however, the impacts will be short-term and only occur during construction. Wildlife uses would remain in the project area and any displaced wildlife would likely return following completion of construction. Road and trail decommissioning would entail road surface decompaction, recontouring to match the natural hillslope, the removal of roadside berms, and the installation of cross drains. After decommissioning, these trail areas would restore habitat to their natural state, resulting in a beneficial effect associated with wildlife use. Proposed designated roads would be improved by road shaping treatments such as berm breaches, knicks, road outsloping and rolling dips would be installed to decrease road surface erosion, improve drainage dispersion, and improve on-going maintenance. In addition, the road surface would be overlayed with Class II base rock to strengthen areas where weak soils occur. Road to trail conversions and trail construction would involve trail contouring and outsloping. Installation of frequent proposed trail drainage features, such as grade reversing dips that would disperse runoff and decrease hydraulic energy potential, and prevent erosion from trail related runoff, would be installed throughout the proposed road and trail network.

Implementation of the proposed project would substantially reduce the potential for accelerated erosion and sedimentation into the Novato Creek Watershed that could adversely impact water quality and listed aquatic species and their habitats. This would result in a beneficial effect on the movement of native resident migratory fish and wildlife species and native wildlife nursery sites. For these reasons, the proposed project would not interfere with the movement of native resident or migratory fish or wildlife species, with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. Therefore, mitigation measures are not required.

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

No impact

The majority of Mount Burdell Open Space Preserve is within unincorporated Marin County and governed by the Marin Countywide Plan. The parcels are zoned as Agriculture and Conservation and Restricted Open Space. These zoning and land use designations are intended to support public recreation and natural resources preservation and the proposed project supports and continues that use. The respective Countywide Plan includes goals and policies to protect natural resources. The RTMP includes policies and BMPs to protect biological resources, which are previously listed in this document. Implementation of the proposed project would conform with the goals and policies of these documents.

Marin County Board of Supervisors adopted Ordinance 3342 – Native Tree Protection and Preservation on May 16, 2002 to establish regulations for the protection and preservation of native trees in non-agricultural unincorporated areas of Marin County by limiting tree removal. The ordinance defines protected trees and prohibits their removal unless one or more of the exceptions applies. Removal of protected trees requires a permit. MCOSD is exempt from this ordinance pursuant to Title 22:06.050 – Exemptions from Land Use Permit Requirements because the RTMP is the MCOSD document that governs as an extension of the Marin Countywide Plan.

Prior to the commencement of project implementation, all required permits, agreements, and authorizations would be obtained from the RWQCB and the CDFW. The MCOSD shall comply with all conditions of those permits. MCOSD would implement applicable RTMP BMPs listed under the subheading Applicable RTMP Policies and BMPs to minimize potential impacts on biological resources. For these reasons, implementation of the proposed project would result in no impact associated with potential conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

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

No Impact

There are no adopted HCPs or NCCPs in Marin County, and therefore, the proposed project would not conflict with any of these plans.

CULTURAL RESOURCES

TABLE 6: CULTURAL RESOURCES CHECKLIST QUESTIONS

	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation	Less-than-Significant Impact	No Impact
a)	Cause a substantial adverse change in the significance of a historic resource pursuant to §15064.5?	☐	☐	☒	☐
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☒	☐
c)	Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☒	☐

Setting

Cultural and Historical Resources Studies

Tom Origer and Associates prepared a Cultural Resources Study (CRS) for the proposed project in 2024[59]. It included a cultural resources literature search completed at the Northwest Information Center of the California Historical Resources Information System (CHRIS), examination of the library and files of Tom Origer and Associates, initial Native American Consultation with the Native American Heritage Commission (NAHC), and an archaeological survey of the project area. The CRS satisfies the following RTMP BMPs:

- Cultural Resources-1: Historical and Archaeological Resource Mapping
- Cultural Resources-2: Consultation with Northwest Information Center

Tom Origer & Associates conducted archival research utilizing their in-house library, a records search at the Northwest Information Center, historic maps and aerial photos, and other sources of ethnographic literature. Archival research found that a very small portion of the project area had been previously subject to a formal survey by an archaeologist, and no resources have been recorded within the project area. Archival research also found that three cultural resources studies have been conducted within a quarter-mile of the project area and that two cultural resources have been documented within a quarter-mile of the project area with the closest resource recorded just outside its northeastern boundary. Review of historic maps concluded that there were no buildings within the project area.

Tom Origer & Associates conducted an intensive field survey on April 17, 18, and 22, 2024. The surface conditions were examined and hoes were used to expose the ground surface. While steeper slopes were noted as a hindrance, field conditions were clear, warm, and dry. No archaeological resources or site indicators were identified within the survey area. However, two segments of a stone fence were documented along a portion of the northeastern boundary of the Bowman parcel, outside of the proposed project disturbance area. The stone fence is estimated to date to the 1980s and was likely constructed to demarcate a property boundary. Tom Origer & Associates recommendation indicated that the fence may be eligible for inclusion in the California Register of Historical Resources should future project activities be proposed that could affect its integrity.

[59] Barrow, E., Tom Origer and Associates. 2024. *Cultural Resources Study for the Bowman Canyon Road and Trail Improvement Project, Marin County, California.*

Given these findings, and the existing conditions of the project area including landform age, geologic formation, and steepness of the terrain, the CRS concluded that there would be a very low potential for buried cultural resources to exist within the project area. No additional archaeological work was recommended and, given that there are no proposed plans to alter the stone fence, no additional built environment recommendations were warranted. The CRS included recommendations regarding discovery of buried archaeological resources and human remains:

- Pursuant to State CEQA Guidelines Section 15064.5(f), if archaeological remains are uncovered, work at the place of discovery should be halted immediately until a qualified archaeologist can evaluate the finds. Prehistoric archaeological site indicators included: obsidian and chert flakes and chipped stone tools; grinding and mashing implements including slabs and handstones, and mortars and pestles; bedrock outcrops and boulders with mortar cups; and locally darkened midden soils. Midden soils may contain a combination of any of the previously listed items with the possible addition of bone and shell remains, and fire-affected stones. Historic period site indicators generally include fragments of glass, ceramic, and metal objects; milled and split lumber; and structure and feature remains such as building foundations and discrete trash deposits including wells, privy pits, and dumps.
- Pursuant to State CEQA Guidelines Section 15064.5(d), if human remains are encountered, excavation or disturbance of the location must be halted in the vicinity of the find, and the county coroner contacted. If the coroner determines the remains are Native American, the coroner will contact the Native American Heritage Commission (NAHC). The NAHC will identify the person or persons believed to be most likely descended from the deceased Native American. The most likely descendent makes recommendations regarding the treatment of the remains with appropriate dignity.

The following RTMP BMPs address these recommendations:

- Cultural Resources-6: Construction Recovery Protocol
- Cultural Resources-7: Human Remains

Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial and Section 5097.99 of the Public Resources Code defines the obtaining or possession of Native American remains or grave goods to be a felony. Buried human remains encountered during project implementation, by law, must be reported to the County Coroner. The disposition of Native American burials is within the jurisdiction of the NAHC, who has the statutory authority to mediate agreements regarding the disposition of Native American remains. In cases in which human remains are known or believed to be likely, consultation with the NAHC is initiated early in the planning process so that the consultations with appropriate Native American most likely descendant occurs and agreement regarding the disposition of the remains can be reached. Additionally, MCOSD would directly contact the Federated Indians of Graton Rancheria in the event that human remains are inadvertently discovered per the request by FIGR on previous projects.

Project Area History

In northern California, archaeological evidence suggests human occupation had occurred by at least 12,000 years ago. Initial use of the area was for hunting and gathering resources by highly mobile, extended families who had limited exchange systems or social structure. With the introduction of a milling technology later on, and even later, a dependence on an acorn economy, population growth, expansion, and trade systems were developed. Sociopolitical complexity and status distinctions based on wealth are also observable in the archaeological record, by an increased range and distribution of trade goods such as shell beads and obsidian tools, which are possible indicators of both status and increasingly complex exchange systems. At Euroamerican contact, Marin County was inhabited by the Coast Miwok people. They settled in large, permanent villages and also used seasonal camps and task-specific locations. Their

society consisted of many tribelets that were small independent groups of usually related family members occupying a specific territory and speaking the same language or dialect. The Coast Miwoks pursued a subsistence cycle focused on gathering and harvesting seasonally available resources. This group managed their environment to improve and maintain it to suit their needs. Inter-tribelet relationships were socially and economically advantageous, offering marriage partners, information, and materials and services not available locally. In central Marin County, Native American archaeological sites are recorded on terraces adjacent to creeks and springs, along ridgelines and within rock outcroppings.

Between A.D. 1579 to 1603, contact with native populations likely occurred during the voyages of Drake, Cermeño, and possibly Vizcaino. In this area, Spanish interaction resumed with the local Native Americans probably somewhat before the establishment of Mission Dolores in San Francisco in 1776. Later, Mission San Rafael Arcángel was founded in December 1817. After secularization of the missions, large areas of land were opened for landgrants granted to local Marin County Native Americans who had been a part of the mission system. The project area is within the Rancho Nicasio, which was one of three landgrants granted to Teodosio Quilaguegui by Governor Figueroa in 1835, encompassing approximately 20 square leagues that stretched from the present-day city of Novato westward to Tomales Bay.[60] [61] In 1855, after Mexico ceded Alta California to the United States after the Mexican-American War, the United States Land Commission rejected Quilaguegui's claim to Rancho Nicasio and the land containing the project area was patented to Henry Halleck in 1861.[60] [61] Halleck arrived in California in 1847 during his military service, later practicing law in the state before returning east to serve in the Civil War.

Mount Burdell is named after the Burdell family, early settlers who became prominent in the region's history. Dr. Galen Burdell, a dentist who came to California from New York in 1849, married Mary Augustina Black in 1893. As a wedding gift, the couple received the Olompali ranch, which included what became known as Burdell Mountain.[62] Their property became the Burdell Ranch and was located northeast of the project area.

Applicable Regulations

National Historic Preservation Act Context

The proposed project would likely require a Section 404 Permit from the USAOCE, and therefore, would be subject to compliance with Section 106 of the National Historic Preservation Act (NHPA)[63] to address potential impacts to historic properties. This includes resources that are eligible for listing on the National Register of Historic Places (NRHP).

Section 106 of the National Historic Preservation Act

Federal protection of resources is legislated by the NHPA of 1966 as amended by 16 U.S. Code 470, the Archaeological Resource Protection Act of 1979, and under guidelines established by the Advisory Council on Historical Preservation. These laws and organizations maintain processes for determination of the effects on historical properties eligible for listing in the NRHP.

Section 106 of the NHPA and accompanying regulations[64] constitute the main federal regulatory framework guiding cultural resources investigations and require consideration of effects on properties that are listed in or may be eligible for listing in the NRHP. The NRHP is the nation's master inventory of known historic resources. It is administered by the National Park Service and includes listings of

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60 Cowan, Robert G. 1977. Ranchos of California. Historical Society of Southern California.

61 Hoover, M., Rensch, H., Rensch, E., Abeloe, W., and Kyle, D.. 2002. Historic Spots in California. 5th Edition. Stanford University Press, Stanford.

62 Teather, D. 1986. Historic Resource Study of Olompali State Historic Park.

63 54 USC § 306108, Effect of Undertaking on Historic Property, United States Code (codifying Section 106 of the National Historic Preservation Act). Available: https://www.law.cornell.edu/uscode/text/54/306108

64 36 Code of Federal Regulations (CFR) Part 800: *Protection of Historic Properties* (regulations implementing Section 106 of the National Historic Preservation Act), Advisory Council on Historic Preservation. Available: https://www.achp.gov/sites/default/files/regulations/2017-02/regs-rev04.pdf

buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, and cultural districts that are considered significant at the national, state, or local level. The formal criteria[65] for determining NRHP eligibility are as follows:

1. The property is at least 50 years old however, properties under 50 years of age that are of exceptional importance or are contributors to a district can also be included in the NRHP;
2. It retains integrity of location, design, setting, materials, workmanship, feeling, and associations; and
3. It possesses at least one of the following characteristics:
    a. Events: Association with events that have made a significant contribution to the broad patterns of history.
    b. Persons: Association with the lives of persons significant in the past.
    c. Architecture: Distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or possesses high artistic values, or represents a significant, distinguishable entity whose components may lack individual distinction.
    d. Has yielded, or may be likely to yield, information important to prehistory or history (information potential).

Listing in the NRHP does not entail specific protection or assistance for a property but it does guarantee recognition in planning for federal or federally assisted projects, eligibility for federal tax benefits, and qualification for federal historic preservation assistance. The potential effects of a proposed project on properties listed in the NRHP must be evaluated under CEQA and any resource listed in the NRHP is automatically listed in the California Register.

The National Register Bulletin also provides guidance in the evaluation of archaeological site significance. If a heritage property cannot be placed within a particular theme or time period, and thereby lacks "focus," it is considered not eligible for the NRHP. In further expanding upon the generalized NRHP criteria, evaluation standards for linear features such as roads, trails, fence lines, railroads, ditches, and flumes are considered in terms of four related criteria that account for specific elements that define engineering and construction methods of linear features: size and length; presence of distinctive engineering features and associated properties; structural integrity; and setting. The highest probability for NRHP eligibility exists within the intact, longer segments, where multiple criteria coincide.

Secretary of the Interior's Standards

The *Secretary of the Interior's Standards for the Treatment of Historic Properties* (Secretary's Standards) provide guidance for working with historic properties. The Secretary's Standards are used by CEQA lead agencies to evaluate proposed rehabilitative work on historic properties. They are a useful analytic tool for understanding and describing the potential impacts of proposed changes to historic resources. Projects that comply with the Secretary's Standards benefit from a regulatory presumption that they would not result in a significant impact to a historic resource. Projects that do not comply with the Secretary's Standards may or may not cause a substantial adverse change in the significance of a historic property.

In 1992 the Secretary's Standards were revised so they could be applied to all types of historic resources, including landscapes. They were reduced to four sets of treatments to guide work on historic properties: Preservation, Rehabilitation, Restoration, and Reconstruction. The four distinct treatments are defined as follows:

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[65] 36 C.F.R. § 60.4, *Criteria for Evaluation,* Part 60 - National Register of Historic Places (regulations implementing the National Historic Preservation Act's criteria for listing and eligibility of historic properties). Available: https://www.ecfr.gov/cgi-bin/text-idx?SID=b36f494ab8c19284178b4c593eda2a8f&tpl=/ecfrbrowse/Title36/36cfr60_main_02.tpl

- Preservation is defined as the act or process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property. Work, including preliminary measures to protect and stabilize the property, generally focuses upon the ongoing maintenance and repair of historic materials and features rather than extensive replacement and new construction. New exterior additions are not within the scope of this treatment; however, the limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a preservation project.
- Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features that convey its historical, cultural, or architectural values.
- Restoration is defined as the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period. The limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional is appropriate within a restoration project.
- Reconstruction is defined as the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

The appropriate treatment for any renovation project under the Secretary's Standards for Treatment of Historic Properties is rehabilitation. One existing structure, a stone fence likely denoting a property boundary, will not be impacted as a part of the proposed project.

AB 52 Consultation with Federated Indians of Graton Rancheria

Assembly Bill 52 (AB 52) is described in the Tribal Cultural Resources section of this Checklist. On January 23, 2024, a request was sent to the State of California's NAHC by MCOSD seeking information from the Sacred Lands File and the names of Native American individuals and groups. The NAHC responded on February 11, 2024, stating that the Sacred Lands file did not indicate the presence of cultural resources within the project area and that the following tribes may have knowledge of cultural resources in the project area and should be contacted:

- Federated Indians of Graton Rancheria
- Guidiville Indian Rancheria

MCOSD sent an email Invitation to Consult per AB 52 to the following tribes on March 19, 2024, which also satisfied RTMP MBP Cultural Resources-3: Tribal Consultation:

- Federated Indians of Graton Rancheria
- Guidiville Indian Rancheria
- Coast Miwok Tribal Council of Marin
- Ione Band of Miwok Indians

The consultation letters notified tribes of the proposed project and informed them that Tom Origer and Associates would be conducting a cultural resources survey of the project area. Of the tribes contacted, MCOSD received requests to consult from the Federated Indians of Graton Rancheria (FIGR) and the Guidiville Indian Rancheria (GIR).

In an email dated March 21, 2024, FIGR acknowledged receipt of the notification and requested that a representative be present during the scheduled archaeological fieldwork on April 17, 2024. A representative of FIGR was present for the fieldwork on that date. GIR responded by letter dated May 30, 2024, thanking MCOSD for the notification and the opportunity to be present for the fieldwork, and

requesting a copy of the final Cultural Resources Study. MCOSD provided the finalized Cultural Resources Study to both GIR and FIGR on June 11, 2024.

Applicable RTMP Policies and BMPs

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to minimize or avoid potential environmental impacts on cultural resources. The applicable RTMP Policies and BMPs are listed below and are provided, in their entirety, in Appendix A.

- Cultural Resources-1: Historical and Archaeological Resource Mapping
- Cultural Resources-2: Consultation with Northwest Information Center
- Cultural Resources-3: Tribal Consultation
- Cultural Resources-5: Permanent Protection
- Cultural Resources-6: Construction Discovery Protocol
- Cultural Resources-7: Human Remains

CEQA Context

Cultural and historical resources are nonrenewable and are easily damaged or destroyed. Potential impacts on cultural and historical resources are determined by analyzing the potential effect of implementing the proposed Project to known and unknown cultural and historical resources.

a) Would the Project cause a substantial adverse change in the significance of a historic resource pursuant to §15064.5?

Less than Significant Impact

Historical resources are defined by CEQA Guidelines Section 15064.5 as “Any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California. Generally, a resource shall be considered historically significant if the resource meets the criteria for listing on the California Register of Historical Resources.”

Tom Origer and Associates conducted a records search at the Northwest Information Center of the California Historical Resources Information System. One historic-era stone fence dating approximately to 1963 and potentially eligible for inclusion on the California Register was found along the northeastern boundary of the property. The location of the historic stone fence is outside of the proposed project disturbance areas and alterations to the fence are not proposed. No additional historic resources or properties were identified, or are listed on federal, state, or local inventories within or abutting the project area. A review of maps dating from the late 1800s to 1995 did not identify any potential for specific historic development and a field survey did not identify any cultural resources within or adjacent to the project area.

Excavation required for bridge abutments and other minor earth-moving associated with project implementation could reveal unknown historic resources. To address this issue, the proposed project would implement the applicable RTMP BMPs, which would ensure that the implementation of the proposed project would not result in significant impacts. For these reasons, implementation of the proposed project would not result in a substantial adverse change in the significance of a historic resource pursuant to CEQA Guidelines Section15064.5 and the implementation of the proposed project would result in a less than significant impact to historic resources.

b) Would the Project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Less than Significant Impact

An archaeological resource is defined by CEQA Section 21083.2 as “an archaeological artifact, object, or site, about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information
2. Has a special and particular quality such as being the oldest of its type of the best available example of its type
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.”

No archaeological resources have been identified within the project area. Based on the geology and soil type mapped within the project area, there is a low potential for buried Native American archaeological resources and the proposed project would not result in significant impacts on known cultural resources. Excavation required for the bridge abutments and other minor earth-moving associated with project implementation has the potential to reveal unknown archaeological or Native American resources. To address this issue, the proposed project would implement the applicable RTMP BMPs, which would ensure that the implementation of the proposed project would not result in significant impacts to archaeological or Native American resources. Additionally, MCOSD would directly contact FIGR in the event that cultural resources are inadvertently discovered. For these reasons, implementation of the proposed project would result in a less than significant impact associated with a substantial adverse change in the significance of a historic resources pursuant to CEQA Guidelines Section 15064.5.

c) Would the Project disturb any human remains, including those interred outsides of formal cemeteries?

Less than Significant Impact

Section 7050.5 of the California Health and Safety Code states that it is a misdemeanor to knowingly disturb a human burial and Section 5097.99 of the Public Resources Code defines the obtaining or possession of Native American remains or grave goods to be a felony. Buried human remains encountered during project implementation, by law, must be reported to the County Coroner. The disposition of Native American burials is within the jurisdiction of the NAHC, who has the statutory authority to mediate agreements regarding the disposition of Native American remains. In cases in which human remains are known or believed to be likely, consultation with the NAHC is initiated early in the planning process so that the consultations with appropriate Native American most likely descendant occurs and agreement regarding the disposition of the remains can be reached. Additionally, MCOSD would directly contact FIGR in the event that human remains are inadvertently discovered.

Excavation required for the bridge abutments and other minor earth-moving associated with project implementation could reveal unknown human remains. Should this occur MCOSD would contact the County Coroner and the NAHC. MCOSD would also contact FIGR. The proposed project would implement the applicable RTMP BMPs. RTMP BMP Cultural Resources-7: Human Remains which identifies protocols to follow should the project uncover human remains.

For these reasons, implementation of the proposed project would result in a less than significant impact associated with human remains being encountered during project implementation, including those interred outside of formal cemeteries.

ENERGY

TABLE 7: ENERGY CHECKLIST QUESTIONS

	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation	Less-than-Significant Impact	No Impact
a)	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☐	☒
b)	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

Setting

Current energy use within the project area is very minimal. Recreational visitors may use small amounts of gasoline to drive to and from the project area. Similarly, MCOSD rangers and maintenance staff drive to and from the project area and use petroleum during routine maintenance activities such as mowing and weed whacking. There is no electrical use at the project area.

Applicable RTMP Policies and BMPs

The RTMP does not include Policies and BMPs specific to Energy. The RTMP Policies and BMPs are provided, in their entirety, in Appendix A.

CEQA Context

In order to assure that energy implications are considered in project decisions, CEQA Section 21100(b)(3) requires that the potential energy impacts of proposed project be considered, with emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. Appendix F of the CEQA Guidelines provides guidance for assessing the significance of potential energy impacts.

a) Would the Project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

No Impact

The proposed project would not result in measurable incremental increases in the use of fuel. During construction, the proposed project would require the use diesel-powered heavy equipment and gas-powered vehicles to access the site and bring materials and equipment to the area. Equipment would include trail dozers, mini-excavator, compactors, cement truck, cement mixers, rubber track carrier, generators, ATVs, generators, jackhammers, power saws, and other hand tools. As described in the project description, heavy equipment would operate for approximately 591 working days over a seven-month, three-season overall construction period, and approximately eight to 10 hours a day. Up to five MCOSD staff members would drive to and from the project site each day during construction to monitor activity and ensure that all RTMP BMPs and Mitigation Measures are implemented. The amount of fuel energy utilized to construct the proposed project would consist of that required for project implementation. For these reasons, the proposed project would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources during project construction.

Operation of the project would occur as described in the project description and would result in energy use from trail users driving to and from the project area and from MSOSD staff to perform regular maintenance.

The proposed project is not expected to significantly increase vehicle trips for recreational use of these trails because the proposed project does not include a parking area and under existing conditions, parking is very limited to a few spaces at designated trailheads. The affected trails are existing facilities that primarily support neighborhood recreation. The proposed new bridges and trail relocation/improvements are not likely to attract significantly more people to the area as no additional parking is provided at the trailheads. Operation and maintenance activities would be similar to existing conditions and energy use would not increase compared to baseline conditions. Therefore, implementation of the proposed project would result in no impact associated with wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation.

b) Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No Impact

As discussed above, the project would use small amounts of energy during construction of the proposed project, including the use of heavy equipment to construct re-routes, develop newly proposed trails, and decommission abandoned trail segments and social trails as well as from truck trips associated with employees driving to and from the site and from material deliveries. Operation and maintenance activities would be similar to existing conditions and energy use would not increase compared to baseline conditions. Implementation of Policy SW-29: Retrofit or Upgrade Construction Equipment would ensure that MCOSD uses the most efficient equipment available and conducts the project in an energy efficient manner. Therefore, the proposed project would not conflict with renewable energy or energy efficiency plans, including goals set forth in AB 32, including the 39 Recommended Actions identified by the California Air Resources Board (CARB) in its Climate Change Scoping Plan.[66] The proposed project would also not conflict with goals and policies contained in the Climate Action Plan. For these reasons, implementation of the proposed project would result in no impact associated with conflict or obstruct with a state or local plan for renewable energy or energy efficiency.

[66] California Air Resources Board. 2022. *California 2022 Climate Change Scoping Plan*. Available: https://ww2.arb.ca.gov/resources/documents/2022-scoping-plan-documents

GEOLOGY AND SOILS

TABLE 8: GEOLOGY AND SOILS CHECKLIST QUESTIONS

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

Setting

The MCOSD preserves are within the central portion of the Coast Range Physiographic Province of California, composed of a series of northwest-southeast aligned coastal mountain chains dominated by a similar trending San Andreas Fault Zone.[67] Marin County has several faults delineated by the California Division of Mines and Geology, with the San Andreas Fault being the only fault identified by the Alquist-Priolo Earthquake Fault Zoning Act. Additionally, an active portion of the Hayward fault lies near the county. There is a 62 percent likelihood of fault rupture with a magnitude of 6.7 or greater to occur on one of the San Francisco Bay Area active faults, including the San Andreas or the Hayward faults, before the year 2032.[68] It is also possible, but with a low probability, that earthquakes may occur on inactive or previously unidentified faults.

The main geologic hazards for the MCOSD's open space areas and trail infrastructure are landslides and other related slope stability hazards under strong seismic shaking, or more commonly, during intense rainfall events that quickly saturate the soil. Landslides are the downward movement of materials such as rock, soil, or fill. Debris flows are a rapid downslope movement of thick slurry composed of loose soil, rock, and organic material entrained with air and water; a debris avalanche is a more rapid or extreme debris flow.

Ground shaking is one of the key geologic hazards associated with seismic activity, with some areas more susceptible to strong shaking and potential damage due to their proximity to the fault zone or their underlying soil composition. Soils most susceptible to seismic shaking amplification tend to be younger alluvial deposits, bay mud, and artificial fill found in the lower lying areas around open water including Bolinas, San Pablo, and Richardson Bays. Road and trail stability are also influenced by the underlying soils and how easily they are compacted and eroded, and how stable they are on slopes.

Project Area Geology

The project area is located in the central portion of the Coast Ranges Physiographic Province of California, which is a series of coastal mountain chains that parallel the northwest-southeast mountain ranges of northwest California. The project area is mapped as underlain by a complex assemblage of rocks belonging to the Franciscan Complex, a geologic formation that dominates much of coastal Northern California. The Franciscan Complex is characterized as a mélange, or geologic mixture, that was formed during the subduction of the Farallon Plate beneath the North American Plate beginning in the Mesozoic Era. This geologic history created a mixture of rock types without a consistent orientation due to extreme pressure, heat, and plastic deformation during subduction. The USGS describes this rock as follows:

> *Tectonic mixture of masses of resistant rock types including sandstone, altered mafic volcanic rock (greenstone), chert, gabbro, exotic metamorphic rocks embedded in a sheared, shaley matrix.*

Project Area Soils

The soils within the project area are generally from the weathering of Franciscan Complex bedrock, including sandstone, shale, and serpentine. They are mapped as the Tacoloma-McMullin Complex, Henneke Stony Clay Loam, Saurin-Bonnydoon Complex, and Bonnydoon-Gilroy-Typic Argixerolls, included on Figure 19 – Soils Map. Under the Natural Resources Conservation Service (NRCS) Hydrologic Soil Group classification system, which ranks soils based on infiltration rates and runoff potential, the project area soils fall into Group C and Group D. Group C soils are typically loamy with slow infiltration rates, while Group D soils are clay-rich with very slow infiltration rates, a high swelling potential

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67 County of Marin, 2014, *Marin County Open Space District's Road and Trail Management Plan Recirculated Final Tiered Program Environmental Impact Report.* State Clearinghouse No. 2011012080.

68 County of Marin. 2007. *Marin Countywide Plan.*

due to clay content, and high-water table. Both groups are associated with high runoff potential, which directly influences watershed hydrology, stormwater management, and sediment delivery systems[69].

The mapped soils with the highest occurrence in the project area is the Saurin-Bonnydoon Complex, covering approximately 40% of the project area. Saurin soils formed in fractured sandstone and shale and are typically 20 to 40 inches deep to bedrock. These soils fall into Hydrologic Group C, with moderate permeability, rapid runoff, and high erosion hazards on ridgetops and side slopes.

Project Area Faulting and Seismicity

The San Andreas Fault Zone dominates this geologically active area and is located approximately 11.5 miles west of the project area. The San Andreas Fault system forms the boundary between the North American and Pacific tectonic plates. The Hayward-Rodgers Creek Fault Zone is located approximately 15.7 miles from the project area. The project area is not located within a mapped Earthquake Fault Zone as defined by the Alquist-Priolo Act of 1972 and there are no known earthquake faults that could result in surface rupture within the project area. However, a fault is located near the northern boundary of the project area along Bowman Creek is subject to strong seismic ground shaking in the event of a large magnitude earthquake on these nearby faults. Strong ground shaking can trigger liquefaction in loose granular soils in saturated conditions. Within the project area, the liquefaction potential is low due to the medium dense nature of the soils, the grain size distribution of the sediments, and because ground water is below this depth. The liquefaction potential below ground water is unknown.[70]

Project Area Landsliding

The project area is mapped as mostly landslides[71] consisting of mapped landslides, intervening areas typically narrower than 1,500 feet, and narrow boarders around landslides defined by drawing envelopes around groups of mapped landslides. There are multiple landslides mapped on the Bowman parcels which radiate to the north, west, and south within the project area. Smaller slides can occur within these areas during wet years, periods of intense rainfall, and during large earthquakes when the soil is saturated. These smaller slides are generally shallow and may be cleared relatively easily. Larger mapped slides may have deeper slide planes and could result in significant damage or slow creep if active. Predicting large-scale movements is difficult as they may only occur every few decades during extreme conditions of soil saturation or soil saturation combined with ground shaking.

Applicable RTMP Policies and BMPs

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to minimize or avoid potential environmental impacts to geology and soils. The applicable RTMP Policies and BMPs are listed below and are provided, in their entirety, in Appendix A.

- General-1: Limit Work Area Footprints in Sensitive Resource Areas
- General-3: Minimize Potential for Erosion
- General-4: Modify Construction Methods Relating to Soil Disturbance, Restrict Use of Offsite Soil, Aggregate, or Other Construction Materials
- General-7: Include Standard Procedures in Construction Contracts

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69 Natural Resources Conservation Service (NRCS), U.S. Department of Agriculture. 2007. *National Engineering Handbook,* Part 630 Hydrology, Chapter 7 Hydrologic Soil Groups. U.S. Department of Agriculture, Natural Resources Conservation Service.

70 California Geological Survey (CGS), California Earthquake and Hazards Zone Application, State of California Department of Conservation, interactive web map. Available: https://maps.conservation.ca.gov/cgs/EQZApp/app/ Accessed September 22, 2025.

71 Wentworth, C.M., Graham, S.E., Pike, R.J., Beukelman, G.S., Ramsey, D.W., and Barron, A.D., 1997. *Summary Distribution of Slides and Earth Flows in Marin County, California.* United States Geological Survey, 97-745 C, Sheet 4 of 11. Available: https://pubs.usgs.gov/of/1997/of97-745/madl.html

- Construction Contracts-1: Standard Procedures in Construction Contracts
- Water Quality-1: Modifications to Road and Trail Management Actions to Protect Water Bodies, Wetlands, and Tidally Influenced Areas
- Water Quality-2: Temporary Erosion and Sediment Control
- Water Quality-3: Erosion Control Measures
- Water Quality-6: Grading Windows
- Geologic Hazards-1: Assessment and Requirements in Areas of Potential Geologic Hazard
- Geologic Hazards-2: Construction in Areas of Slides and Debris Flows
- Geologic Hazards-3: Construction in Areas of Erodible and Expansive Soils
- Geologic Hazards-4: Construction in Areas of Collapsible Soils

CEQA Context

A project would normally result in a significant impact to geology and soils if it would result in substantial erosion, expose people to major geologic hazards, or a permanent loss of natural geologic resources created by a substantial change in topography or land subsidence.

a) Would the Project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

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

No Impact

The project area is located in an area that could experience earthquakes and very strong ground shaking as a result of a large magnitude earthquake on these nearby faults. The San Andreas Fault Zone is located approximately 11.5 miles from the project area and the Hayward-Rodgers Creek Fault Zone is located approximately 15.7 miles from the project area. However, the project area is not located within a mapped Earthquake Fault Zone as defined by the Alquist-Priolo Act of 1972 and there are no known earthquake faults that could result in surface rupture within the project area. The proposed project does not include construction of any structures that could pose a safety hazard to trail users in the event of an earthquake. The proposed recreational use bridges would be developed utilizing Marin County Open Space District Engineered Bridge Designs by Mayone Structural Engineers, Inc. The material would be determined at the time of construction based on relative cost, and could be sawn lumber, steel, or fiberglass. If lumber is used, it would be untreated wood. The proposed trail bridges would be located above the 100-year flood elevation spanning the banks of the ephemeral streams. Concrete foundations would be set beyond the top of the stream banks and the bridge anchors would be set in the concrete foundations. Cut and fill volumes for the bridge foundations would be balanced in that the soil excavated for the footings would be replaced by concrete. All excavation associated with the bridge foundations would occur outside of the stream channels and beyond the top of bank. The density of people who visit Mount Burdell Open Space Preserve is relatively low in comparison to urban and suburban areas of Marin County, and implementation of the project would not alter or introduce new risk of earthquake.

Implementation of the proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist or based on other substantial evidence of a known fault. For these reasons,

implementation of the proposed project would result in no impact associated with rupture of a known earthquake fault involving risk of loss, injury, or death.

ii) Strong seismic ground shaking?

No Impact

Ground shaking is one of the key geologic hazards associated with seismic activity, with some areas more susceptible to strong shaking and potential damage due to their proximity to the fault zone or their underlying soil composition. Soils most susceptible to seismic shaking amplification tend to be younger alluvial deposits, bay mud, and artificial fill found in the lower lying areas around open water including Bolinas, San Pablo, and Richardson Bays. Soils within the preserves are predominantly loam to clay loam, which are not as susceptible to strong seismic ground shaking. For these reasons, implementation of the proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Implementation of the proposed project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking.

iii. Seismic-related ground failure, including liquefaction?

No Impact

Liquefaction can result when strong ground shaking, such as during an earthquake, occurs in loose granular soils in saturated conditions. Within the project area, the liquefaction potential is very low due to the medium dense nature of the soils, the coarse nature of the soil, grain size distribution of the sediments, probable increases in soil density with depth, and because ground water is below at depth. The proposed project would not be subject to other types of seismic-related ground failure, including differential settlement or lateral spreading. For these reasons, implementation of the proposed project would result in no impact associated with directly or indirectly causing potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure including liquefaction.

iv) Landslides

Less than Significant Impact

Landslides are the downward movement of materials such as rock, soil, or fill. Debris flows are a rapid downslope movement of thick slurry composed of loose soil, rock, and organic material triggered by prolonged intense rainfall. The project area is mapped as mostly landslides, having mapped landslides that radiate to the north, west, and south within the project area. The steep slopes render the project area susceptible to debris flows particularly during intense rainfall events that quickly saturate the soil. While the project area may be vulnerable to landslides, mudslides, and slope instability due to the relatively steep hillsides, implementation of the proposed project would not result in a risk to property or public safety because of lack of habitable structures within the project area and the low density of public use.

The proposed road decommissions were selected to remove roads that exhibit conditions associated with landslide susceptibility, including steep gradients, erosional features, or evidence of prior slope instability. The proposed trail decommissionings and improvements have been designed to direct water off the trail surface without creating rills, gullies, or erosion that could lead to instability, debris flows, or landslides. This would be achieved by limiting trail gradients, constructing frequent drainage breaks and grade reversals, outsloping the trail tread, and providing regular maintenance. The proposed project would not expose recreational users to new landslide potential. For these reasons, implementation of the proposed project would result in a less than significant impact associated with risk of loss, injury, or death involving landslides.

b) Would the Project result in substantial soil erosion or the loss of topsoil?

Less than Significant Impact

Erosion is a natural process in which soil and highly weathered rock materials are worn away and then transported by wind and/or water. Soil erosion can become problematic when human intervention causes rapid soil loss and the development of erosional features, such as incised channels, rills, and gullies, that undermine roads, buildings, or utilities. Vegetation clearing and earth-moving activities reduces soil structure and cohesion, resulting in abnormally high rates of erosion, referred to as accelerated erosion. Natural rates of erosion can vary depending on slope, soil type, and vegetative cover. Regional erosion rates are also dependent on tectonics and changes in relative sea level. Soils containing high amounts of silt are typically more easily eroded, while coarse-grained sand and gravel soils are generally less susceptible to erosion.

Soils within the project area would be subject to very high erosion potential. The purpose of the proposed project is to implement the MCOSD's RTMP to provide the public with a safe multi-use trail system to enhance the visitor experience, reduce the environmental impacts on sensitive resources by reducing sedimentation and erosion, and establish a sustainable system of roads and trails that meet design and management standards and would provide safe year-round access along the trail alignment. Implementation of the proposed project would substantially reduce the potential for accelerated erosion and sedimentation into the Novato Creek Watershed that could adversely impact water quality and listed aquatic species and their habitats by improving some road and trail segments, decommissioning eroding and redundant road and trail segments, road-to-trail conversion, and the development of new sustainable trails. Additionally, the proposed improved trail segments would be constructed with erosion control features as described in the Project Description, the proposed decommissioning and restoration of social trails and Upper Serpentine, WB-02, -03, -03.1, -04, and -05 roads would also reduce existing soil erosion, and applicable Policies and BMPs included in the RTMP would be implemented, all of which would minimize potential for substantial soil erosion and the loss of topsoil.

The soils within the project area are mostly Saurin-Bonnydoon Complex soils, which have a very high erosion potential. The existing Upper Serpentine Road is prone to rutting and surface erosion. The historical utilization of this road during wet conditions along with improper maintenance techniques has resulted in a deep fall-line through-cut and rutting and gullying of the roadbed. The WB-02, -03, -03.1, -04, and -05 are within a mapped landslide and would be decommissioned to remove roads which exacerbate drainage issues and elevate erosion concerns. The existing social trails in the project area also contribute to erosion and sediment delivery to surface waters under existing conditions.

By reducing the overall road and trail footprint through the decommissioning of roads in sensitive habitat, converting some roads to trails, and relocating trails out of sensitive habitats, implementation of the proposed project would reduce the trail gradient to below 10 percent, and would include frequent drainage breaks and grade reversals, outsloping the trail tread, and would include crossings of the ephemeral streams, all of which would reduce existing trail erosion in the project area. The proposed project would implement the applicable policies and Best Management Practices included in the District's RTMP. For these reasons, implementation of the proposed project would result in a less than significant impact associated with substantial soil erosion or the loss of topsoil.

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

Less than Significant Impact

Slope stability can depend on several complex variables, including the geology, structure, and the amount of groundwater present, as well as external processes such as climate, topography, slope geometry, and human activity. Earthquake-induced settlement of soils results when relatively unconsolidated granular materials experience vibration associated with seismic events. The vibration causes a decrease in soil volume as the soil grains tend to rearrange into a denser state. This decrease in volume and consolidation of soil can result in the settlement of overlying structural improvements. Landslides are the downward movement of materials such as rock, soil, or fill and lateral spreading refers to landslides that form on gentle slopes that have a rapid fluid-like flow movement. Subsidence is defined as the sinking of the ground caused by the movement of material beneath the ground's surface. It is most often caused by the removal of water, oil, natural gas, or mineral resources and can also result from natural events such as earthquake, soil compaction, erosion, sinkhole formation, and adding water to fine soils deposited by wind. Liquefaction can result when strong ground shaking, such as during an earthquake, occurs in loose granular soils in saturated conditions.

The project area is located in an area that could experience earthquakes and very strong ground shaking as a result of a large magnitude earthquake on these nearby faults however, the proposed project does not include construction of any structures that could pose a safety hazard to trail users in the event of an earthquake. In the project area, there are existing roads within a mapped landslide area. The implementation of the proposed project would decommission the existing roads which are mapped in landslide areas by restoring to their natural hillslope contours and cross drains to improve drainage where necessary.

The structures included in the proposed project would be the proposed trail bridges and puncheons crossing ephemeral streams. A seismic event could result in damage to the proposed bridges, which would requiring subsequent repairs however, this would not result in significant environmental impacts. Implementation of the proposed project would involve minimal ground disturbance which would not cause the underlying geologic unit to become unstable. For these reasons, implementation of the proposed project would not cause a geologic unit or soil to become unstable and result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse, resulting in a less than significant impact.

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

Less than Significant Impact

Expansive Soils are soils that can shrink and/or swell, and thus change in volume, in relation to changes in their moisture content. Generally, the expansiveness relates to the clay content in the soil which enable the soil to absorb water and swell, increasing in volume, when they get wet and then shrink when they dry. These soils often expand in the winter and shrink in the dry summer months. Expansive soils are one of the more problematic soils because the shrinking and swelling in clayey soils can create enough force to cause major damage to building foundations, slabs, patios, and sidewalks.

The project area consists primarily of Saurin-Bonnydoon Complex soils, which have a moderate permeability and are well-drained, and therefore are not considered expansive soils. The proposed trail improvements do not involve new structures that could result in risks to life or property associated with expansive soil. The proposed trail bridges are structures that could experience damage

associated with expansive soils though would not result in substantial risks to life. For these reasons, implementation of the proposed project would result in a less than significant impact associated with substantial direct or indirect risks to life or property associated with expansive soils.

e) Would the Project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact

Implementation of the proposed project would not generate wastewater and would not include installation or use of any septic tanks or alternative wastewater disposal systems. For these reasons, implementation of the proposed project would result in no impact associated with septic tanks and alternative wastewater disposal systems.

f) Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature

No Impact

Paleontological resources include fossils of life that existing prior to the start of the Holocene Epoch, approximately 11,700 years ago. The geology of the project area is of the Franciscan Complex that dates to the Jurassic Period, approximately 199.6 to 145.5 million years ago. Generally, vertebrate and marine fossils in the Franciscan Complex are extremely rare though micro-fossils, including single-celled organisms are sometimes found, particularly in cherts.

The Records Search completed as part of the Cultural Survey Report for the proposed project showed that no recorded fossil sites are located within Marin County, although there are multiple records of invertebrate and plant fossils assigned to the Holocene Epoch. The Franciscan complex, widespread in coastal California, has produced only small collections of significant fossils, none of which occurred in Marin County. For these reasons, implementation of the proposed project would not directly or indirectly destroy unique paleontological resources or site, or unique geologic features and therefore would result in no impact.

GREENHOUSE GAS EMISSIONS

TABLE 9: GREENHOUSE GAS EMISSIONS CHECKLIST QUESTIONS

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

Setting

There is a general scientific consensus that global climate change is occurring and is caused by increased emissions of greenhouse gases (GHGs). Global climate change is the observed increase in average global temperatures, along with other changes in climatic factors such as wind, precipitation, and storm frequency and intensity. Climate change can result from natural factors and processes, but recent trends in global climate change, including the marked increase in global temperatures over the past half-century, are primarily attributable to human activities. By trapping heat in the atmosphere, GHGs, which result from a wide array of human activities such as the burning of fossil fuels and deforestation, are a primary cause of human-induced climate change. Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. There is international scientific consensus that human-caused increases in GHGs have, and will continue to, contribute to global warming. Potential global warming impacts in California may include, but are not limited to, loss in snowpack, increase in sea level rise, more extreme heat days per year, more high ozone days, larger forest fires, and more drought years. Secondary effects are likely to include a global rise in sea level, impacts to agriculture, changes in disease vectors, and changes in habitat and biodiversity.[72]

The six gasses that are the principal contributors to GHG emissions are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (NFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_3). While the presence of the primary GHGs in the atmosphere are naturally occurring, CO_2, CH_4, and N_2O are also emitted from human activities, accelerating the rate at which these compounds occur within earth's atmosphere. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas methane results from off-gassing associated with agricultural practices and landfills. Other GHGs including hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride, and are generated in certain industrial processes. CO_2 is the reference gas for climate change because it is the predominant GHG emitted. The effect that each of the GHGs could have on global warming is a combination of the mass of their emissions and their global warming potential. Global warming potential indicates, on a pound-for-pound basis, how much a gas is predicted to contribute to global warming relative to how much warming would be predicted to be caused by the same mass of CO_2. CH_4 and N_2O are substantially more potent GHG than CO_2, with global warming potential of 25 and 310 times that of CO_2, respectively. Total GHG emissions are typically measures in metric tons of CO2 equivalent ($MTCO_2e$).

[72] California Environmental Protection Agency (CalEPA), March 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature.*

The Marin County Greenhouse Gas Inventory for Countywide Emissions for the Year 2023 concluded that countywide emissions have dropped 34 percent since 2005, which is equivalent to 23 percent below estimated 1990 levels, a trend line indicating that Marin County is on track to meet the statewide goal of reducing emissions by 40 percent below the 1990 level by the year 2030.[73] The greatest reductions have occurred in the Built Environment - Electricity sector, primarily due to the lower carbon intensity of electricity; the Transportation sector, due to more fuel-efficient and alternatively fueled vehicles; and the Waste sector, due to the lower organic content of landfilled waste and material used for alternative daily cover. The sectors contributing the largest amount of emissions include the Transportation sector, contributing 56 percent of community emissions, the Built Environment – Natural Gas sector, contributing 31 percent, and the Agricultural sector, contributing 9 percent. Construction and operation activities associated with implementation of the proposed project are represented in the Off-Road sector, which contributed one percent of emissions in 2023.

There are two means for reducing GHGs in the atmosphere: cutting emissions of GHGs and increasing sequestration, the process by which atmospheric GHGs are stably incorporated into non-mobile forms such as trees and soil. In California, there are four significant pieces of legislation seeking to address climate change and GHG emissions:

- Assembly Bill (AB) 32, the Global Warming Solutions Act, addresses total GHG emissions across the State and throughout different sectors of California's economy, with the goal of reducing emissions to 1990 levels by 2020 and 40 percent below 1990 levels by 2030.
- Senate Bill (SB) 375 requires reduction of emissions from automobiles and light trucks.
- SB 97 requires consideration of climate change in all environmental assessments under CEQA, regardless of the specific source of GHGs or other climate change effects.
- SB 32 sets a GHG emissions reduction target of 40 percent below 1990 levels by 2030.

The California Air Resources Board (CARB) is tasked with the implementation of AB 32 through the development of a Scoping Plan, which is to be updated every five years. CARB produced its second update to the Scoping Plan in 2022.[74] The Scoping Plan identifies natural and working lands, such as agricultural lands, as a critical component to the State's climate change strategy and notes their potential to be both a source and a sink for GHG emissions. In recent years, natural and working lands in California have experienced significant carbon loss, primarily as a result of wildfire. The Scoping Plan states that the objective for natural lands such as Mount Burdell Open Space Preserve is to promote their role as a carbon sink while minimizing GHG and other emissions associated with factors such as management and wildfire.

GHG emissions are also regulated by the Bay Area Air Quality Management District (BAAQMD). The BAAQMD 2022 CEQA Guidelines provide standards for analyzing a project's potential impacts on GHG emissions and thresholds of significance for operational emissions.[75] The BAAQMD 2017 Climate Action Plan also addresses climate change and GHG emissions. For natural and working lands, the CAP

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[73] County of Marin. 2025. Greenhouse Gas Inventory for Countywide Emissions for the Year 2023. Available: https://assets.marincounty.gov/marincounty-prod/public/2025-07/Marin%20Countywide%202023%20GHG%20Inventory%20Report.pdf

[74] California Air Resources Board. 2022. *California 2022 Climate Change Scoping Plan*. Available:. https://ww2.arb.ca.gov/resources/documents/2022-scoping-plan-documents

[75] Bay Area Air Quality Management District (BAAQMD). 2022. CEQA Air Quality Guidelines. Available: https://www.baaqmd.gov/plans-and-climate/california-environmental-quality-act-ceqa/updated-ceqa-guidelines

focuses primarily on increasing carbon sequestration on lands such as the Mount Burdell Open Space Preserve.[76]

Locally, the Marin County Climate Action Plan provides GHG reduction goals and measures for unincorporated Marin County, with the overall target of reducing emissions to 40 percent below 1990 levels by 2030.[77]

Applicable RTMP Policies and BMPs

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to minimize or avoid potential environmental impacts to greenhouse gas emissions. The applicable RTMP Policies and BMPs are listed below and are provided, in their entirety, in Appendix A.

- Policy SW.29: Retrofit or Upgrade Construction Equipment
- Air Quality-1: Implement BAAQMD Measures

CEQA Context

A project would normally result in a significant impact on greenhouse gas emissions if it results in a significant increase in greenhouse gas emissions or conflicts with a plan, policy or regulation intended to reduce greenhouse gas emissions.

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

Less than Significant Impact

The proposed project would result in minor GHG emissions during both construction and operation of the project. Construction of the project would use heavy equipment which would release criteria pollutant emissions. Emissions would also result during construction from contractors and MCOSD employees driving to and from the site each day. GHG emissions associated with construction would be limited as a result of the project's limited duration and the small scale of the proposed improvements.

Marin County Parks utilized the screening criteria and process provided in the 2022 BAAQMD CEQA Guidelines to evaluate the proposed project's potential GHG emissions impacts. The first step in this process is to evaluate whether the proposed project meets the screening criteria defined in the 2022 BAAQMD CEQA Guidelines. If the proposed project meets all screening criteria, its impact is considered to be less than significant and further detailed analysis of potential project emissions is not required.

Below is a list of the construction criteria and determination of whether the proposed project meets these criteria.

1. The project size is at or below the applicable screening level size shown in Table 4-1.

Table 4-1 describes the single land use construction and operational criteria for air pollutant and precursor screening levels. There is not a specific land use category in Table 4-1 that would accurately describe the proposed project, so the criteria for the City Park category has been selected because it most closely matches the proposed project. In this category, the project size for construction is 10 acres and the project size for operation is 175 acres.

The project area is approximately 12.35 acres, of which approximately 8.2 acres would involve road equipment. Approximately 2.1 acres of trails would be developed utilizing mechanized trail

[76] Bay Area Air Quality Management District (BAAQMD). 2017. *Final 2017 Clean Air Plan, Spare the Air, Cool the Climate.* http://www.baaqmd.gov/~/media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-proposed-final-cap-vol-1-pdf.pdf?la=en

[77] County of Marin, 2020. *Marin County Climate Action Plan 2030*.

equipment, consisting of the T1, T1.1, and T4 trails minus the area of incorporated road to trail conversion. Approximately 1.3 acres of trail would be hand-built, consisting of the T2, T3, T3.1, and T3.4 trails. Approximately 0.75 acres of trails would be passively decommissioned, involving no tools or equipment. No heavy construction equipment would be utilized for implementation or operation of the proposed project. For the purpose of this analysis, the project area is 8.2 acres defined by the area that would involve road equipment, which meets the construction criteria. The operational area is 12.35 acres, which meets the operation criteria. All best management practices (see Table 5-2 in Chapter 5, "Project-Level Air Quality Impacts") are included in the project design and implemented during construction.

All of the best management practices identified in Table 5-2 would be implemented during project implementation, which meets this criterion. The BMPs are listed below:

B-1: All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) shall be watered two times per day.

B-2: All haul trucks transporting soil, sand, or other loose material off-site shall be covered.

B-3: All visible mud or dirt trackout onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.

B-4: All vehicle speeds on unpaved roads shall be limited to 15 mph.

B-5: All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.

B-6: All excavation, grading, and/or demolition activities shall be suspended when average wind speeds exceed 20 mph.

B-7: All trucks and equipment, including their tires, shall be washed off prior to leaving the site.

B-8: Unpaved roads providing access to sites located 100 feet or further from a paved road shall be treated with a 6- to 12-inch layer of compacted layer of wood chips, mulch, or gravel.

B-9: Publicly visible signs shall be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District's General Air Pollution Complaints number shall also be visible to ensure compliance with applicable regulations.

2. Construction-related activities would not overlap with operational activities.

   Activities associated with project implementation would not overlap with operational activities; therefore, this criterion is met.

3. Construction-related activities would not include:
   - demolition,
   - simultaneous occurrence of two or more construction phases (e.g., paving and building construction would occur simultaneously), or
   - extensive site preparation (e.g., grading, cut and fill, or earth movement).

   Implementation of the proposed project would not include demolition, simultaneous occurrence of two or more construction phases, or extensive site preparation; therefore, this criterion is met.

4. Construction-related activities would not include extensive material transport (e.g., soil import and export requiring a considerable amount of haul truck activity).

Implementation of the proposed project would not require extensive material transport. Construction of the project would require approximately 144 total haul trips for hauling construction materials and the import of soil, rock and aggregate totaling approximately 3,500 tons of material over the three-year project implementation period.

5. Construction-related activities would not include stationary sources (e.g., backup generators) subject to Air District rules and regulation.

   Implementation of the proposed project would not require stationary sources, such as back-up generators, therefore this criterion is met.

The proposed project would not include any of the construction screening criteria, therefore a detailed assessment of the project's criteria air pollutant and precursor emissions is not required and the proposed project would have a less than significant effect regarding greenhouse gas emissions.

Operation of the proposed project would occur as described in the project description and would result in GHG emissions from regular maintenance. GHG emissions associated with operation and maintenance would include truck trips to and from the site from MCOSD staff to patrol the trails and for regular maintenance. The trail would be patrolled and maintained by existing staffing and the frequency of patrols would not increase as a result of the project. Overall maintenance is expected to decrease as the trail improvements would improve the sustainability of the trail and GHG emissions would not increase compared to baseline conditions. For these reasons, on-going operation and maintenance activities associated with implementation of the proposed project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Implementation of the proposed project is not likely to significantly increase vehicle trips for recreational use of these trails. The proposed project does not include additional parking at the trailhead, so visitation would remain unchanged by parking availability. Visitor use of the project area for public recreation would continue similar to existing conditions, as the proposed project does not include any parking or other amenities and any increase in trail use is anticipated to be minor and largely proportional with regional population growth. Compared to a city park, an open space preserve has a lower intensity of public use and the screening level size for an open space preserve is likely to be lower than the city park. Additionally, these guidelines would apply to a new park or an addition of acreage to an existing park and therefore do not apply to the proposed project. Therefore, while a potential minor increase in use of the project area trails is anticipated, it is not expected to be substantial and would not generate greenhouse gas emissions that could result in a significant impact on the environment. For these reasons, visitor use associated with implementation of the proposed project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

Additionally, the proposed project would incorporate applicable RTMP BMPs, which would further reduce the GHG emissions associated with construction and operation of the project. As a result, the proposed project would meet all of the screening criteria identified in the 2022 BAAQMD CEQA Guidelines and the proposed project would not result in GHG emissions that would have a significant impact on the environment. Therefore, construction and operation of the proposed project would result in a less-than-significant impact associated with the generation of greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

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

No Impact

In 2006, the California State Legislature enacted the California Global Warming Solutions Act of 2006 (Assembly Bill; AB 32). AB 32 focuses on carbon neutrality, reducing GHG emissions in California

and, following the 2022 Scoping Plan Update and as directed by Assembly Bill 1279, requires the reduction by 85 percent below 1990 levels no later than 2045.

The proposed project would not conflict with GHG reduction goals set forth in AB 32, including the Recommended Actions identified by the CARB in its Climate Change Scoping Plan. The project would also not conflict with goals and policies contained in the Marin Countywide Plan and Climate Action Plan. For these reasons, implementation of the proposed project would result in no impact associated with conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

HAZARDS AND HAZARDOUS MATERIALS

TABLE 10: HAZARDS AND HAZARDOUS MATERIALS CHECKLIST QUESTIONS

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

Setting

Hazardous substances are materials designated in government codes and regulations or that exhibit certain characteristics such as being toxic, corrosive, flammable, reactive, or explosive. A non-hazardous substance can become a hazardous waste if during its normal use it comes to meet the definition of a hazardous material or hazardous substance.

The MCOSD uses a limited amount of hazardous materials at the project site during routine maintenance from the use of motorized equipment for weed and vegetation control, trail maintenance, and routine patrols. The vehicles that the MCOSD use at the project site contain hazardous materials, including gasoline, lubricants, and other solutions. The MCOSD does not store any hazardous materials at the project site.

Applicable RTMP Policies and BMPs

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to minimize or avoid potential environmental impacts to hazards and hazardous materials. The applicable RTMP Policies and BMPs are listed below and are provided, in their entirety, in Appendix A.

- Policy SW.26: Control or Restrict Access to Ignition Prevention Zones when Red-Flag Conditions Exist
- General-6: Prevent or Reduce Potential for Pollution
- Water Quality-3: Erosion Control Measures
- Water Quality-4: Preventing or Reducing the Potential for Pollution
- Geologic Hazards-3: Construction in Areas of Erodible and Expansive Soils

CEQA Context

A project would normally result in a significant impact on hazards and hazardous materials if the project would expose people and/or the environment to hazards or hazardous materials.

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

Less than Significant Impact

During construction, the MCOSD would use small quantities of fuel, lubricants, and other similar construction materials that can be hazardous. There may be a potential for releases to occur during construction that could affect construction workers, recreational users, and the environment. During operation of the project, maintenance activities involving heavy equipment may have the potential to result in releases of hazardous materials. The MCOSD contractors and field staff would adhere to existing laws and regulations that govern the transport, use, storage, handling, and disposal of hazardous materials to reduce the potential hazards associated with these activities. California Occupational Safety and Health Administration (CalOSHA) is responsible for developing and enforcing workplace safety standards, including the handling and use of hazardous materials. The federal Department of Transportation (DOT) and the California DOT (Caltrans) regulate the transportation of hazardous materials. Together, federal and state agencies determine driver-training requirements, load labeling procedures, and container specifications designed to minimize the risk of accidental release. Additionally, the applicable policies and BMPs included in the MCOSD's RTMP would be implemented. Therefore, the transport, use, storage, handling, and disposal of hazardous materials for the project would be adequately controlled through existing regulatory requirements and the potential impact during construction and operation of the proposed project. For these reasons, implementation of the proposed project would result in a less than significant impact associated with creation of a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

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

No Impact

As discussed above, the proposed project would involve construction and operation activities that use limited quantities of hazardous materials, such as gasoline, diesel fuel, oils, and lubricants, and other similar chemicals. Construction and operation activities associated with implementation of the proposed project would be subject to federal, state, and local laws and regulations governing hazardous materials and all applicable policies and BMPs included in the MCOSD's RTMP would be implemented. For these reasons, implementation of the proposed project would result in a less-than-significant impact associated with creation of a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

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

No Impact

The closest schools to the proposed trail improvements are San Marin High School and San Ramon Elementary School, which are approximately 0.45 and 0.80 miles from project area, respectively. Other schools in the area are near Miwok Park, which is approximately 1 mile from the project area. Although unlikely, implementation of the proposed project could result in the release of hazardous materials from routine transportation or use of hazardous materials such as oils, lubricants and other fluids required for construction and/or operation equipment. Releases would be limited to fluids used for construction equipment, which would be onsite in small quantities. Since the proposed project is located more than 0.25 mile from a school, there is a very low potential for a spill to affect the school. Construction and operation activities associated with implementation of the proposed project would be subject to federal, state, and local laws and regulations governing hazardous materials and all applicable policies and BMPs included in the MCOSD's RTMP would be implemented. For these reasons, implementation of the proposed project would result in a less-than-significant impact associated with the emission of hazardous emissions or handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school.

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

No Impact

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the state, local agencies, and developers to provide information about the location of hazardous materials release sites. Government Code Section 65962.5 requires the California Environmental Protection Agency to updated Cortese List annually. A search of the current Cortese Lists identifies one historical site in Novato near San Marin Drive, which is located 1.17 miles from the project site.[78] For these reasons, implementation of the proposed project would result in no impact associated with creation of a significant hazard to the public or the environment due to its location on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5.

[78] California Department of Toxic Substances Control (DTSC), 2019. EnviroStor environmental database. http://www.envirostor.dtsc.ca.gov/public/.

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

No Impact

The airports nearest to the project area are the public Gnoss Field Airport in Novato, which is over 3 miles east and the private San Rafael Airport, located over 9 miles to the southeast. No aviation hazards would result from modifications to trails in Mount Burdell Open Space Preserve. There are no aviation hazards associated with the proposed project and no airfields in the project area. For these reasons, implementation of the proposed project would result in no impact associated with creation of a safety hazard or excessive noise for people residing or working in the project area.

f) Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

No Impact

The project area is not located within an adopted emergency response plan or emergency evacuation plan area, nor is the project area currently used for has an emergency access plan through the Novato Fire Protection District and Fire Safe Marin. Mount Burdell Open Space Preserve and portions of the Bowman Canyon property are in Zone NOV-E043, and the remainder of Bowman Canyon is in MRN-E021. The residential neighborhood immediately adjacent on San Marin Drive is in Zone NOV-E035 on the Novato Fire Protection District[79] mapping and in Zone 35 on the Fire Safe Marin – Novato evacuation map.[80] Neighborhoods south and southeast to the project area are directed to evacuate utilizing Novato Boulevard, San Marin Drive, or Sutro Avenue. Implementation of the proposed project would improve pedestrian and bicycle egress in case of a fire or other emergency should one occur within Mount Burdell Open Space Preserve. For these reasons, implementation of the proposed project would result in no impact associated implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

Figure 23 shows the Fire Safe Marin Evacuation Route for the neighborhoods adjacent to Mount Burdell Open Space Preserve.

g) Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less than Significant Impact

The California Department of Forestry and Fire Protection (CalFire) has mapped areas of high wildfire hazards throughout California, including Marin County. The project area is mapped as a High Fire Hazard Zone.[81] Vegetation management occurs within the project area through annual grazing, mowing conducted by MCOSD, and through Marin Wildfire Prevention Authority's (MWPA) Greater Novato Shaded Fuel Break Project. The shaded fuel break project includes fuel reduction within 200 to 300 feet from the edge of structures adjacent to the wildland-urban interface throughout the city of Novato, including the project area.[82] The Greater Novato Shaded Fuel Break Equipment used during construction and maintenance activities associated with the proposed project could generate sparks which could result in wildland fire.

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79 Genasys (formerly Zonehaven) Evacuation Management webpage: https://aware.zonehaven.com/zones/US-CA-XMR-FAI-E006?z=14.538394279068314&latlon=37.97869493515445%2C-122.60634344563596

80 Fire Safe Marin – Novato webpage: https://www.novatofire.org/home/showpublisheddocument/9468/637327500864800000

81 CALFire Find your Fire Hazard Severity Zone (FHSZ) viewer. https://gis.data.ca.gov/datasets/789d5286736248f69c4515c04f58f414

82 MWPA Greater Novato Shaded Fuel Break Project. https://www.marinwildfire.org/project/greater-novato-fuel-break-plan Accessed November 2025.

Figure 24 shows the Fire Severity Zone for the project area and adjacent neighborhoods.

The MCOSD would require the contractor and maintenance staff to implement applicable policies and Best Management Practices included in the used MCOSD's Road and Trail Management Plan to minimize risk of wildfire that could be initiated from equipment to construct and maintain the proposed project, such as requiring vehicles be equipped with fire extinguishers to address small fires ignited by construction or maintenance activities before a wildland fire develops. The MCOSD's Road and Trail Management Policy SW-26 allows the MCOSD to temporarily or permanently close preserves or restrict uses in preserves to reduce fire risk during periods of high fire danger. For these reasons, implementation of the proposed project would result in a less-than-significant impact associated with the exposure of people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires.

HYDROLOGY AND WATER QUALITY

TABLE 11: HYDROLOGY AND WATER QUALITY CHECKLIST QUESTIONS

	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation	Less-than-Significant Impact	No Impact
a)	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b)	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c)	Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
	i) result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
	ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?	☐	☐	☐	☒
	iii) 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?	☐	☐	☐	☒
	iv) impede or redirect flood flows?	☐	☐	☐	☒
d)	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e)	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

Setting

The Mount Burdell Open Space Preserve is located within the Novato Creek Watershed. The Novato Creek Watershed drains an area of approximately 47.37 square miles.[83] The Novato Creek watershed lies in the northern portion of Marin County and encompasses a mix of natural open space, residential development, and agricultural lands. Novato Creek originates in the coastal hills to the west of the City of Novato, flows generally eastward, and discharges into San Pablo Bay. Within the watershed, Bowman Canyon Creek is a significant tributary. It flows southward along Bowman Canyon Road, just west of the project area, and joins Novato Creek. An unnamed tributary is located just north of the project area, flowing west before draining into Bowman Canyon Creek.

Hydrology within the project area is influenced by a combination of precipitation, surface water runoff, underlying geologic stratigraphy, topography, soil permeability, and vegetative cover. No formally mapped streams pass directly through the project area. Obvious drainages within the project area include an unnamed creek in the southwest, and another unnamed creek on the eastern edge of the project area. Both unnamed creeks carry surface flows during spring but are dry by mid-summer, reflecting the strong season precipitation patterns of the region.[84] The unnamed creek on the east side of the ridge flows east towards San Marin High School and the western creek flows west off the ridge and then south in Bowman Canyon for 0.4 miles, converging with Novato Creek on the other side of Novato Boulevard. An unnamed tributary to Bowman Canyon Creek is located immediately north of the project area.

In addition to these creeks, the project area includes one small pond west of the ridge, and feeds into the drainage on the western side of the project area. This feature supports temporary ponding during the wet season, March through June, before drying later in the year. A freshwater seep is also present in the southwestern portion of the project area within grassland habitat, where it maintains localized surface moisture and supports wetland vegetation.

Applicable RTMP Policies and BMPs

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to minimize or avoid potential environmental impacts to hydrology and water quality. The applicable RTMP Policies and BMPs are listed below and are provided, in their entirety, in Appendix A.

- Water Quality-2: Temporary Erosion and Sediment Control
- Water Quality-3: Erosion Control Measures
- Water Quality-4: Preventing or Reducing the Potential for Pollution
- Water Quality-5: Road and Trail Inspections
- Water Quality-6: Grading Windows
- Water Quality-8: Proper Disposal of Excess Materials
- Water Quality-9: Sidecasting Construction Material

CEQA Context

A project would normally result in a significant impact to hydrology or water quality if it would substantially degrade water quality, contaminate a public water supply, substantially degrade or deplete groundwater resources, interfere substantially with groundwater recharge, encourage activities that result in the use of large amounts of water, use water in a wasteful manner, or cause substantial flooding.

a) Would the Project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Less than Significant Impact

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83 California Department of Fish and Wildlife (CDFW) 2009. SF Bay Watersheds Stream Habitat Assessment Reports – Novato Creek.

84 NOMAD. 2023. *Botanical Resource Survey Report – Bowman Canyon Road and Trail Plan.*

Water quality standards and waste discharge requirements are established by the State Water Resources Control Board, created by the State Legislature in 1967 as a result of the Porter-Cologne Act. There are nine regional water quality control boards that regulate activities that could affect water quality by defined basin boundaries. The project area is in the San Francisco Bay Regional Water Quality Control Board. Activities, including discharges, that could affect surface, coastal, or ground waters generally require a permit from the regional water quality control board. The proposed project would be subject to Clean Water Act Section 401 Water Quality Certification and/or Report of Waste Discharge permit from the San Francisco Bay Regional Water Quality Control Board.

The purpose of the proposed project is to is to implement the MCOSD's RTMP to provide the public with a safe multi-use trail system to enhance the visitor experience, reduce the environmental impacts on sensitive resources by reducing sedimentation and erosion, and establish a sustainable system of roads and trails that meet design and management standards and would provide safe year-round access along the trail alignment. The existing road and trail alignments within the project area have become outdated in design and safety. The roads are generally steep, their surfaces earthen, and many are experiencing accelerated erosion. Overly steep gradients, rill and gully erosion, and variable tread conditions concentrate surface runoff and increase sediment transport, accelerating erosion processes that reduce the long-term stability of road and trail segments. The existing social trails in the project area also contribute to erosion and sediment delivery to surface waters under existing conditions.

Construction activities associated with the proposed bridges and trail improvements could generate sediment that could temporarily affect water quality in Bowman Canyon Creek in the project area and downstream. Water quality could be affected during project implementation by erosion from grading and earthmoving operations, or a release of fuels or other chemicals used during construction.

Implementation of the RTMP BMPs, policies, and design standards would minimize potential water quality impacts from construction and operation of the proposed trails. Abutments for the proposed bridges would be located on relatively level ground not subject to high erosion. The proposed bridges and puncheons would be constructed when the creek channel is dry, and therefore these activities are not expected to generate substantial erosion. Earthwork would occur during the dry season, generally from May through September, consistent with RTMP BMP Water Quality-6 Grading Windows to reduce erosion potential to the maximum extent possible. The proposed project would incorporate erosion control techniques such as road shaping treatments including berm breaches, knicks, road outsloping, rolling dips would be installed to decrease road surface erosion, and approaches to proposed bridges and puncheons surfaced with aggregate base rock where weak soils occur. For these reasons, implementation of the proposed project would result in a less than significant impact associated with a potential violation of water quality standards or waste discharge requirements, and a less than significant impact associated with potential degradation of surface or ground water quality.

b) Would the Project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

No Impact

The project area does not lie within any identified groundwater basin. All proposed trail improvements would retain natural tread surfacing, resulting in no change to groundwater recharge. For these reasons, implementation of the proposed project would result in no impact associated with substantially decreased groundwater supplies or substantial interference with groundwater recharge such that the project may impede sustainable groundwater management of the basin.

c) Would the Project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:

i) Result in substantial erosion or siltation on- or off-site?

No Impact

Implementation of the proposed project would not alter the course of the seasonal drainages within the project area and does not include any impervious surfaces. Potential erosion that could result from construction activities and the long-term benefits of the proposed project associated with reduced erosion and siltation are discussed under Checklist Item (a).

The proposed project would reduce erosion, sedimentation, and sediment delivery to drainages by shifting public use and operations onto a smaller, sustainable, and hydrologically better-functioning network of designated roads and purpose-built trails. Key element of the proposed project include decommissioning steep, fall-line and poorly drained ranch roads and unauthorized social trails; hydrologically disconnecting decommissioned alignments from swales, springs, and stream networks; upgrading or replacing unimproved stream crossings with engineering crossings sized and designed to pass flows and debris without plugging; and adding frequent drainage dispersion features on retained roads and new trails to prevent runoff concentration. These actions would shorten flow paths, reduce runoff velocities on road/trail surfaces, prevent gully initiation, and reduce fine sediment mobilization during storm events, thereby minimizing sedimentation into ephemeral channels and downstream waters.

For these reasons, implementation of the proposed project would not alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would result in substantial erosion or siltation on- or off-site. Instead, the proposed project would minimize sediment mobilization and bank disturbance by keeping users out of streambeds and maintaining natural channel function.

ii) Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

No Impact

Implementation of the proposed project would not include any impervious surfaces and therefore would not increase the rate or amount of surface runoff. All proposed trails and fire roads would remain pervious and would not introduce impervious surfaces to the project area. Trail construction would rely on contour alignment, outsploping, grade reversals, and other drainage features to disperse runoff and promote infiltration rather than concentrate flows. The proposed trail bridges and puncheons would span ephemeral channels and be installed above the 100-year floor elevation, with abutments placed outside the top of bank. These structures would not constrict channels, alter natural flow patterns, or reduce floodplain capacity. For these reasons, implementation of the proposed project would not alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of

impervious surfaces, in a manner which would substantial increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.

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

No Impact

Implementation of the proposed project would not include any impervious surfaces. All proposed trails would consist of pervious native-soil tread designed with outsloping, grade reversals, rolling dips, and other drainage features to disperse runoff and promote infiltration. As such, the proposed project would not increase the volume of surface runoff. The proposed project area does not contain stormwater drainage systems, and none are planned.

Proposed trail bridges and puncheons would space ephemeral channels and be installed above the 100-year flood elevation, with abutments placed outside of the top of bank. These structures would not introduce impervious surfaces within stream channels, constrict flows, or alter natural drainage patterns. The proposed trail bridges and puncheons are designed to minimize erosion and sedimentation by keeping users out of the streambeds and preventing bank disturbance and tread incision at crossings. By maintaining natural channel function and reducing sediment mobilization, the bridges and puncheons would not create additional sources of polluted runoff.

Potential erosion that could result from construction activities and the long-term benefits of the proposed project associated with reduced erosion and siltation are discussed under Checklist Item (a). For these reasons, implementation of the proposed project would not alter the existing drainage pattern of the site or area in a manner which would create runoff exceeding the capacity of stormwater drainage systems or result in additional sources of polluted runoff.

iv) Impede or redirect flood flows?

No Impact

The proposed recreational use trail bridges and puncheons would be located above the 100-year flood elevation spanning the banks of the ephemeral streams and would provide a sufficient freeboard allowance to minimize potential impacts from debris transported during high flow events. Concrete foundations would be set at the top of the stream banks and the bridge anchors would be set in the concrete foundation. The proposed recreational use puncheons would be located above the 100-year flood elevation spanning the banks of the ephemeral streams and would not be subject to regulatory permit authorizations. Both the proposed trail bridges and puncheons would be constructed utilizing Marin County Open Space District Engineered Bridge Designs by Mayone Structural Engineers, Inc.

The proposed rock armored ford crossings would consist of locally sourced rock varying in size from 3 to 18 inches embedded into the stream channel on both sides of the crossing. The rock armored ford crossings would be constructed on streams with high banks and are designed so that the stream flow travels across the trail, which is armored with rock to minimize erosion. The proposed vented causeway would consist of trail segments on a constructed embankment through seasonally wet areas. They are constructed by creating an embankment of imported rock over geotextile to provide separation between the surrounding wet ground and the dry elevated trail. The venting refers to open channels in the causeway that allows surface flows to pass through the causeway structure. Both the proposed rock armored ford crossings and proposed vented causeway would utilize standard U.S. Department of Agriculture Forest Service plans.

For these reasons, implementation of the proposed project would not alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would impede or redirect flood flows and no impact would occur.

d) Would the Project, in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

No Impact

The project area is mapped within the designated Zone X flood hazard area depicted on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map. Flood Zone X is one of the flood insurance rate zones that correspond to areas outside the one percent annual chance floodplain, areas of one percent annual chance sheet flow flooding where average depths are less than one foot, and areas of one percent annual chance of stream flooding where the contributing drainage area is less than one square mile, or areas protected from the one percent annual chance flood by levees. Base flood elevations have not been determined at the project area.

Tsunami is a long high sea wave caused by an earthquake, submarine landslide or volcanic eruption, or other disturbance. The speed of tsunami waves is a factor of ocean depth versus distance from the ocean, and tsunami waves build to higher heights as they travel inland as the depth of the ocean decreases. Seiche is a temporary standing wave in the water level of a lake or partially enclosed body of water, usually caused by changes in atmospheric pressure caused by earthquakes or landslides. The project area is not located near a body of water that would be subject to tsunami or seiches. Elevations within the Mount Burdell Open Space Preserve range from 200 feet to 940 feet above sea level, and the project area is located several miles away from areas subject to tsunamis. As a result of the distance from the San Francisco Bay or the Pacific Ocean and the elevation of the project site, it would not be affected by seiche or tsunami. For these reasons, implementation of the proposed project would not risk the release of pollutants due to inundation by seiche, tsunami, or flood.

e) Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

No Impact

The project area is within the boundaries of the San Francisco Bay Basin Water Quality Control Plan (Basin Plan)[85] and the Marin Municipal Water District (MMWD) 2015 Urban Water Management Plan (UWMP).[86]

The Basin Plan is San Francisco Bay Regional Water Quality Control Board's master water quality control planning document. It designates beneficial uses and water quality objectives for Waters of the State, including surface waters and groundwater, and includes programs of implementation to achieve water quality objectives. The proposed project would be subject to Clean Water Act Section 401 Water Quality Certification and/or Report of Waste Discharge permit from the San Francisco Bay Regional Water Quality Control Board. The proposed project would also implement applicable policies and Best Management Practices included in MCOSD's RTMP in addition to any special conditions included in the regulatory permits and therefore would not conflict with or obstruct implementation of a water quality control plan.

The UWMP specific to water supply topics including water deliveries and uses, water supply sources, efficient water uses, and demand management measures within MMWD's service area. Regarding groundwater, the UWMP stated that water supply is from precipitation that contributes to local runoff and the Russian River, the latter is imported from Sonoma Water through a contractual agreement.

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[85] California Regional Water Quality Control Board, San Francisco Bay Region. 2017. *Water Quality Control Plan (Basin Plan).* Oakland, California. Updated to reflect the Basin Plan amendments adopted up through May 4, 2017 https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/basin_plan/docs/basin_plan07.pdf

[86] Marin Municipal Water District. 2016. *Urban Water Management Plan: 2015 Update*. Prepared by RMC Water and Environment, San Francisco, CA. http://marinwater.org/DocumentCenter/View/3828/MMWD-2015-UWMP-Final---Report-Only?bidId=

The UWMP concluded that the potential for municipal groundwater use within the boundaries of MMWD's service area is very limited due to limited production capabilities, water quality constraints, and potential water rights issues. As a result of these studies, groundwater is not currently or planned to be used as a municipal water supply source by MMWD, though private groundwater wells are used within MMWD's service area. The proposed project would not utilize groundwater during construction or operation, and none of the proposed improvements would impede groundwater recharge. For these reasons, implementation of the proposed project would conflict with or obstruct implementation of a sustainable groundwater management plan.

LAND USE AND PLANNING

TABLE 12: LAND USE AND PLANNING CHECKLIST QUESTIONS

	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation	Less-than-Significant Impact	No Impact
a)	Physically divide an established community?	☐	☐	☐	☒
b)	Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

Setting

The project area is located within the Mount Burdell Open Space Preserve in unincorporated Marin County, adjacent to the City of Novato and approximately 6.5 miles north of San Rafael. The land uses surrounding the Preserve includes further passive recreational opportunities on California State Park lands to the north, private ranch lands to the north and west, and residential development to the south and east. The private ranch immediately north of the project area utilizes the project area for grazing four to six months annually, typically between the months of January to June. Adjustments to the grazing timeframe are dependent on forage availability which is driven by weather and herd size. There is limited street parking at trailheads along the eastern boundaries of the preserve, and limited street parking on the western end of Mount Burdell Open Space Preserve.

Mount Burdell Open Space Preserve is used for walking, hiking, mountain biking, horseback riding, and other outdoor nature-based activities.

Applicable RTMP Policies and BMPs

The RTMP does not include Policies and BMPs specific to land use and planning. The RTMP is governed as an extension of the Marin Countywide Plan and therefore the proposed project is exempt from the land use/development code permit requirements pursuant to Muni Code section 22.06.050: Exemptions from Land Use Permit Requirements. The RTMP Policies and BMPs are provided, in their entirety, in Appendix A.

CEQA Context

A project would normally result in a significant impact to land use and planning if it would conflict with the adopted land use and zoning regulations or if would disrupt or divide the physical arrangement of an established community.

a) Would the Project physically divide an established community?

No Impact

Implementation of the proposed project would occur exclusively within the Mount Burdell Open Space Preserve. For this reason, implementation of the proposed project would not physically divide an established community.

b) Would the Project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

No Impact

The proposed project is located exclusively within the Mount Burdell Open Space Preserve, which is designated zoned as Agriculture and Conservation by the County of Marin and zoned as Conservation and Restricted Open Space by the City of Novato. The Agriculture and Conservation zoning and Restricted Open Space zoning of all of the parcels is intended to support public recreation and natural resources preservation and the proposed project supports and continues that use.

The purpose of the proposed project is to implement the MCOSD's RTMP to provide the public with a safe multi-use trail system to enhance the visitor experience, reduce the environmental impacts on sensitive resources by reducing sedimentation and erosion, and establish a sustainable system of roads and trails that meet design and management standards and would provide safe year-round access along the trail alignment. By relocating visitor access away from sensitive resources and decommissioning eroding trails, erosion and sedimentation into nearby waterbodies would be reduced resulting in long-term improvement to water quality over existing conditions.

The proposed project is consistent with the Agriculture and Conservation designations included in the County of Marin Countywide Plan and the Conservation and Restricted Open Space designations included in the City of Novato General Plan. The proposed project would include grading and excavation to construct and improve roads and trails. The City of Novato Municipal Code Chapter VI – Excavation and Fills requires projects to obtain a permit for grading, excavation and fills. The proposed project would be exempt from this requirement under exceptions B.1. "an excavation which is less than two feet in depth" and B.2. "an excavation which does not create a cut slope greater than five feet in height and steeper than one and one-half horizontal to one vertical".[87] For these reasons, implementation of the proposed project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

[87] City of Novato Municipal Code Ordinance No. 1837 §5, Ord. No. 1212 §3, and Ord. No. 1232 §2

MINERAL RESOURCES

TABLE 13: MINERAL RESOURCES CHECKLIST QUESTIONS

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

Setting

The State Mining and Reclamation Act (SMARA) of 1975 requires that counties adopt policies to protect certain state-designated mineral resource sites from land uses that preclude or inhibit mineral extraction needed to satisfy local market demand on a timely basis. The purpose of the act is to ensure that construction materials are available to all areas of the state at a reasonable cost. The California State Department of Conservation Division of Mines and Geology has designated eight sites in Marin County as having significant mineral resources for the North Bay region. Of the eight mineral resource sites designated in Marin County, two no longer meet the minimum threshold requirements and are exempt from application of mineral resource policies. Of the remaining six sites, two sites are located within an MCOSD preserve, including Ring Mountain and Mount Burdell Open Space Preserve.

The extraction of mineral resources at Burdell Mountain began in the late 19th century, primarily focusing on the production of high-quality paving blocks.[88] The original quarry served regional infrastructure needs until operations ceased in 1894.

Following this initial period of activity, the site saw a mid-century resurgence when the Marin Gravel Company established a crushing plant to process stone from the historical Taylor workings. This later phase of development shifted the site's output from dimensional paving stone to crushed aggregate. However, by the time the SMARA was enacted in 1975, commercial operations had concluded. In 1977, the land was acquired by the Marin County Open Space District, transforming the industrial site into the Mount Burdell Open Space Preserve.

Applicable RTMP Policies and BMPs

The RTMP does not include Policies and BMPs specific to mineral resources. The RTMP Policies and BMPs are provided, in their entirety, in Appendix A.

CEQA Context

A project would normally result in a significant impact to mineral resources if a loss of known mineral or of a locally important mineral resources recovery area occurred from implementation of the project.

[88] U.S. Geological Survey. (n.d.). *Burdell Mountain (MRDS #10092344) STN_C*. Mineral Resource Data System. Retrieved from https://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10092344.

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

No Impact

The proposed project would not include mineral extraction and would not impact a known mineral resource. The inactive quarry located within the eastern portion of Mount Burdell ceased operations in 1894. For these reasons, implementation of the proposed project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.

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

No Impact

Implementation of the proposed project would not include mineral extraction or impact a known mineral resource. While Mount Burdell Open Space preserve holds an inactive quarry, it is not currently designated as a locally important recovery site in the Marin County General Plan. For these reasons, implementation of the proposed project would not result in the loss of availability of a locally important mineral resource recover site delineated on a local general plan, specific plan, or other land use plan.

NOISE

TABLE 14: NOISE CHECKLIST QUESTIONS

	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation	Less-than-Significant Impact	No Impact
a)	Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b)	Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c)	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Setting

Noise is defined as unwanted sound. Sound is measured in decibels (dB), with zero dB corresponding to the lowest threshold of human hearing and 120 to 140 dB corresponding to the threshold of painful sound. Decibels are measured using different scales. The A-weighted decibel scale noted as dBA is cited in most noise criteria. Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A-weighted sound level over a given time period, noted as Leq, which represents a single value of a constant sound level for the duration of the measurement period. Ldn represents a 24-hour A-weighted equivalent sound level with a nighttime adjustment of increased 10dB between 10:00 p.m. and 7:00 a.m. to account for increased sensitivity to noise during the nighttime. Community noise equivalent level, noted as CNEL, is the average A-weighted noise level during a 24-hour day that includes an evening weighting of 5 dB between 7:00 p.m. and 10 p.m. and a nighttime weighting of 10 dB between 10:00 p.m. and 7:00 a.m.

Human response to sound and noise is subjective and can vary greatly from person to person, depending of a variety of factors including the intensity, frequency, and pattern of the sound, the background or ambient sound present without the unwanted sound, and the activity of the individual when the unwanted sound is occurring. Noise can interfere with concentration, communication, and sleep and at high levels, can result in hearing damage. According to the U.S. Department of Housing and Urban Development's 1985 Noise Guidebook,[89] permanent physical damage to human hearing can begin with prolonged exposure to noise levels higher than 85 to 90 dBA. Prolonged noise exposure in excess of 75 dBA increases body tensions, which can affect blood pressure, functions of the ear, and the nervous system. In comparison, extended periods of noise exposure above 90 dBA would result in permanent cell damage. To avoid adverse effects on human physical and mental health in the workplace or in communities, the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA)

[89] U.S. Department of Housing and Urban Development. 1985. *The Noise Guidebook.*

requires the protection of workers from hearing loss when the noise exposure equals or exceeds an 8-hour time-weighted average of 85 dBA.[90]

Noise impacts can be organized into three categories. The first category comprises audible increases in noise levels noticeable to humans. Audible increases in noise levels generally refer to a change of 3.0 dBA or greater because this level has been found to be barely perceptible in outdoor environments. The second category, potentially audible, refers to a change in the noise level between 1.0 and 3.0 dBA which is the range of noise levels has been found to be noticeable only in laboratory environments. The last category is changes in noise level of less than 1.0 dBA that are inaudible to the human ear. In terms of CEQA analyses, the audible changes in existing ambient or background noise levels associated with a proposed project are considered.

Existing noise levels at most of the MCOSD's preserves are similar to that found in rural areas of Marin County, except where preserves abut developed residential areas or major transportation facilities such as U.S. Highway 101. Near residential areas or roadways, noise levels within preserves would be dominated by those sources. For other areas, noise levels within and adjacent to preserves typically range from 40-60 dBA during daytime, and from 20-40 dBA at night.[91] Mount Burdell Open Space Preserve is surrounded by open space and residential development and is typically quiet with noise levels in the 35 to 55 dBA range during the daytime. The nearest residential receptors on Pepper Craft Way are a group of residences on a cul de sac, which is approximately 570 feet east of the southern-most portion of WB-01 Road.

Applicable RTMP Policies and BMPs

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to minimize or avoid potential environmental impacts to noise. The applicable RTMP Policies and BMPs are listed below and are provided, in their entirety, in Appendix A.

- BMP Noise-1: County Noise Ordinance Requirements
- BMP Noise-2: Noise Control During Construction Within and Adjacent to Sensitive Wildlife Populations

CEQA Context

A project would normally result in a significant impact to noise if it would substantially exceed or increase the ambient noise levels for adjoining areas or if it exceeded the noise levels recommended in an adopted plan or noise ordinance. Noise impacts are assessed by first determining which project components would generate noise and then comparing the anticipated noise levels with existing noise levels from other sources in the project area and with past land uses practices on the property.

a) Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

No Impact

Noise standards that apply to the project area are established by the Marin County Noise Ordinance 3431 is incorporated into the Marin County Code Sections 6.70.030(5) and 6.70.040 regarding construction activities and related noise, and penalties for violations. Under this code, construction activities are limited to Monday through Friday from 7:00 a.m. to 6:00 p.m. and Saturday from 9:00 a.m. to 5:00 p.m. The ordinance does not allow construction on Sundays or specific holidays.

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90 Occupational Safety & Health Administration, 2011. Regulations, Standards 29 CFR, Occupational Noise Exposure 1910.95.

91 County of Marin. 2014. Marin County Open Space District Road and Trail Management Plan—Recirculated Final Tiered Program Environmental Impact Report. State Clearinghouse No. 2011012080.

Consistent with MCOSD's RTMP BMP Noise-1, construction activities associated with implementation of the proposed project would comply with these ordinances.

Implementation of the proposed project would occur over three construction seasons. The noise that would be generated during project implementation would be from construction equipment to install the proposed bridges, improve trails, and decommission trails. Equipment would include an excavator, bulldozers, compactors, water trucks, trail dozers, mini-excavators, trail compactors, cement mixers, rubber track carriers, generators, ATVs, jackhammers, power saws, and other hand tools. Construction staging areas would be restricted to existing MCOSD roads and trails or other areas that would avoid any significant impact on sensitive natural resources. Access to the project site for construction equipment would be at Bowman Canyon Road and would require approximately six workers onsite. Construction of the project would require approximately 144 total haul trips for hauling construction materials and the import of soil, rock and aggregate.

Estimated noise levels associated with implementation of the proposed project would be attenuated by topography, vegetation, and distance. Construction activities would be short-term, requiring approximately seven months over three construction seasons, and the applicable Best Management Practices included in the MCOSD's RTMP would be implemented. MCOSD would comply with the allowable construction hours in the Marin County Municipal Code. Therefore, construction-related temporary increase in ambient noise would result in a less than significant impact associated with generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

After project construction, use of the proposed roads and trails for public recreation would continue similar to existing conditions. The proposed project does not include additional parking or other amenities and therefore any increased use of the project area would be negligible and proportional with regional population growth. The proposed project would not result in a substantial permanent increase in ambient noise levels in its vicinity compared to existing conditions. For these reasons, implementation of the proposed project would result in a less than significant impact associated with generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.

b) Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?

Less than Significant Impact

Groundborne vibration or noise generated by construction equipment spreads through the ground and diminishes in magnitude with increases in distance. The effects of ground vibration or noise may be imperceptible at the lowest levels, low rumbling sounds and detectable vibrations at moderate levels, and slight damage to nearby structures at the highest levels. Groundborne vibration or noise can be a problem in situations where the primary airborne noise path is blocked, such as in the case of a subway tunnel passing near homes or other noise-sensitive structures. Construction equipment and activities have the potential to result in varying degrees of temporary groundborne vibration or noise, the amount is dependent on the specific construction equipment used and the specific construction activity being conducted.

There are no adopted state or local policies or standards for groundborne vibration. The average person is quite sensitive to ground motion, and the human body can detect levels as low as 0.02 inch per second when background noise and vibration levels are low. Vibration intensity is expressed as peak particle velocity (PPV), the maximum speed at which the ground moves while it vibrates. Since groundshaking speeds are very slow, PPV is measured in inches per second. The Federal Railway Administration and the Federal Transit Administration (FRA) have published guidance relative to

vibration impacts.[92] According to the FRA, fragile buildings can be exposed to groundborne vibration PPV levels of 0.5 inch per second without experiencing structural damage. Caltrans recommends that extreme care be taken when sustained pile driving occurs within 25 feet of any building, or within 50 to 100 feet of a historic building or a building in poor condition, and neither of these conditions exist in the project area. Groundborne vibration from construction activities that involve "impact activities," primarily pile driving and use of a hoe ram to break concrete, could produce detectable or significant vibration at nearby sensitive buildings and sensitive receptors unless the project includes proper mitigation. Caltrans has also indicated that in most cases, vibration induced by typical construction equipment does not result in adverse effects on people or structures.

Implementation of the proposed project would require some small construction equipment including an excavator, bulldozers, compactors, water trucks, trail dozers, mini-excavators, trail compactors, cement mixers, rubber track carriers, generators, ATVs, jackhammers, power saws, and other hand tools, but would not require heavy construction equipment or activities that would induce groundborne vibration or noise such as pile drivers or blasting. The nearest residential receptors on Pepper Craft Way are a group of residences on a cul de sac, which is approximately 570 feet east of the southern-most portion of WB-01 Road. Based on guidance provided by Caltrans, construction equipment and activities would occur at a sufficient distance from the nearest residence such that groundborne vibration and noise would not be detectable. For these reasons, implementation of the proposed project would result in a less than significant impact associated with the generation of excessive groundborne vibration or groundborne noise levels.

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

No Impact

The airports nearest to the project area are the public Gnoss Field Airport in Novato, which is over 3 miles east and the private San Rafael Airport, located over 9 miles to the southeast. The project area is not included in an airport land use plan. For these reasons, implementation of the proposed project would not expose people residing or working in the project area to excessive noise levels associated with a private airstrip, an airport land use plan, or within two miles of a public use airport.

[92] U.S. Department of Transportation, Federal Transit Administration. 2018. Transit Noise and Vibration Assessment Manual. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

POPULATION AND HOUSING

TABLE 15: POPULATION AND HOUSING CHECKLIST QUESTIONS

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

Setting

The proposed project is located within the Mount Burdell Open Space Preserve, which is mostly within the jurisdiction of the County of Marin. Mount Burdell Open Space Preserve is governed by both the Marin Countywide Plan and zoning ordinance and the City of Novato Municipal Code and zoning ordinance. The project area is adjacent to an existing residential neighborhood in the City of Novato. Land uses in this neighborhood are controlled by the City of Novato General Plan and its implementing zoning regulations.

Mount Burdell Open Space Preserve is designated zoned as Agriculture and Conservation by the County of Marin and zoned as Conservation and Restricted Open Space by the City of Novato. The Agriculture and Conservation zoning and Restricted Open Space zoning of all of the parcels is intended to support public recreation and natural resources preservation, and the proposed project supports and continues that use. The land use designation and zoning of all of the parcels is intended to support public recreation, and the proposed project supports and continues that use.

Although the County of Marin updated its Housing Element in 2023, the Housing Element does not apply to the proposed project. The House Element addresses sites with potential for residential development and guides the County's compliance with State housing law, whereas the project site consists entirely of land designated and zoned for open space conservation and public recreation. Because the Mount Burdell Open Space Preserve contains no lands planned or suitable for housing development, the Housing Element does not govern or influence the proposed project.

Applicable RTMP Policies and BMPs

The RTMP does not include policies and BMPs specific to population and housing. The RTMP Policies and BMPs are provided, in their entirety, in Appendix A.

CEQA Context

A project would normally result in a significant impact to population and housing if it would cause substantial population growth or would remove existing housing.

a) Would the Project induce substantial unplanned 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)?

No Impact

The project area is located in the Mount Burdell Open Space Preserve used for outdoor recreation purposes, including walking, hiking, dog walking, horseback riding, and bike riding. The project area is undeveloped except for the trails and provides no housing or business opportunities. The proposed project does not include new homes or businesses or infrastructure that would support new homes or businesses. For these reasons, implementation of the proposed project would have no impact associated with the inducement of substantial unplanned population growth in an area, either directly, such as by proposing new homes and businesses, or indirectly such as through extension of roads or other infrastructure.

b) Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No Impact

There is no housing within Mount Burdell Open Space Preserve. For this reason, implementation of the proposed project would have no impact associated with the displacement of existing people or housing or necessitate the construction of replacement housing.

PUBLIC SERVICES

TABLE 16: PUBLIC SERVICES CHECKLIST QUESTIONS

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

Setting

The project area is within Mount Burdell Open Space Preserve, which is in the jurisdiction of both the unincorporated Marin County and the City of Novato. The project area is served by the Novato Fire Protection District, Marin County Sheriff's Office, and City of Novato Police Department. Mount Burdell Open Space Preserve is owned and maintained by the MCOSD and includes public access trails. There currently are no park facilities such as restrooms and playgrounds and none are proposed as part of the project. Bowman Canyon Road along the western boundary provides emergency access to the Bowman Canyon parcels and adjacent ranches.

Applicable RTMP Policies and BMPs

The RTMP does not include Ppolicies and BMPs specific to public services. The RTMP Policies and BMPs are provided, in their entirety, in Appendix A.

CEQA Context

A project would normally result in a significant impact public services if it would result in the need for new or additional public services in order to maintain acceptable service ratios, including response times and other performance objectives.

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

Fire protection?

Police protection?

Schools?

Parks?

Other public facilities?

No Impact

Implementation of the proposed project would improve the existing trail system at Mount Burdell Open Space Preserve, which is an existing public facility. The proposed trail improvements would improve safety for trail users, which would be a beneficial effect. Implementation of the proposed project would not increase emergency response demands, nor would it reduce emergency access to the project area. The proposed project includes approximately 1.2 miles of existing unimproved ranch roads that would be converted to trail use. The existing conditions of the roads proposed for road-to-trail conversion are unsustainable and subject to past landslide activity and increased rates of erosion. Despite the conversion of 1.2 miles of roads to trails, the proposed project would improve and adopt two miles of roads into the Open Space designated road network. The two miles of roads proposed for improvement and designation would be upgraded to District standards to reduce erosion, protect sensitive aquatic and upland habitats, and improve vehicle and user safety while providing emergency access. Existing emergency access would be maintained during implementation and operation of the proposed project.

The proposed project does not include new housing, commercial, or industrial development which could result in the need for new or improved public services such as fire protection, police protection, schools, parks, or other public facilities. For these reasons, implementation of the proposed project would not result in the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for fire protection, police protection, schools, parks, or other public facilities.

RECREATION

TABLE 17: RECREATION CHECKLIST QUESTIONS

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

Setting

Mount Burdell Open Space Preserve is an outdoor recreational facility owned and operated by the MCOSD and utilized by walkers, hikers, cyclists, equestrians, and other outdoor enthusiasts. It supports a network of fire roads and trails for hikers, cyclists, dog walkers, and equestrians. The purpose of the proposed project is to implement the MCOSD's RTMP to provide the public with a safe multi-use trail system to enhance the visitor experience, reduce the environmental impacts on sensitive resources, and establish a sustainable system of roads and trails that meet design and management standards and would provide safe year-round access along the trail alignment. Implementation of the proposed project would achieve the following project objectives:

- Improve visitor safety and access to the Preserve
- Reduce road and trail erosion and sediment delivery to streams
- Reduce road density and habitat fragmentation

To achieve the project purpose and objectives, the proposed project would improve some road and trail segments, decommission some road and trail segments, road-to-trail conversions, and the development of new sustainable trails within the Bowman Canyon parcels of Mount Burdell. These actions would meet the proposed project purpose and objectives by providing greater accessibility for visitors, reducing road and trail erosion and minimizing anthropogenic sediment delivery into surface waters, reducing the number of redundant and unsustainable roads and trails, and reducing habitat fragmentation. The proposed project is consistent with the land use and zoning designations in the City of Novato General Plan, the Marin Countywide Plan, and the MCOSD's RTMP.

Applicable RTMP Policies and BMPs

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to improve the recreational experience and to minimize or avoid potential environmental impacts from MCOSD's road and trail system. The RTMP Policies and BMPs that apply to specific CEQA Checklist topic areas are listed in each section of this checklist and are provided, in their entirety, in Appendix A.

CEQA Context

A project would normally result in a significant impact to recreation if it would conflict with the established recreational uses of the project area.

a) Would the Project 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?

No Impact

Implementation of the proposed project would support existing uses at the Mount Burdell Open Space Preserve. Implementation of the proposed project would improve visitor safety and reduce road and trail erosion would improve some road and trail segments, decommission some road and trail segments, road-to-trail conversions, and the development of new sustainable trails, resulting in a net improvement on sustainability and durability of the existing trail system and would not impact other regional or local parks. Mount Burdell Open Space Preserve is used for outdoor recreation and implementation of the proposed project would not change the existing use patterns.

After project implementation, use of the trails for public recreation would continue similar to existing conditions. The level and types of recreational use of the project area would remain essentially the same as existing use patterns after implementation of the proposed project, although the improved conditions could attract a nominal increase in visitor use. The new trail bridges would facilitate trail access during the winter however increased use is expected to be minimal and largely result from the local communities. The proposed project does not include parking or other amenities which would typically induce increased visitation. For these reasons, increased visitation associated with implementation of the proposed project is expected to be negligible, and proportional with regional population growth. Implementation of the proposed project would decommission 3 miles of roads and 3.1 miles of steep, unsustainable social trails and the removal of the roads and trail segments would not result in significant impacts to other trails in a manner that could result in the deterioration of these facilities. For these reasons, implementation of the proposed project would result in no impact associated with increasing the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.

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

No Impact

The proposed project would install nine trail bridges, three armored fords, two puncheons, one armored dip, and one causeway for visitors to use instead of the existing rock ford crossings, restore the remaining nine water crossings by removing fill and restoring to their natural grade, develop new trail connections, improve social trails, and decommission redundant and eroding road and trail segments.

This Initial Study has identified potentially significant impacts that could result from implementation of the proposed project even with inclusion of the recommendations included in the Engineering Report and has included mitigation measures to reduce the potentially significant environmental impacts to a less than significant level in the Biological Resources topic area in this CEQA Checklist.

With the implementation of the mitigation measures identified in this Initial Study, implementation of the proposed project would not result in a significant adverse physical effect on the environment. The proposed project consists of improvements to an existing trail system at an existing recreational facility and does not involve construction of a new recreational facility or expansion of an existing recreational facility. For these reasons, implementation of the proposed project would have no impact associated with recreational facilities or the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.

TRANSPORTATION

TABLE 18: TRANSPORATION CHECKLIST QUESTIONS

	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation	Less-than-Significant Impact	No Impact
a)	Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☐	☒
b)	Conflict with or be inconsistent with CEQA Guidelines §15064.3, subdivision (b)?	☐	☐	☐	☒
c)	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d)	Result in inadequate emergency access?	☐	☐	☐	☒

Setting

The proposed project is within the City of Novato and unincorporated Marin County and is subject to the City of Novato General Plan and Marin Countywide Plan. The Transportation Authority of Marin (TAM) is the congestion management agency and the transportation sales tax authority for Marin County. As the congestion management agency, TAM is responsible for managing a variety of transportation projects and programs in Marin County, receiving federal, state, regional, and local funds, working closely with all eleven cities and towns as well as the county. As the designated congestion management agency for Marin County, TAM is tasked with preparing a Congestion Management Plan to fulfill state of California legislative requirements Propositions 111 and 116, which were approved in June 1990. The congestion management program monitors local multi-modal transportation networks including level of service monitors levels of service on the county's roadways and works to improve all methods of transportation locally and regionally. The 2019 Congestion Management Plan is the most recent biennial update.[93]

Access to the project site is from Bowman Canyon Drive via Novato Boulevard in the City of Novato. There is parking at Mount Burdell Open Space Preserve at two trailheads in the eastern portion and at the Bowman Canyon Road trailhead, and the proposed project does not include the addition of parking facilities.

Applicable RTMP Policies and BMPs

The RTMP does not include Policies and BMPs specific to transportation. The RTMP Policies and BMPs are provided, in their entirety, in Appendix A.

[93] Transportation Authority of Marin (TAM). 2019. *Congestion Management Program Update.* https://2b0kd44aw6tb3js4ja3jprp6-wpengine.netdna-ssl.com/wp-content/uploads/2019/11/2019-FINAL-CMP-11-4-19.pdf

CEQA Context

Effective January 01, 2020, CEQA documents are required to utilize the vehicle miles traveled (VMT) methodology to analyze transportation impacts. Vehicle miles traveled refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Automobile delay, represented by level of service (LOS) analysis, does not constitute a significant effect on the environment though it can still be utilized as an augment to the required VMT analysis. Other considerations include conflict with programs, plans, ordinances, or policies that address circulation systems including transit roadway, bicycle, and pedestrian facilities; an increase in hazards due to road geometry or project design features; and inadequate emergency access.

a) Would the Project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

No Impact

Implementation of the proposed project would improve the existing trail system at the existing Mount Burdell Open Space Preserve, which currently supports outdoor recreation. Under existing conditions, there are dedicated parking spaces at two trailheads in Mount Burdell Open Space Preserve and a dedicated pull-out on the western Bowman Canyon parcels. The proposed project would not develop additional parking facilities. Visitors accessing Mount Burdell Open Space Preserve by vehicle would continue to utilize the trailhead parking, on-street parking on public roads, or walk or bike to the site. For these reasons, implementation of the proposed project is not expected to result in a significant increase in traffic, and therefore it would not conflict with TAM Congestion Management Program.

The Marin Countywide Plan and Marin County's Congestion Management Program contain policies to encourage non-vehicle modes of travel and the proposed project would be consistent with these plans. Additionally, the purpose of the proposed project is to implement the MCOSD's RTMP and consists of improvements to the existing trail system at Mount Burdell Open Space Preserve, which would benefit existing pedestrian and bicycle facilities. For these reasons, implementation of the proposed project would not conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. Implementation of the proposed project would result in a beneficial effect on existing bicycle and pedestrian facilities at Mount Burdell Open Space Preserve.

b) Would the Project conflict with or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

No Impact

CEQA Guidelines Section 15064.3, subdivision (b) describes the criteria for analyzing transportation impacts associated with the proposed project's projected increase in vehicle miles traveled. This refers to the amount and distance of automobile travel attributable to a project.

Under existing conditions, there are dedicated parking spaces at two trailheads in Mount Burdell Open Space Preserve and a dedicated pull-out on the western Bowman Canyon parcels and the proposed project would not develop additional parking facilities. For these reasons, implementation of the proposed project is not expected to result in an increase of vehicle miles traveled, public transit, or non-motorized travel. The level and types of recreational use of the project area after implementation of the proposed project are expected to remain essentially the same as existing use patterns. Increased use is expected to be minimal and largely result from the local communities, proportional with regional population growth. For these reasons, implementation of the proposed project is not expected to result in an increase in non-motorized travel and it would result in no impact associated with a conflict or inconsistency with CEQA Guidelines Section 15064.3, subdivision (b).

c) Would the Project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

No Impact

The project area is located within Mount Burdell Open Space Preserve, a public outdoor recreation facility that is owned and managed by MCOSD. Implementation of the proposed project would not reconfigure public roadways. Large construction equipment would access the project area from Bowman Canyon Road, off of Novato Boulevard, which is mainly used by visitors and to access the ranch adjacent to the preserve. Bowman Canyon Road does not have steep turns and has minimal elevation gain. On-street parking is permitted within the dedicated pull out. The dedicated pullout provides space for approximately six vehicles. During construction, trails within the project area would be closed to recreation for safety purposes. For these reasons, implementation of the proposed project would result in no impact associated with substantially increasing hazards due to a geometric design feature or incompatible uses.

d) Would the Project result in inadequate emergency access?

No Impact

Emergency access to the project area is via Bowman Canyon Road. Within the project area, emergency access is currently through the unimproved ranch roads. Emergency services in the project area are provided by the Novato Police Department and Novato Fire Protection District. The nearest police station is located in the City of Novato, approximately four miles southeast of the project area. The nearest fire station is located in the City of Novato, approximately two miles southeast of the project area.

The existing unimproved ranch roads provide inadequate access for emergency vehicles as they are generally steep, their surfaces earthen, and many are experiencing accelerated erosion. The proposed road improvements would include road adoption and road improvements by implementing road shaping treatments such as berm breaches, knicks, road outsloping and rolling dips to decrease road surface erosion, and to improve drainage dispersion and long-term maintenance. During construction, existing emergency access would be maintained during implementation and operation of the proposed project. The improvements to the existing trail system at Mount Burdell Open Space Preserve would result in an overall improvement to emergency access. For these reasons, implementation of the proposed project would result in no impact to emergency access.

TRIBAL CULTURAL RESOURCES

TABLE 19: TRIBAL CULTURAL CHECKLIST QUESTIONS

	Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code §21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:	**Potentially Significant Impact**	**Less than Significant with Mitigation**	**Less-than-Significant Impact**	**No Impact**
a)	Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code §5020.1(k)?	☐	☐	☐	☒
b)	A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

Setting

Assembly Bill 52 (AB52) is an amendment to CEQA approved September 24, 2014 which provides California Native American tribes on the Native American Heritage commission (NAHC) list the right to consult with a CEQA lead agency prior to the release of a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report for a project if they have requested AB52 consultation. AB52 also established the Tribal Cultural Resources section of the CEQA Checklist, requires CEQA lead agencies to consider tribal cultural resources when assessing project impacts and mitigation, and requires formal notice to tribes who request it and meaningful consultation.

Consultation is defined as the meaningful and timely process of seeking, discussing, and considering carefully the views of others, in a manner that is cognizant of all parties' cultural values and, where feasible, seeking agreement. Consultation between government agencies and Native American tribes shall be conducted in a way that is mutually respectful of each party's sovereignty. Consultation shall also recognize the tribes' potential needs for confidentiality with respect to places that have traditional tribal cultural significance.

Public Resources Code (PRC) Section 21074 defines tribal cultural resources as either of the following:

- Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:
    - Included or determined to be eligible for inclusion in the California Register of Historic Resources.

- Included in a local register of historical resources as defined in PRC Section 5020.1(k).[94]
- A resource determined by the Lead Agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC Section 5024.1(c).[95] In applying the criteria set forth in PRC Section 5024.1(c), for the purposes of this paragraph, the Lead Agency shall consider the significance of the resource to a CA Native American tribe.
- A cultural landscape that meets the above criteria is a tribal cultural resource to the extent that the landscape is geographically defined in terms of size and scope of the landscape.
- A historical resource described in PRC Section 21084.1,[96] a unique archaeological resource described in PRC Section 21083.2(g),[97] or a non-unique archaeological resource as defined in PRC 21083.2(h)[98] if it conforms with the criteria of subdivision (a).[99]

While CEQA evaluates potential impacts on a physical aspect, tribal cultural resources can also include intangible attributes such as their association with historical events, oral history, customs, and traditions. Both tangible and intangible should be considered, evaluated, and managed together.

On January 23, 2024, a request was sent to the State of California's NAHC by MCOSD seeking information from the Sacred Lands File and the names of Native American individuals and groups to

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[94] Local register of historical resources" means a list of properties officially designated or recognized as historically significant by a local government pursuant to a local ordinance or resolution.

[95] A resource may be listed as an historical resource in the California Register if it meets any of the following National Register of Historic Places criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.

(2) Is associated with the lives of persons important in our past.

(3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.

(4) Has yielded, or may be likely to yield, information important in prehistory or history.

[96] A project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. For purposes of this section, an historical resource is a resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources. Historical resources included in a local register of historical resources, as defined in subdivision (k) of Section 5020.1, or deemed significant pursuant to criteria set forth in subdivision (g) of Section 5024.1, are presumed to be historically or culturally significant for purposes of this section, unless the preponderance of the evidence demonstrates that the resource is not historically or culturally significant. The fact that a resource is not listed in, or determined to be eligible for listing in, the California Register of Historical Resources, not included in a local register of historical resources, or not deemed significant pursuant to criteria set forth in subdivision (g) of Section 5024.1 shall not preclude a lead agency from determining whether the resource may be an historical resource for purposes of this section.

[97] As used in this section, "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

[98] As used in this section, "nonunique archaeological resource" means an archaeological artifact, object, or site which does not meet the criteria in subdivision (g). A nonunique archaeological resource need be given no further consideration, other than the simple recording of its existence by the lead agency if it so elects.

[99] As part of the determination made pursuant to Section 21080.1, the lead agency shall determine whether the project may have a significant effect on archaeological resources. If the lead agency determines that the project may have a significant effect on unique archaeological resources, the environmental impact report shall address the issue of those resources. An environmental impact report, if otherwise necessary, shall not address the issue of nonunique archaeological resources. A negative declaration shall be issued with respect to a project if, but for the issue of nonunique archaeological resources, the negative declaration would be otherwise issued.

contact regarding the proposed project. The NAHC responded on February 11, 2024, stating that the Sacred Lands file did not indicate the presence of cultural resources within the project area and that the following tribes may have knowledge of cultural resources in the project area and should be contacted:

- Federated Indians of Graton Rancheria
- Guidiville Indian Rancheria

MCOSD emailed an Invitation to Consult per AB52 to the following tribes on March 19, 2024, which also satisfied RTMP MBP Cultural Resources-3: Tribal Consultation:

- Federated Indians of Graton Rancheria
- Guidiville Indian Rancheria
- Coast Miwok Tribal Council of Marin
- Ione Band of Miwok Indians

The consultation letters notified tribes of the proposed project and informed them that Tom Origer and Associates would be conducting a cultural resources survey of the study area. Of the tribes contacted, MCOSD received requests to consult from the Federated Indians of Graton Rancheria (FIGR) and the Guidiville Indian Rancheria (GIR).

In an email dated March 21, 2024, FIGR acknowledged receipt of the notification and requested that a representative be present during the scheduled archaeological fieldwork on April 17, 2024. A representative of FIGR was present for the fieldwork on that date. GIR responded by letter dated May 30, 2024, thanking MCOSD for the notification and the opportunity to be present for the fieldwork, and requesting a copy of the final cultural resources study. MCOSD provided the finalized cultural resources study to both GIR and FIGR on June 11, 2024.

The MCOSD will invite FIGR and GIR to review and provide comments on the draft CEQA document during the public review period.

To date, neither FIGR or GIR have identified any Tribal Cultural Resources within the project area during the consultation process and no TCRs were identified during the Cultural Resources Study conducted by Tom Origer and Associates (see Cultural Resources section for more information).

Applicable RTMP Policies and BMPs

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to minimize or avoid potential environmental impacts to tribal cultural resources. The applicable RTMP Policies and BMPs are listed below and are provided, in their entirety, in Appendix A.

- Cultural Resources-1: Historical and Archaeological Resource Mapping
- Cultural Resources-2: Consultation with Northwest Information Center
- Cultural Resources-3: Tribal Consultation
- Cultural Resources-5: Permanent Protection
- Cultural Resources-6: Construction Discovery Protocol
- Cultural Resources-7: Human Remains

CEQA Context

A project would normally result in a significant impact to tribal cultural resources if it would adversely change the significance of a tribal cultural resource, including those identified by tribes.

a) **Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?**

No Impact

PRC Section 21074 defines tribal cultural resources and PRC Section 5020.1(k) defines the local register of historic resources, both of which are included in the Setting section of this Tribal Cultural Resources section.

No cultural resources, artifacts, indications of fossil soils, or historic resources/or properties that are listed on federal, state, or local inventories within or adjacent to the project area. MCOSD invited the FIGR and GIR to consult on the proposed project pursuant to AB52 but did not receive correspondence from FIGR or GIR providing information indicating that tribal cultural resources could be present within the project area or vicinity. For these reasons, implementation of the proposed project would result in no impact associated with a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k).

Per the request by FIGR on previous projects, the MCOSD would directly notify FIGR of any inadvertent discovery of cultural or historical resources, human remains, and/or tribal cultural resources and would implement recommendations from FIGR regarding disposition of the discovery.

b) **Would the Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.**

No Impact

PRC Section 21074 defines tribal cultural resources and PRC Section 5024.1(c) defines the criteria used to determine if a resource can be considered for listing on the California Register of Historic Resources, both of which are included in the Setting section of this Tribal Cultural Resources section.

No cultural resources, artifacts, indications of fossil soils, or historic resources/or properties that are listed on federal, state, or local inventories within or adjacent to the project area. MCOSD invited the FIGR and GIR to consult on the proposed project pursuant to AB52 but did not receive correspondence from FIGR or GIR providing information indicating that tribal cultural resources could be present within the project area or vicinity. For these reasons, implementation of the proposed project would result in no impact associated with a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is resource

determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1.

Per the request by FIGR on previous projects, the MCOSD would directly notify FIGR of any inadvertent discovery of cultural or historical resources, human remains, and/or tribal cultural resources and would implement recommendations from FIGR regarding disposition of the discovery.

UTILITIES AND SERVICE SYSTEMS

TABLE 20: UTILITIES AND SERVICE SYSTEMS CHECKLIST QUESTIONS

	Would the project:	Potentially Significant Impact	Less than Significant with Mitigation	Less-than-Significant Impact	No Impact
a)	Require or result in the relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
b)	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
c)	Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d)	Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☐	☒
e)	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Setting

The Mount Burdell Open Space Preserve is an undeveloped natural area used for natural resource preservation and for outdoor recreational activities. MCOSD does not provide any parking, restrooms, drinking water or other similar facilities that would require utilities, such as electricity, potable water, or wastewater on its open space preserves. Facilities include trails, roads for emergency and maintenance access, gates, signage, and trash cans at some trailheads to capture trash and pet waste. Within the preserve are several privately-operated communication towers that support cell phone and other similar communications. The proposed project is located on parcels acquired by the MCOSD in 2018 and 2020 commonly known as Bowman Canyon. The Bowman Canyon parcels total 409 acres and are now part of the 2,035-acre Mount Burdell Open Space Preserve. Facilities within the project area include trails and unimproved ranch roads.

Applicable RTMP Policies and BMPs

The RTMP does not include Policies and BMPs specific to utilities and service systems. The RTMP Policies and BMPs are provided, in their entirety, in Appendix A.

CEQA Context

A project would normally result in a significant impact on utilities and service systems if it would exceed or conflict with existing standards, service capacities, and/or entitlements. Potentially significant impacts to utilities and service systems have been evaluated by determining new or altered services that would be required to implement the proposed project.

a) Would the Project require or result in the relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?

No Impact

Implementation of the proposed project would not require the relocation, construction, or expansion of any utility or public service facility. MCOSD may import water by tank trucks to the project area during construction for dust control and implementation of trail improvements. MCOSD would utilize recycled wastewater if it is available. Implementation of the proposed project would rely on construction equipment powered by diesel fuel and gasoline and would not require or impact any electrical infrastructure. For these reasons, implementation of the proposed project would result in no impact associated with the relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects.

b) Would the Project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

No Impact

Implementation of the proposed project may require water be imported by tank trucks during construction for dust control and implementation of trail improvements. MCOSD would utilize recycled wastewater if it is available. Implementation of the proposed project would not require regular supply. The project area currently does not have water service, and none is proposed as part of the project. Implementation of the proposed project would not create new demands for water supply and would not include or require any drinking fountains, irrigation, or water facilities. For these reasons, implementation of the proposed project would result in no impact associated with the sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years.

c) Would the Project result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No Impact

There are no existing bathrooms or water facilities available within the project area. Implementation of the proposed project does not include new restrooms that would increase projected demand for wastewater treatment. For these reasons, implementation of the proposed project would result in no impact associated with adequate wastewater treatment capacity to serve the project's projected demand in addition to the provider's existing commitments.

d) Would the Project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

No Impact

Implementation of the proposed project would generate a nominal amount of solid waste, primarily associated with concrete or other refuse fill from the littered creeks, which would be removed to the Redwood Landfill, located in Novato. Redwood Landfill is permitted throughput capacity to receive 2,300 tons per day of waste material and has a design capacity of 26,000,000 cubic yards. The volume of construction-related solid waste is estimated to be 40 cubic yards and would not affect landfill capacity. Implementation of the proposed project would comply with applicable county, state, and federal regulations regarding solid waste disposal. For these reasons, implementation of the proposed project would result in no impact associated with generation of solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.

e) Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No Impact

As discussed in item (d), implementation of the proposed project would generate a nominal amount of solid waste, primarily associated with vegetation clearing, which would be removed to the Redwood Landfill, located in Novato. The volume of construction-related solid waste would not affect land landfill capacity. Implementation of the proposed project would comply with applicable county, state, and federal regulations regarding solid waste disposal. For these reasons, implementation of the proposed project would result in no impact associated with compliance with federal, state, and local management and reduction statutes and regulations related to solid waste.

WILDFIRE

TABLE 21: WILDFIRE CHECKLIST QUESTIONS

	If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Potentially Significant Impact	Less than Significant with Mitigation	Less-than-Significant Impact	No Impact
a)	Impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
b)	Due to slope, prevailing winds, and other factors, would the Project exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c)	Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
d)	Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Setting

The southeastern boundary of the project area is within an area mapped as Urban Wildland Interface. There are no evacuation routes within the project area as the project area contains only unimproved ranch roads. A primary evacuation route is mapped on Novato Blvd, also within the adjacent residential neighborhood.[100] The Mount Burdell Open Space Preserve includes 20-foot-wide fire roads that extend along most of the length of the ridgelines. In this context, a fire road is maintained through vegetation management to provide fire fighters access to remote areas. In MCOSD preserves, fire roads are also utilized as multi-use trails. The California Department of Forestry and Fire Protection (CalFire) has mapped areas of high wildfire hazards throughout California, including Marin County. The project area is not mapped as within a fire hazard severity zone, though areas south and west of the project area are mapped as within the high fire hazard severity zone within the State responsibility area.[81]

MCOSD currently implements RTMP Policy SW.26: Control or Restrict Access to Ignition Prevention Zones when Red-Flag Conditions Exist and would continue to do so regardless of whether the proposed project is implemented.

[100] Marin Map. Accessed March 2024. https://marincounty.maps.arcgis.com/apps/webappviewer/index.html?id=688f506cfb144067826bb35a062b0f0a

Applicable RTMP Policies and BMPs

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to minimize or avoid potential environmental impacts to wildfire. The applicable RTMP Policies and BMPs are listed below and are provided, in their entirety, in Appendix A.

- Policy SW.26: Control or Restrict Access to Ignition Prevention Zones when Red-Flag Conditions Exist
- Construction Contracts-1: Standard Procedures in Construction Contracts

CEQA Context

A project would normally result in a significant impact on wildfire if it is located in or near state responsibility areas or lands classified as a very high fire hazard severity zone and would increase wildfire risk, increase air pollution concentration from wildfire due to topographic features or prevailing winds, increase risk to people or structures form post-wildfire flooding or landslides, or conflict with an adopted emergency response plan or emergency evacuation plan.

a) Would the Project impair an adopted emergency response plan or emergency evacuation plan?

No Impact

The project area is not located within an adopted emergency response plan or emergency evacuation plan area, nor is the project area currently used for has an emergency access plan through the Novato Fire Protection District and Fire Safe Marin. Mount Burdell Open Space Preserve and portions of the Bowman Canyon property are in Zone NOV-E043, and the remainder of Bowman Canyon is in MRN-E021. The residential neighborhood immediately adjacent on San Marin Drive is in Zone NOV-E035 on the Novato Fire Protection District[79] mapping and in Zone 35 on the Fire Safe Marin – Novato evacuation map.[80] Neighborhoods south and southeast to the project area are directed to evacuate utilizing Novato Boulevard, San Marin Drive, or Sutro Avenue. Implementation of the proposed project would improve pedestrian and bicycle egress in case of a fire or other emergency should one occur within Mount Burdell Open Space Preserve. For these reasons, implementation of the proposed project would result in no impact associated implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.

b) Due to slope, prevailing winds, and other factors, would the Project exacerbate wildfire risks and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less than Significant Impact

Implementation of the proposed project would not exacerbate wildfire risks in the area. The trails would continue to be utilized for outdoor recreation. The proposed project does not include new designated parking or other amenities that would normally contribute to a significant increase in visitors, new types of visitors, or create a destination attraction and does not include any structures or amenities that could potentially exacerbate wildfire risks. The new trail configuration would also improve access for ranger patrol and emergency responders on foot or using small all-terrain vehicles.

Construction and maintenance equipment could generate sparks and could temporarily increase fire risk. To address this potential, MCOSD vehicles are equipped with fire extinguishers to address small fires ignited by construction activities before a problem develops and the MCOSD RTMP BMP Construction Contracts-1 requires all construction vehicles to be equipped with a suitable fire extinguisher. For these reasons, implementation of the proposed project would result in a less than significant impact associated with exacerbation of wildfire risks that would thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire.

c) Would the Project require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

No Impact

Implementation of the proposed project would improve the existing trail system at Mount Burdell Open Space Preserve, the only infrastructure within the project area would be recreational trail bridges and puncheons. There are no existing water sources, power lines or other utilities within the project area and none are proposed as part of the project. The proposed project does include the improvement to 3 miles of existing ranch roads. The proposed project does not include any structures or other facilities that would be flammable or otherwise increase the wildfire risk. Implementation of the proposed project would not increase emergency response demands.

Implementation of the proposed project would result in a beneficial effect on the existing MCOSD's fuel management activities within Mount Burdell Open Space Preserve because the trail access would be improved. The proposed trail system improvements would improve safety for trail users, which is a beneficial effect and would provide improved egress for visitors utilizing the trail system in case of emergency. The proposed project would improve fire department access by improving the condition of 3 miles of existing ranch roads within the project area, which would continue to be available for emergency vehicle use same as existing conditions. This would be a beneficial impact. For these reasons, implementation of the proposed project would result in no impact associated with the installation or maintenance of associated infrastructure, such as roads, fuel breaks, emergency water sources, power lines or other utilities that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

d) Would the Project expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No Impact

As described in the Hydrology and Water Quality section of this CEQA Checklist, implementation of the proposed project would not adversely affect the flow of drainage within the project area or result in other substantial drainage changes. The proposed project does not include any structures or other facilities that would be at risk due to post-fire slope instability. The trail system including the proposed bridges could be damaged due to post-fire runoff or slope instability, but the risk to people or structures would be low. Use of the project area would be similar to existing conditions and would not result in increased wildfire risk. For these reasons, implementation of the proposed project would result in no impact associated with the exposure of people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

MANDATORY FINDINGS OF SIGNIFICANCE

TABLE 22: MANDATORY FINDINGS OF SIGNIFICANCE CHECKLIST QUESTIONS

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

Setting

Implementation of the proposed project would result in an overall beneficial effect to the environment as it would decommission degraded, unimproved ranch roads and social trails that would result in less erosion and sedimentation entering the Novato Creek Watershed which would improve water quality. The potentially significant environmental impacts described in this document that could result from implementation of the proposed project would be temporary and mitigation measures have been included in this document to reduce the significance of potentially significant impacts to a less than significant level. MCOSD would implement applicable RTMP BMPs, Air Quality Best Management Practices, and the mitigation measures included in this document to reduce potential impacts not addressed by the RTMP BMP to a less than significant level.

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

Less than Significant with Mitigation

The proposed project would eliminate sources of erosion and sedimentation associated with the existing trail system within Mount Burdell Open Space Preserve, which would improve environmental conditions for Novato Creek watershed, specifically water quality, and would improve the aquatic

habitat. The proposed project would improve drainage by installing water-control features, such as outsloping and rolling dips to minimize the trail system's effect on erosion and sedimentation into the watershed. Installation of the proposed bridges would eliminate sedimentation associated with trail access through ephemeral streams and swales. Decommissioning of highly erosive, unimproved ranch roads and social trails would further reduce sedimentation into the watershed. Overall, implementation of the proposed project would reduce the existing impacts from the existing trail system in Mount Burdell Open Space Preserves by reducing erosion and sedimentation and the area natural habitat disturbed by trails.

Potentially significant construction-related impacts to special-status species would be reduced to less-than-significant levels by implementation of the applicable Best Management Practices included in the MCOSD's RTMP and the implementation of mitigation measures included in this document. As described in the Cultural Resources section of this CEQA Checklist, the project area does not contain any important examples of the major periods of California history or prehistory. For these reasons, with mitigation measures identified in this document, the implementation of the proposed project would result in a less than significant impact associated with the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.

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

Less than Significant

The proposed project is one of several trail projects that the MCOSD has constructed in the last five years as part of its implementation of the RTMP. These projects include repairs and improvements to the following trails:

- Blithedale Summit Open Space Preserve, Larkspur - Piedmont Trail and West Baltimore Trail
- Cascade Canyon Open Space Preserve, Fairfax - Cascade Canyon Fire Road
- Mount Burdell Open Space Preserve, Novato - San Carlos Fire Road
- Pacheco Valle and Ignacio Valley Open Space Preserves, Novato - Ponti Fire Road to Trail
- Roy's Redwoods Open Space Preserve, Woodacre - Roy's Redwoods Restoration
- Terra Linda Ridge/Sleepy Hollow, San Rafael - Springs Hill Trail
- Terra Linda/Sleepy Hollow Divide Open Space Preserves, San Anselmo - Tomahawk Fire Road
- Cascade Canyon Open Space Preserve, Fairfax - Carey Camp Bridges
- Cascade Canyon Open Space Preserve, Fairfax - Toyon Fire Road
- Cascade Canyon Open Space Preserve, Fairfax - Wagon Wheel Bridges
- Rush Creek Open Space Preserve, Novato - Blue Oak Trail
- Terra Linda Open Space Preserve, San Anselmo - Memorial Trail

Additionally, the MCOSD and Marin County Parks are undergoing a planning process for several road and trail improvement projects including, but not limited to, the following:

- Blithedale Summit Open Space Preserve, Mill Valley - Greenwood Fire Road
- Cascade Canyon Open Space Preserve, Fairfax - Lower Cascade Fire Road
- Ignacio Open Space Preserve, Novato - Buck Gulch Falls Trail

All past RTMP projects have complied with the requirements of the RTMP and all future RTMP would also comply with the requirements of the RTMP, including Policy SW.4: Overall Reduction in Road, Trail, and Visitor Impacts, which mandates the designation of new roads and trails resulting in a net reduction of environmental impacts from the existing road and trail system. The projects would achieve this policy goal through reducing erosion and sedimentation, improving the environmental impacts from existing stream crossings, redesigning trails to avoid impacts to sensitive habitat and species, and decommissioning of existing non-designated trails. In combination, these projects would result in a net improvement to the environmental resources of the open space preserves.

Regarding the proposed project, MCOSD would implement applicable RTMP BMPs, the air quality Best Management Practices, and the mitigation measures included in this document to reduce potential impacts not addressed RTMP BMPs to a less than significant level. Cumulatively, MCOSD projects would result in beneficial effects to environmental resources by improving its road and trail system. For these reasons, implementation of the proposed project would not result in impacts that are individually limited, but cumulatively considerable.

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

No Impact

The nearest private residence is on Pepper Craft Way at a cul de sac, which is approximately 570 feet east of the southern-most portion of WB-01 Road. Potential environmental effects of the proposed project in the vicinity of the residential area would be very limited as the proposed project would take place within open space areas and construction equipment would only remain in one location for a matter of weeks as work progresses. Approximately 1,100 feet of WB-01 Road is located within 1,000 feet of the nearest residence. Proposed project related construction activities within this segment would be limited to minor drainage improvements such as berm breaches, knicks, road outsloping, or rolling dips, and the placement of approximately 153 cubic yards of Class II base rock to improve road stability and drivability. These light construction treatments would be short-term and localized, minimizing potential air quality impacts to nearby residences. Implementation of the proposed project could affect visitors for recreational purposes during project implementation as the work areas would be closed during that time. This would have a temporary, non-environmental impact, and ultimately, implementation of the proposed project would improve the visitor experience. For these reasons, implementation of the proposed project would result in no environmental impact that would cause substantial adverse effects on human beings, either directly or indirectly.

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APPENDIX A – MARIN COUNTY OPEN SPACE DISTRICT ROAD AND TRAIL MANAGEMENT PLAN (RTMP) POLICIES AND BEST MANAGEMENT PRACTICES (BMPs)

POLICIES

Policy SW.1: Application of this Road and Trail Management Plan Policies

The policies and requirements of this plan will apply within all open space preserves, and within any new preserves that may be established. These policies will also apply to existing and future trail easements unless they would conflict with the terms of the easement, in which case the easement will prevail.

Policy SW.2: System Roads and Trails

The MCOSD will, following adoption of this plan, designate a system of roads and trails, referred to as "system roads and trails," in all existing and new open space preserves, through a collaborative public process. Those roads and trails eligible for consideration as part of the system must have been constructed as of November 2011. The MCOSD may improve, maintain, convert, or reroute system roads and trails according to the policies and requirements of this plan, as time and resources allow. Nonsystem roads and trails, defined as those roads and trails not designated as system roads and trails, may be decommissioned at any time, as time and resources allow.

Policy SW.3: Social Trails

For the purpose of this policy, social trails are defined as narrow pedestrian footpaths that a) were not constructed; and b) have not been improved, managed, or maintained. This definition extends to wildlife trails used occasionally by pedestrians. This plan recognizes that, for all practical purposes, social trails will continue to exist after the system of roads and trails has been designated. Social trails are not subject to closure or decommissioning unless a) their continued existence compromises public safety; b) results in unacceptable levels of erosion, or damage or disruption to plants and wildlife; c) their volume of use increases; and/or d) they are used by equestrians or bikers.

Policy SW.4: Overall Reduction of Road, Trail, and Visitor Impacts

The designated system of roads and trails will have less overall impact to resources compared to the network of roads and trails existing as of November 2011. Impacts will be reduced by decommissioning non-system roads and trails, and by the improvement, conversion, or rerouting of system roads and trails. The MCOSD will maximize the reduction of road, trail, and visitor impacts in Sensitive Resource Areas, compared to Conservation Areas and Impacted Areas. Impacted Areas will exhibit the widest range of acceptable road, trail and visitor impacts.

Policy SW.5: Policy on Pedestrian Activities

Pedestrians are encouraged to stay on system roads and trails.

Policy SW.6: Prohibition on Off-Road or Off-Trail Equestrian Use

Horses and pack animals must stay on system roads and trails, except when watering or resting the animal. Off-trail riding is prohibited. Riding or possession of a horse or pack animal on non-system roads and trails is prohibited. Riding or possession of a horse or pack animal on social trails is prohibited.

Policy SW.7: Prohibition on Off-Road or Off-Trail Bicycle Use

Mountain bikers must stay on system roads and trails designated for bicycle use. Off-trail riding is prohibited. Riding or possession of a bicycle on non-system roads and trails is prohibited. Riding or possession of a bicycle on social trails is prohibited.

Policy SW.8: Prohibition on Off-Road or Off-Trail Pedestrians with Dogs or Other Domestic Animals

Pedestrians with dogs and other domestic animals must stay on system roads and trails. Off-trail use by pedestrians with dogs and other domestic animals is prohibited. Use of non-system roads and trails, and social trails, by pedestrians with dogs and other domestic animals is prohibited.

Policy SW.9: Prohibition of Dogs within Sensitive Water Resources

Dogs are not allowed to travel, run, walk, hunt, or bathe in streams or any sensitive water bodies, such as marshes, lakes, or ponds, within the preserves.

Policy SW.10: Policy on Leash Only Preserves

Due to the occurrence of sensitive resources, dogs must be leashed on all roads and trails in those preserves currently designated as “leash only” (i.e., Cascade Canyon, Ring Mountain, and Rush Creek Preserves). The MCOSD may designate other “leash only” preserves in the future.

Policy SW.11: Policy on Leash Requirements for Dogs

Dogs must be on leash (no more than 6 feet in length) a) in all designated “leash only” preserves; and b) on all trails. Dogs may be off leash, but under voice control, only on fire roads that are not within leash only preserves. The MCOSD will identify roads passing through leash only preserves with signs. Dogs under voice control must remain on the fire road.

Policy SW.12: Road and Trail Connectivity

The MCOSD will strive to increase road and trail connectivity for all trail users. The MCOSD will strive to provide opportunities for short to medium distance loops and long-distance routes. The MCOSD may consider one-way, uphill-only, time separation, and single-use or priority-use trails to achieve these ends.

Policy SW.13: Prohibition on Dangerous Activities

Activities that exceed the established speed limit, are reckless, or pose a danger to the user or to other road and trail users, are prohibited.

Policy SW.14: Road and Trail Etiquette

All road and trail users will practice good etiquette at all times. Mountain bikers will always yield to both hikers and equestrians. Hikers will yield to equestrians. Mountain bikers must announce their presence by using a bell or calling out when overtaking other trail users.

Policy SW.15: Expectation of Active Cooperation of All Road and Trail Users

Increased trail use opportunities must be coupled with cooperation among all trail users, and with the MCOSD, to promote lawful trail use, reduce violations, reduce impacts to natural resources, prevent displacement of any trail user types, minimize disturbance to existing neighbors, and avoid endangerment of other trail users.

Policy SW.16: Prohibition of Uses

The MCOSD may prohibit certain trail uses or apply increased trail use restrictions within certain areas to enhance safety, minimize conflicts between trail users, and protect natural resources. Examples of areas where this policy may apply include, but are not limited to, those proximate to stables and those traditionally heavily traveled by equestrians, and in Sensitive Resource Areas.

Policy SW.17: Displacement of Existing Trail Users

The MCOSD will strive to prevent displacement of equestrians and pedestrians when accommodating trail access and trail connections for mountain bikers. When considering the designation of existing trails as single-use or priority-use, the MCOSD will take care to maintain connectivity between destinations for user groups historically using those trails.

Policy SW.18: Unauthorized Trail Construction and Maintenance

The MCOSD has no tolerance for unauthorized trail construction and unauthorized reopening of closed or decommissioned roads and trails. The MCOSD will prosecute such violations to the fullest extent of the law. The MCOSD will apply new deterrence methods, including rigorous investigation and increased penalties to stop such damaging and unlawful activities.

Policy SW.19: Redundant Roads and Trails

Redundant roads or trails are defined as those that roughly parallel an existing route serving essentially the same purposes, uses, and user groups. Through designation of the road and trail system, the

MCOSD will reduce the overall level of redundancy compared to baseline levels and when doing so will exclude from designation the road or trail segment or segments that have the highest overall maintenance costs and the worst profile of environmental impacts. The MCOSD may strategically retain some redundant roads and trails in the interest of separating user groups and avoiding user conflict. Redundant roads and trails that are not designated as system roads and trails will be decommissioned as time and resources allow. All decommissions of redundant fire road segments will be subject to consultation with Marin County Fire and the relevant local fire agencies.

Policy SW.20: Conversion of System Roads to Trails

The MCOSD may convert system roads to trails to protect natural resources, enhance visitor experience and/or safety, or align maintenance costs with available funds. System roads encumbered by license, lease, or easement for nonrecreational purposes, and roads required for maintenance or emergency access, may not be converted to trails unless encumbrances are removed, or roads are no longer necessary for maintenance or emergency use.

Policy SW.21: Roads or Trails Serving Nonrecreational Uses

Roads or trails subject to or encumbered by license, lease, or easement, for nonrecreational purposes, and those roads required for maintenance or emergency access, will become system roads and trails, unless encumbrances are removed, or roads are no longer necessary for maintenance or emergency use.

Policy SW.22: Protect High-Value Vegetation Types

As a general policy, visitors will be directed away from areas of high-value vegetation types, as identified in the MCOSD's mapped Legacy Vegetation Management Zones and other more site-specific biotic assessments undertaken or commissioned by the MCOSD, to prevent disturbance and adverse impact. This will be done through the appropriate placement of new and rerouted trails, by erecting fencing, or by installing educational signs that provide information about the resource values being protected.

Policy SW.23: Identify High Value Biological Resources

Designation of the road and trail system and evaluation of road and trail project proposals will be based on best available data, including inventories of wildlife, and vegetation resources. The MCOSD will undertake site specific and programmatic efforts to extend and improve upon the biological data underlying its decision-making criteria. System designations, project design, and project implementation are subject to amendment on the basis of new information.

Policy SW.24: Minimize Intrusions into Larger Contiguous Habitat Areas and Wildlife Corridors

In designating the system of roads and trails, the MCOSD will minimize their adverse effects on sensitive vegetation, as well as, habitat connectivity and migration corridors for all native species of wildlife.

Policy SW.25: Helmet Requirement

Per California state law, bicycle riders less than 18 years old are required to wear a helmet when riding on the MCOSD roads and trails.

Policy SW.26: Control or Restrict Access to Ignition Prevention Zones when Red-Flag Conditions Exist

Appropriate actions will be taken to minimize the risk of wildfire ignition when red-flag conditions exist. These actions may include prohibiting vehicle access, closing trails, or closing entire areas to all human activities until red-flag conditions expire. The public will be informed of the reasons why such actions are being taken, and areas will be patrolled to ensure compliance.

Policy SW.27: Protect High-Value Cultural and Historic Resources by Rerouting or Confining Visitor Access

Areas of high- value cultural and historic resources will be protected from disturbance and adverse impact. This will be done through the appropriate placement of trails, by erecting barriers, or other methods to discourage access.

Policy SW.28: Remove or Realign Roads and Trails Away from High-Value Cultural and Historic Resources

As a general policy, designated roads and trails will be rerouted away from high-value cultural and historic resources whenever possible and feasible. Areas where roads or trails are removed will be restored to natural conditions. The removal or realignment of roads will be done in consultation with Marin County Fire and other local fire agencies.

Policy SW.29: Retrofit or Upgrade Construction Equipment

Work with the Bay Area Air Quality Management District to implement feasible actions from the 2010 Clean Air Plan MSM C-1 – Construction and Farming Equipment. Pursue funding to retrofit the existing construction equipment engines with diesel particulate filters or upgrade to equipment with electric, Tier III, or Tier IV off-road engines. Seek to rent construction equipment that meets these criteria, if available.

Policy SW.30: Permeable Paving

For any new parking areas and other large areas of potentially impermeable surfaces, use permeable paving or an equivalent for all paved areas to provide for the infiltration of rainfall.

Policy SW.31: Floodplain Policy for New and Improved Roads and Trails

The MCOSD will review current Federal Emergency Management Agency Flood Insurance Rate Maps and other current flood maps to assess potential flood impacts to any proposed new or improved road, trail, or associated facilities located in the lower elevation bayland or coastal areas (i.e., Santa Margarita Island, Santa Venetia Marsh, Bothin Marsh, Rush Creek, Deer Island, and Bolinas Lagoon). In cases where a flood risk is identified, proposed facilities shall either be relocated outside of the flood prone area or designed and constructed in a manner to protect public safety and not increase base flood elevations. As part of public safety, the MCOSD shall also review the most current Tsunami Inundation Maps as part of the trail improvement planning efforts in those areas in order to identify areas that may require escape plans or proper notification.

Policy T.1: Loop and Long-Distance Trail Connections

When designating system roads and trails, the MCOSD will seek to maintain and/or develop new opportunities for loop and long-distance travel, when such opportunities do not conflict with resource protection or visitor safety.

Policy T.2: Visitor Amenities

The MCOSD may provide or permit visitor amenities such as a) facilities to encourage the pickup and disposal of pet waste; b) watering opportunities for horses and other pack animals; c) potable water; and d) small bike repair stations.

Policy T.3: Visitor Safety

The safety of all road and trail users depends in large part on visitor conduct. The MCOSD expects that all users will conduct themselves in a safe manner, to protect their own safety and the safety of other users. The MCOSD shall consider visitor safety in designating the road and trail system.

SPECIAL USE POLICIES

In addition to providing public access for recreational uses, the MCOSD preserves also allows uses such as commercial dog walking, recreational events, and access for utility providers such as Verizon and PG&E. There is a need for a consistent and structured approach for the MCOSD to respond to requests for special uses. New policies to accomplish this are described below.

Policy SP-1: Lease/License/Other Form of Approval Required for Land Management or Utility Activities

Consistent with the MCOSD's Nonconforming Use Policy, all agencies and service providers requesting access to open space preserves will be required to obtain a lease, license, or other form of approval from the MCOSD describing the purpose and timing of their activities. The MCOSD may impose fees and conditions. Such conditions may include, but will not be limited to, the timing of the activity with respect to seasonal and weather concerns, the protection of natural resources, and the location of the activity. The MCOSD's Nonconforming Use Policy provides specific guidance for permitting use of open space by utilities, water districts, and other similar entities.

Policy SP-2: Permit Required for Organized Recreational Activities or Events

All private parties or public agencies requesting access to the MCOSD preserves for recreation-related or other special events will be required to complete and obtain a permit detailing the purpose and timing of their activities. The MCOSD may impose fees and conditions. Such conditions may include, but will not be limited to, the timing of the activity with respect to seasonal and weather concerns, the number of participants, the protection of natural resources, and the location of the activity. An administrative fee will be charged by the MCOSD for reviewing and granting any permits. Additional fees may be incurred by the applicant for administration and monitoring of the event by the MCOSD staff, or if compliance with the California Environmental Quality Act or any regulatory permit is required. The MCOSD insurance and indemnity requirements will also apply.

Policy SP-3: Prohibition on Unofficial, Non-sponsored Group Activities

Any unofficial, non-sponsored outdoor recreation event involving more than 15 participants is prohibited.

GENERAL BMPs

General 1: Limit Work Area Footprints in Sensitive Resource Areas

Limit the size of construction-related road and trail management activities to the minimum size needed to meet project objectives. BMPs include:

- Minimize project footprint. Minimize the size of the work area, including the project area, access roads, and staging areas. Wherever possible, use existing upland roads, trails, and other disturbed areas for project activities in order to reduce unnecessary disturbance, minimize soil and water erosion, and reduce overall project costs.
- Reduce or relocate footprint during planning and design phase. Reduce the work area footprint in sensitive resource areas or move the work area to common natural communities and upland areas. Implement further refinements during site preparation and construction to further reduce impacts.
- Minimize soil disturbance**.** Minimize soil disturbance to the greatest extent possible to reduce the potential for introducing or spreading invasive plants, to protect topsoil resources, and to reduce available habitat for the establishment of new invasive plants.
- Mark project footprint near sensitive natural resources. Mark ingress/egress routes, staging areas, and sensitive resources to prevent inadvertent impacts to sensitive resources.
- Restrict soil disturbance and import of nonnative soil or fill material. To reduce the potential for damage of native plants and/or introduction of invasive plants, the contractor will be required to minimize the footprint of soil disturbance to the minimum amount necessary to complete the contracted work. In particular, access roads, staging areas, and areas of temporary disturbance will be minimized in size. The contractor and its staff and subconsultants agree not to drive off-road or drive or park on native vegetation unless approved in advance by the MCOSD natural resource staff. The contractor agrees that if soil excavation is required, every attempt will be made to have a balanced cut and fill project that reuses all native soils onsite. No nonnative soil or fill material will be brought onsite or used during the contractor's activities unless approved by the MCOSD natural resource staff.

General-2: Modify Construction- Related Vegetation Management Methods in and near Wetlands, Riparian Vegetation

Restrict construction-related vegetation management near wetlands in a manner that reduces the potential for sediment or pollutants to enter wetlands. Implement the following BMPs, as needed:

- Establish a buffer of 100 feet from wetland and tidally influenced areas (i.e., from the ordinary high-water mark of flowing or standing water in creeks, streams, or ponds). Avoid construction work within this buffer area. If construction work in wetlands and riparian areas cannot be fully avoided, consult with the appropriate state and federal agencies to obtain permits.
- Within the buffer, restrict routine vegetation management activities in creeks, streams, other waterways, and tidally influenced areas. Limit vegetation management work to least-harmful methods; restrict herbicides to those that are EPA-approved for use near water. Prohibit activities that disturb soil or could cause soil erosion or changes in water quality.
- Within the buffer, limit work that may cause erosion to the low flow or low tide periods. Low flow months for local creeks are typically August to October. For tidal areas, work will not occur within 2 hours of high tide events at construction sites when high tide is greater than 6.5 feet measured at the Golden Gate Bridge, using corrections for areas near individual MCOSD preserves. Tide charts are available online from the National Oceanic and Atmospheric Agency/National Weather Service (http://www.wrh.noaa.gov/mtr/sunset.php).
- Within the buffer, minimize erosion and sedimentation; maintain erosion and sediment control devices during ground disturbing activities and until all disturbed soils have been stabilized.

Measures include weed-free straw, hydromulch, geofabrics, wattles, sediment traps, check dams, drainage swales, and sand bag dikes. Materials must be certified weed-free to prevent the introduction of wheat, barley, and other nonnative plant seeds. Erosion control materials must be constructed of natural fibers (e.g., coconut fiber mats, burlap, and rice straw wattles, etc.) and may not be constructed with plastic monofilaments or other materials that could entrap snakes or amphibians.

- Prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) to protect water quality for work in or near wetlands, ponds, seeps, creeks, tidal areas, or stream crossings.

General-3: Minimize Potential for Erosion

Conduct road and trail activities in a manner that controls and minimizes the potential for soil erosion and contribution of sediment to wetlands. Implement the following as needed:

- To minimize erosion and sedimentation, maintain erosion and sediment control devices during ground disturbing activities and until all disturbed soils have been stabilized. Measures include rice straw, hydromulch, geofabrics, wattles, sediment traps, check dams, drainage swales, and sand bag dikes. Materials must be certified weed-free to prevent the introduction of wheat, barley, and other nonnative plant seeds. Erosion control materials must be constructed of natural fibers (e.g., coconut fiber mats, burlap and rice straw wattles, etc.) and may not be constructed with plastic monofilaments or other materials that could entrap snakes or amphibians.
- Unless no feasible alternative is available, avoid using heavy equipment in areas with soils that are undisturbed, saturated, or subject to extensive compaction. Where staging of heavy equipment, vehicles, or stockpiles is unavoidable, limit and mark the allowable disturbance footprint with flagging or fencing. Following the end of work, scarify surface soils to retard runoff and promote rapid revegetation.
- Immediately rehabilitate areas where project actions have disturbed soil. Require areas disturbed by equipment or vehicles to be rehabilitated as quickly as possible to prevent erosion, discourage the colonization of invasive plants, and address soil compaction. Techniques include decompacting and aerating soils, recontouring soils to natural topography, stabilizing soils via erosion control materials, revegetating areas with native plants, and removing and monitoring invasive plants.

General-4: Control Food-Related Trash

Food-related trash can attract wildlife to road and trail project sites. Store food-related trash in closed containers and remove from the project site daily.

General-5: Modify Construction Methods Relating to Soil Disturbance, Restrict use of Offsite Soil, Aggregate, or Other Construction Materials

Conduct construction-related vegetation management in a manner that restricts the use of offsite materials that could introduce or spread invasive plants. Implement the following as needed:

- Minimize soil disturbance. Minimize soil disturbance to the greatest extent possible to reduce the potential for introducing or spreading invasive plants, to protect topsoil resources, and to reduce available habitat for the establishment of new invasive plants.
- Do not allow the introduction of incompatible fill. Use only clean, native soils and aggregate materials from projects within the preserve or use fill that is purchased from a certified weed-free source, before allowing the importation of materials from outside the preserves. Fill materials should be approved by natural resource staff to ensure compatibility with future restoration/rehabilitation goals.
- Segregate and treat soils and vegetation contaminated with invasive plant seeds and propagules. Treat, as appropriate, to prevent the spread of invasive plants**.** Treatment may include disposal

onsite within already infested areas, chipping or pile burning and mulching to eliminate viable seeds, or disposal at an approved cogeneration plant or green waste facility.

- Salvage, store, and reuse topsoil. Where activities disturb soil temporarily, require salvage of the top 6 to 12 inches of topsoil (to retain seeds, soil mycorrhizae, and fungi) from all excavation and disturbance areas. Require reapplication of the salvaged topsoil as a topdressing or topcoat over backfill, unless known to contain invasive plant seeds or propagules.
- Establish dedicated areas for cleaning vehicles, inside and out, of soil or invasive plant seeds or plant parts before entering the MCOSD preserves, whenever moving equipment between areas within the preserves, and before leaving preserves. Within the wash areas, the tires and body of vehicles and equipment will be brushed off and/or hosed down.
- Inspect construction equipment for soil or invasive seeds or plant parts. Require contractors to make equipment available for inspection before entering the MCOSD preserves, when moving between sites within the preserves, and before leaving preserves.
- Develop a native seed mix for erosion control. Develop the seed mixture on a project-by-project basis based on the observed mixture of native and naturalized plants in and near the impact area. Where possible, ensure that seeds are collected locally (i.e., within the same watershed or preserve as the impact), or obtained from a reputable native plant nursery specializing in seed that is collected from local sources.
- Maintain erosion and sediment control devices during ground disturbing activities and until all disturbed soils have been stabilized to help minimize erosion and sedimentation. Measures include rice straw, hydromulch, geofabrics, wattles, sediment traps, check dams, drainage swales, and sand bag dikes. Materials must be certified as weed-free to prevent the introduction of wheat, barley, and other nonnative plant seeds. Erosion control materials must be constructed of natural fibers (e.g., coconut fiber mats, burlap and rice straw wattles, etc.) and not of plastic monofilaments or other materials that could entrap snakes or amphibians.
- Immediately rehabilitate areas where road and trail project activities have disturbed soil. Areas disturbed by equipment or vehicles should be rehabilitated as quickly as possible to prevent erosion, discourage the colonization of invasive plants, and address soil compaction. Techniques include de-compacting and aerating soils, recontouring soils to natural topography, stabilizing soils via erosion control materials, revegetating areas with native plants, and removing and monitoring invasive plants.

General-6: Prevent or Reduce Potential for Pollution

Ensure that actions are taken during ongoing road and trail project activities to prevent or reduce the potential for pollutants entering the MCOSD preserve. Implement the following as needed:

- Prohibit, or restrict equipment refueling, fluid leakage, equipment maintenance, and road surfacing activities near wetlands. Require placement of fuel storage and refueling sites in safe areas well away from wetlands. Safe areas include paved or cleared roadbeds, within contained areas such as lined truck beds, or other appropriate fuel containment sites. Inspect equipment and vehicles for hydraulic and oil leaks regularly. Do not allow leaking vehicles on the MCOSD preserves and require the use of drip pans below equipment stored onsite. Require that vehicles and construction equipment are in good working condition, and that all necessary onsite servicing of equipment be conducted away from the wetlands.
- Require all contractors to possess, and all vehicles to carry, emergency spill containment materials. Absorbent materials should be on hand at all times to absorb any minor leaks and spills.

General-7: Include Standard Procedures in Construction Contracts

When using contractors to perform vegetation management, related to road and trail project activities, the MCOSD will include some or all of the following standard procedures in those contracts.

The contractor will work with the MCOSD natural resource staff to determine the optimal timing of contracted work. Many timing restrictions relate to protecting special-status species. Other types of timing restrictions include timing to control invasive plants; timing to avoid migration, gestation, or flowering periods for special- status species; or timing work in wetlands to the dry season.

- Establish a buffer of 100 feet from wetland and tidally influenced areas (i.e., from the ordinary high-water mark of flowing or standing water in creeks, streams, or ponds). Avoid construction work within this buffer area.
- Within the buffer, limit work that may cause erosion to low flow periods. Low flow months for local creeks are typically August to October. For tidal areas, work will not occur within 2 hours of high tide events at construction sites when high tide is greater than 6.5 feet measured at the Golden Gate Bridge, using corrections for areas near individual MCOSD preserves. Tide charts are available online from the National Oceanic and Atmospheric Agency/National Weather Service (http://www.wrh.noaa.gov/mtr/sunset.php).
- If construction work cannot be fully avoided in wetlands and riparian areas, consult with the appropriate state and federal agencies to obtain permits.
- Require the contractor to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) to protect water quality for road and trail project work in or near wetlands, ponds, seeps, creeks, tidal areas, or stream crossings.

The contractor will work with the MCOSD natural resource staff to identify any priority invasive plants that occur near the project work area, including the project footprint, access roads, staging areas, and similar work areas. The contractor agrees to comply with requirements to reduce the spread or transport of priority invasive plants related to construction activities. Requirements may include some or all of the following:

- Conduct a training program for all field personnel involved with the proposed road and trail project prior to initiating project. The program will consist of a brief presentation by person's knowledgeable in the special-status species, sensitive resource, or invasive plants known from the project area. The program will include the following: a photograph and description of each special-status species, sensitive resource, or invasive plant known from the project area; a description of its ecology and habitat needs; an explanation of the measures being taken to avoid or reduce adverse impacts; and the workers' responsibility under the applicable environmental regulation. The worker training may be conducted in an informal manner (e.g., as part of a routine tailgate safety meeting).
- Restrict work to periods when invasive plants are not in fruit or flower.
- Establish dedicated area for cleaning vehicles, inside and out, of soil or invasive plant seeds or plant parts before entering the MCOSD preserves, whenever moving equipment between areas within the preserves, and before leaving preserves. Within the wash areas, the tires and body of equipment will be brushed off or hosed down.
- Inspect construction equipment for soil or invasive seeds or plant parts. Require contractors to make equipment available for inspection before entering the MCOSD preserves, when moving between sites within the preserves, and before leaving preserves.
- Dispose of green waste in a manner that does not spread invasive plants. Methods include onsite disposal in an already infested area; offsite disposal to a cogeneration plant or an approved green waste composting facility).
- Protect environmentally sensitive areas. The MCOSD natural resource staff will identify any Environmentally Sensitive Areas in or near the road and trail project area prior to the start of

work. Environmentally Sensitive Areas may include: special-status plant or wildlife species or their habitats (e.g., woodrat nests, habitat for special-status plant and wildlife species, individuals or populations of listed special-status plant or wildlife species or locally rare species); wetlands including creeks streams and related riparian area; and sensitive vegetation types as described in this report. The MCOSD staff and contractors will fully avoid and protect such areas during habitat restoration work or will help obtain and comply with necessary permits and regulatory requirements.

- Use locally collected plant materials for revegetation projects. Plant materials will be collected onsite at the MCOSD preserves or within the same watershed as the revegetation project. The contractor will work with the MCOSD to identify native plant nurseries that can collect and propagate seed and other plant materials from the local area. No use of commercial grassland mixtures for erosion control unless approved in advance by the MCOSD. The contractor will allow the MCOSD to inspect and approve all plant materials and seed prior to use onsite.
- Protect special-status species habitat. For vegetation work in or near special-status species habitat, the contractor is required to comply with requirements of the MCOSD project permits to protect special- status species and their associated habitats before and during construction, and to cooperate with the MCOSD in implementing any state and federal permits and agreements for the project. The special- status species population plus a buffer should be designated as an "Environmentally Sensitive Area" using lath and flagging, pin flags, or temporary fencing (depending on resource sensitivity to work). The contractor will be required to avoid all designated Environmentally Sensitive Areas during construction. For any special-status species or their habitats that cannot be fully avoided, the contractor will work with the MCOSD to obtain and comply with federal and state Endangered Species Acts, the federal Migratory Bird Treaty Act, and the state Fish and Game Code permits and agreements.
- Restrict soil disturbance, import of nonnative soil or fill material. To reduce the potential for damage of native plants and/or introduction of invasive plants, the contractor will be required to minimize the footprint of soil disturbance to the minimum amount necessary to complete the contracted work. In particular, minimize the footprint of access roads, staging areas, and areas of temporary disturbance. The contractor and its staff and subconsultants agree not to drive off-road or drive or park on native vegetation unless approved in advance by the MCOSD natural resource staff. The contractor agrees that if soil excavation is required, every attempt will be made to have a balanced cut and fill project that reuses all native soils onsite. Unless pre-approved by the MCOSD natural resource staff, there will be no use of nonnative soil or fill material during the contractor's activities.
- To minimize erosion and sedimentation, maintain erosion and sediment control devices during ground disturbing activities and until all disturbed soils have been stabilized. Measures include rice straw, hydromulch, geofabrics, wattles, sediment traps, check dams, drainage swales, and sand bag dikes. Materials will be certified weed-free to prevent the introduction of wheat, barley, and other nonnative plant seeds. Erosion control materials will be constructed of natural fibers (e.g., coconut fiber mats, burlap and rice straw wattles, etc.) and may not be constructed with plastic monofilaments or other materials that could entrap snakes or amphibians.

Other procedures:

- All entry gates to the project site not used for construction access will be locked at all times and gates used for construction access will be locked during non-construction hours.
- All vehicles will carry a suitable fire extinguisher.
- Immediately rehabilitate areas where project actions have disturbed soil. Require areas disturbed by equipment or vehicles to be rehabilitated as quickly as possible to prevent erosion, discourage the colonization of invasive plants, and address soil compaction. Techniques include de-compacting and aerating soils, recontouring soils to natural topography, stabilizing soils via

erosion control materials, revegetating areas with native plants, and removing and monitoring invasive plants.

- Unless no feasible alternative is available, avoid using heavy equipment in areas with soils that are undisturbed, saturated, or subject to extensive compaction. Where staging of heavy equipment, vehicles, or stockpiles is unavoidable, limit and mark the allowable disturbance footprint with flagging or fencing. Following the end of work, scarify surface soils to retard runoff and promote rapid revegetation.

General-8: Control Noise

To reduce daytime noise and potential disturbance to wildlife species, the MCOSD will require contractors to muffle or control noise from equipment through implementation of the following measures:

- Equipment and vehicles should utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, and use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds, and installation of sound blanket around the project site.

General-9: Conduct Worker Training

The MCOSD will conduct a worker-training program for all field personnel involved with the proposed road and trail management project prior to initiating the project. The program will consist of a brief presentation by persons knowledgeable in the special-status species, sensitive resource, or invasive plants known from the project area. The worker training may be conducted in an informal manner (e.g., as part of a routine tailgate safety meeting). The program will include a photograph and description of each special-status species, sensitive resource, or invasive plant known from the project area; and a description of its ecology and habitat needs; an explanation of the measures being taken to avoid or reduce adverse impacts; and the workers' responsibility under the applicable environmental regulation(s).

General-10: Road and Trail Inspections

- Regularly inspect road and trail features and associated infrastructure to ensure they are well maintained and posing no threat to surrounding sensitive and/or special-status natural resources. Staff will record information pertaining to the status of biophysical resources that could be affected by road or trail use, maintenance, or management activities. These inspections will monitor for the spread of invasive, exotic plants that could affect sensitive and/or special-status native plant or wildlife habitats and any other changes that could create negative impacts to known sensitive and/or special-status native plant or wildlife populations in the immediate vicinity. Staff will report any findings and make recommended corrective actions if appropriate.

General-11: Management of Sudden Oak Death

To reduce and control the spread of Sudden Oak Death (SOD) within the MCOSD system, the following practices will be implemented.

- The MCOSD staff will educate visitors about preventing the spread of Sudden Oak Death (SOD).
- The MCOSD may use interpretive signs, brochures, ranger talks, and other online and print materials that explain the importance of preventing the spread of pathogens and use of preventative measures.
- The education materials should explain that SOD occurs within the preserve; identify typical symptoms; explain that SOD can be spread by park users, especially during rainy and windy weather; and request that park visitors:
  - Use designated parking areas
  - Avoid transporting SOD on shoes, bicycles, and the feet of pet dogs and horses through the use of cleaners and disinfectants.

The MCOSD staff shall be trained about SOD host species and disease transmission pathways and, when undertaking road and trail construction and maintenance activities in areas of the preserves affected by SOD, shall implement the following measures.

- Clean equipment, boots, truck tires, and any other exposed material after working in forest and woodland habitats, with a 10% bleach solution or other disinfectant
- Avoid pruning oaks or other affected trees in wet weather.
- Avoid work in forest and woodlands during the wet season when spores are being produced and infections are starting.
- Leave potentially infected downed trees on site instead of transporting the material to an uninfected area.
- Remove potentially infected downed trees from the property only if it is the first infected tree to be detected in the area or if there is a high fire risk.
- Dispose of infected materials at an approved and permitted dump facility within the 14-county infected quarantine zone.
- If necessary to reduce safety or fire hazards or to address aesthetic or recreational impacts, cut, branch, chip, and/or split infected trees in areas where the material would be less likely to be transported to an uninfected location.
- Purchasing nursery stock for restoration plantings at nurseries that follows current BMPs for preventing the spread of SOD (consult the California Oak Mortality Task Force, **www.suddenoakdeath.org,** for current standards).
- Inspect all plant materials for symptoms of SOD before bringing any plants onto the property.

SENSITIVE NATURAL RESOURCES BMP

Sensitive Natural Resources–1: Modify Management Practices near Sensitive Natural Resources

For construction related activities requiring extensive ground disturbance in and near known sensitive biological resources, the MCOSD will assess the project or proposed action prior to the start of work to suggest modifications to standard procedures considered necessary to help ensure avoidance of impacts to special- status species and other sensitive biological resources. Actions that many be taken include one or more of the following:

- Mark project footprint near sensitive natural resources. Mark ingress/egress routes, staging areas, and sensitive resources to prevent inadvertent impacts to sensitive resources.
- Inspect ingress/egress routes, escort vehicles, and equipment onto the site if necessary to help prevent impacts on ground nesting and ground dwelling species. Work should be conducted during bird non- breeding season (published California Department of Fish and Wildlife non-breeding season dates are August 15 - March 1 but should be adjusted to local conditions).
- Maintain a 15 MPH speed limit in sensitive habitat areas. This will reduce the potential for mortality, dust impacts on vegetation and wildlife. For larger projects, water the roads for dust control near sensitive resources.

SPECIAL STATUS WILDLIFE BMPs

Special-Status Wildlife-1: Literature Reviews

Prior to all road and trail management activities, literature reviews will be conducted to determine if special- status wildlife-species or critical habitats exist within the project area.

The first source reviewed will be the MCOSD's database of special-status wildlife occurrences and sensitive habitats. This database is actively updated and maintained by the MCOSD natural resource staff and contains the most relevant data on sensitive resources on MCOSD land.

In addition to the MCOSD database, the following resources will be reviewed, as necessary, prior to work:

- U.S. Geological Survey topographic maps
- Aerial photographs
- California Department of Fish and Wildlife Natural Diversity Database records
- U.S. Fish and Wildlife Service quadrangle species lists
- University of California at Davis Information Center for the Environment Distribution Maps for Fishes in California
- National Marine Fisheries Service Distribution Maps for California Salmonid Species

Database searches for known occurrences of special-status wildlife species will focus on the vicinity of the project area. Biological communities will be classified as sensitive or non-sensitive as defined by the California Environmental Quality Act and other applicable laws and regulations

Special-Status Wildlife-2: Preconstruction Surveys

If it is determined that special-status wildlife species may occur in a project area, a qualified biologist will survey the area during the appropriate time window to determine the presence or absence of the species. If the species is located, the MCOSD should conduct the activity to avoid impacts to the species. If avoidance is not possible, the appropriate resource agencies will be contacted to obtain guidance or the necessary permits.

Special-Status Wildlife-3: Seasonal Restrictions During Bird Nesting Season

The MCOSD will implement the following seasonal restrictions to protect nesting birds. If work will occur outside the nesting bird window of February 1 to August 31, surveys and avoidance measures will not be necessary for nesting birds. However, surveys for special-status species may still be necessary if they are present in the area.

- Identify potential habitat for nesting birds and survey to determine if active nests are present before initiating road and trail management actions. Surveys will include the proposed road and trail management footprint, and a ¼ mile buffer area (for raptors) or a 150 foot buffer area (for other birds). Surveys will be conducted within 14 days of the start of active ground-disturbing activities.
- If any active nests of protected bird species are found, prohibit brushing, mowing and tree removal activities at the nest site and within a buffer area until the young birds have fledged and left the site, and/ or the nest has been abandoned. The buffer area will be 50-250 feet, or as determined through consultation with the California Department of Fish and Wildlife, pursuant to section 2081 of the California Fish and Game Code and the federal Migratory Bird Treaty Act. In general, a line-of-site buffer of at least 150 feet between the nest site and road and trail management activities is recommended. For raptors, buffer distances may be increased to 250 feet or more, depending on the visual distance from the nest to the road and trail management work area, and the sensitivity of the raptor species to road and trail management activities. In addition, a 5 MPH speed limit will be enforced in and near bird nesting habitats and other sensitive habitat areas.

- If impacts to nesting birds cannot be avoided, contact the U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife to obtain the necessary permits before initiating road and trail management activities.

Special-Status Wildlife-4: Avoidance and Protection of Northern Spotted Owl

Northern spotted owls have potential to occur on the MCOSD preserves. The MCOSD will undertake the following actions when construction-related road and trail management actions are planned to occur within or adjacent to potential northern spotted owl habitat:

- Identify potential habitat for the northern spotted owl and survey to determine if it is occupied or if active nests are present before initiating road and trail management activities. Surveys will include the proposed road and trail management footprint and a 150 foot buffer area. Surveys will be conducted within 14 days of the start of active ground-disturbing activities.
- To the greatest extent possible, avoid occupied habitat completely during key northern spotted owl breeding and nesting season (March-September).
- Mark occupied habitat with flagging or temporary fencing.
- Avoid removal of trees with documented northern spotted owl nests. Removal of nest trees typically requires compensatory mitigation.
- Establish a buffer of at least 100 feet around occupied habitats. Within the buffer area, select least harmful road and trail management activities. Within the buffer area, retain old-growth forest trees and forest canopy, and minimize removal of other vegetation to the fullest extent possible.
- Avoid cutting native trees greater than 10 inches in diameter at breast height within occupied northern spotted owl habitat.
- Conduct a worker training program for all field personnel involved with the proposed road and trail management project prior to project initiation. The program will consist of a brief presentation by persons knowledgeable about the northern spotted owl. The program will include the following: a photograph and description of the northern spotted owl, a description of its ecology and habitat needs, an explanation of the measures being taken to avoid or reduce adverse impacts, and the workers' responsibility under applicable environmental regulations. The worker training may be conducted in an informal manner (e.g., as part of a routine tailgate safety meeting).
- If impacts cannot be avoided, contact the U.S. Fish and Wildlife Service and/or the California Department of Fish and Wildlife to obtain the necessary permits before initiating road and trail management activities.
- Notify the U.S. Fish and Wildlife Service and/or the California Department of Fish and Wildlife within 24 hours of finding any injured northern spotted owl or any unanticipated damage to its habitat associated with the proposed action. Notification must include the date, time, and precise location of the specimen/ incident, and any other pertinent information. Dead animals will be sealed in a plastic zip lock bag containing a piece of paper indicating the location, date, and time when it was found, and the name of the person who found it; the bag should be frozen in a freezer in a secure location. The MCOSD will contact the U.S. Fish and Wildlife Service within seven days to transfer any dead or injured specimens.

Special-Status Wildlife-5: Avoidance and Protection of Double-Crested Cormorant Nests and Heron and Egret Rookery Sites

There are several known or suspected double-crested cormorant, great blue heron, snowy egret, and black- crowned night heron rookery or nesting sites existing on the MCOSD preserves. These procedures are similar to those described in Special-Status Wildlife Protection-3 for seasonal restrictions during bird nesting season but are more specific to these particular bird species and therefore supersede the more general practices for protecting all nesting birds. The MCOSD will undertake the following procedures when construction-related road and trail management is planned to occur within or adjacent to potential nesting or rookery sites for these species:

- Identify potential habitat for double-crested cormorant, heron, and egret nest and rookery sites and survey to determine if they are occupied or if nests are present before initiating road and trail management actions. Surveys will include the proposed road and trail management footprint and a 150-foot buffer area. Surveys will be conducted within 14 days of the start of active ground-disturbing activities.
- To the greatest extent possible, avoid nests and rookery sites completely during key breeding and nesting periods. Activities in or near known sites will be limited during the known nesting seasons for each species, or until young have fully fledged.
- Establish a buffer of at least 100 feet around rookery and nest sites. Within the buffer area, select least harmful road and trail management activities. Restrict activities within the buffer to those that will not disturb roosting or nesting behavior (e.g., noise and visual disturbances).
- Mark occupied habitat with flagging or temporary fencing.
- Prohibit the removal of known roost or nest trees. Restrict the removal of other mature riparian trees within the buffer zone.
- Conduct a worker training program for all field personnel involved with the proposed road and trail management project prior to project initiation. The program will consist of a brief presentation by persons knowledgeable about the special-status species. The program will include the following: a photograph and description of the special-status species, a description of its ecology and habitat needs, an explanation of the measures being taken to avoid or reduce adverse impacts, and the workers' responsibility under applicable environmental regulations. The worker training may be conducted in an informal manner (e.g., as part of a routine tailgate safety meeting).
- If impacts cannot be avoided during the nesting season (March 1 – August 31), contact the California Department of Fish and Wildlife to obtain the necessary permits before initiating road and trail management activities.
- Notify the California Department of Fish and Wildlife within 24 hours of finding any injured special-status species or any unanticipated damage to its habitat associated with the proposed action. Notification must include the date, time, and precise location of the specimen/incident, and any other pertinent information. Dead animals will be sealed in a plastic zip lock bag containing a piece of paper indicating the location, date, and time when it was found, and the name of the person who found it; the bag should be frozen in a freezer in a secure location. The MCOSD will contact the California Department of Fish and Wildlife within seven days to transfer any dead or injured specimens.
- Prohibit or restrict equipment refueling, fluid leakage, equipment maintenance, and road surfacing activities near wetlands. Fuel storage and refueling will occur in safe areas well away from wetlands; safe areas may include paved or cleared roadbeds and other contained areas, such as lined truck beds. Equipment and vehicles will be inspected regularly for hydraulic and oil leaks, and leaking vehicles will not be allowed on the MCOSD preserves. Drip pans will be placed underneath equipment stored on site. Vehicles and construction equipment will be maintained in

good working condition, and any necessary on-site servicing of equipment will be conducted away from the wetlands.

- Require all contractors to possess, and all vehicles to carry, emergency spill containment materials**.**
- Absorbent materials will be on hand at all times to absorb any minor leaks and spills**.**

Special-Status Wildlife-6: Avoidance and Protection of California Clapper Rail, California Black Rail, and Salt Marsh Harvest Mouse

The MCOSD preserves encompass some tidal areas that are known to support, or have the potential to support, California clapper rail, California black rail and salt-marsh harvest mouse. In areas where road and trail management activities are planned to occur within or adjacent to salt marsh or brackish marsh habitats, the MCOSD will first consult with the U.S. Fish and Wildlife Service and the California Department of Fish and Wildlife to determine locations where these species could potentially be affected. The MCOSD will obtain and comply with necessary permits for working in suitable habitat for these species, including, but not limited to the following types of protective actions to prevent harm to these species:

- To the greatest extent possible, avoid occupied California clapper rail and California black rail habitat completely during key breeding and nesting periods. Noise-generating activities, including operating heavy machinery in or near known California clapper or California black rail sites, will be avoided during the nesting season (March 1 – August 31).
- During the California clapper rail and California black rail breeding season, identify potential habitat for California clapper rail and California black rail, and survey to determine if it is occupied before initiating road and trail management activities. Survey will include the proposed road and trail management footprint and a 150-foot buffer area around occupied habitat. Surveys will be conducted within 14 days of the start of active ground- disturbing activities. Occupied habitat will be marked with flagging or temporary fencing.
- Assume presence of salt marsh harvest mouse in appropriate habitats, avoid impacting these areas, and establish a protective buffer. Because the U.S. Fish and Wildlife Service frequently does not allow trapping of the salt marsh harvest mouse to determine its presence, the MCOSD will assume presence in appropriate habitats and avoid disturbing them. If appropriate habitats are present, a 200-foot buffer will be established around the habitat. If work is required within the buffer, activities will be restricted within the buffer to those that will not disturb nesting behavior (e.g., through noise or visual disturbances), and vegetation will be removed by hand under the supervision of a qualified biologist to ensure no impacts to the salt marsh harvest mouse occur.

Special-Status Wildlife-7: Protection of Fish Habitat

If crossing a stream with the potential to support fish is part of a road or trail project, proper fish passage will be designed:

- Preference will be for a bridge instead of a culvert, and an open-arch culvert instead of a pipe culvert. A bridge that will not affect streamflow will be the preferred option. If a culvert is necessary, an open-arch design that does not affect the bed or flow of the stream will be preferred. If an open arch culvert is not possible, pipe culverts will be installed slightly below grade in an area perpendicular to the crossing where the existing streamflow is linear. Resting pools will be designed above and below culverts to allow fish to rest before and after having to pass through the culvert.

Special-Status Wildlife-8: Worker Awareness Training

Conduct worker awareness training. Worker training will include the following information: a photograph and description of each special-status species, sensitive, resource, or invasive plant known from the project area; a description of its ecology and habitat needs; potentially confusing resources (e.g., similar species or habitats); an explanation of the measures being taken to avoid or reduce adverse impacts; reporting and necessary actions if sensitive resources are encountered; and workers' responsibility under the applicable environmental regulation.

Special-Status Wildlife-9: Construction Monitoring

If federal- or state-listed wildlife species are known to be present in the project area or immediate surroundings, a qualified biologist will monitor construction activities to ensure impacts to species will be avoided. If listed wildlife species are present within the immediate vicinity of the project area, a more involved monitoring program might be necessary to ensure that these species do not enter the project area. If a listed species is observed by a worker or construction monitor, work will cease immediately, and the appropriate resource regulatory agency will be contacted if necessary. A construction monitoring program will be developed for each project on a project-specific basis.

Special-Status Wildlife-10: Relocation of Special-Status Species

If federal- or state-listed wildlife species are located on site, the appropriate resource agency will be contacted, and a qualified biologist possessing any necessary permits will relocate individuals to suitable habitat off site as applicable.

Special-Status Wildlife-11: Noise Control

Utilize the best available noise-control techniques when in proximity to occupied sensitive wildlife habitat. The best available noise-control techniques (e.g., improved mufflers, equipment redesign, and use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds) will minimize disturbance of nearby wildlife populations.

Special-Status Wildlife Protection-12: Trash Control

Store food-related trash in closed containers and remove it from the project site daily. Food-related trash can attract wildlife to construction sites, disrupting their normal behavior patterns.

Special-Status Wildlife-13: Road and Trail Inspections

Regularly inspect road and trail features and associated infrastructure to ensure they are well maintained and posing no threat to surrounding special-status wildlife species. Staff will record information pertaining to the spread of invasive exotic plants that could affect wildlife habitats and to the status and quality of any known special-status wildlife species in the immediate vicinity that could be affected by road or trail use, maintenance, or management activities. Staff will report any findings to MCOSD natural resource staff and make recommended corrective actions if appropriate.

SPECIAL STATUS PLANTS BMPs

Special-Status Plants-1: Literature Reviews

Prior to all management activities, literature reviews will be conducted to determine if special-status plant species, critical habitats, or sensitive communities exist within the project area. In addition to the MCOSD database, the following resources will be reviewed, as necessary, prior to work:

- U.S. Geological Survey topographic maps
- U.S. Fish and Wildlife Service National Wetlands Inventory maps
- Bay Area Aquatic Resource Inventory Database
- Aerial photographs
- California Department of Fish and Wildlife Natural Diversity Database records
- U.S. Fish and Wildlife Service quadrangle species lists
- California Native Plant Society inventory records

Database searches for known occurrences of special-status plant species will focus on the vicinity of the project area. Biological communities present in the project location and surrounding areas will be classified based on existing plant community descriptions described in the Preliminary Descriptions of the Terrestrial Natural Communities of California. Biological communities will be classified as sensitive or non-sensitive as defined by the California Environmental Quality Act and other applicable laws and regulations.

Special-Status Plants-2: Avoidance and Protection of Special- Status Plant Species near Road and Trail Management Projects

The MCOSD will undertake the following actions when construction-related road and trail management is planned to occur within or adjacent to special-status plant populations:

- Identify potential special-status plant habitat and survey to determine if it is occupied before initiating road and trail management activities. Surveys will include the proposed road and trail management footprint and a 100-foot buffer area around the footprint if potential special-status plant habitat exists. Surveys will be conducted within 14 days of the start of active ground-disturbing activities.
- To the greatest extent possible, avoid occupied special-status plant populations completely.
- If full avoidance is not possible, restrict work to the period when special-status plants have flowered or set seed**.**
- Establish a buffer of at least 100 feet around special-status plant populations. Within the buffer area, select the least harmful road and trail management activities.
- Mark special-status plant populations with flagging or temporary fencing.
- Prevent unnecessary vehicular and human intrusion into special-status plant species habitat from adjacent construction, maintenance, and decommissioning activities. Where necessary, reroute or sign and fence trails to avoid the special-status plant population.
- Prohibit or restrict equipment refueling, fluid leakage, equipment maintenance, and road surfacing activities near special-status plant populations. Activities will be restricted within the buffer to those that will not disturb roosting or nesting behavior (e.g., through noise or visual disturbances). Fuel storage and refueling will occur in safe areas well away from wetlands; safe areas may include paved or cleared roadbeds and other contained areas, such as lined truck beds. Equipment and vehicles will be inspected regularly for hydraulic and oil leaks, and leaking vehicles will not be allowed on the MCOSD preserves. Drip pans will be placed underneath equipment stored on site. Vehicles and construction equipment will be maintained in good working condition, and any necessary on-site servicing of equipment will be conducted away from special-status plant populations.

- To minimize downslope erosion and sedimentation near special-status plants, maintain erosion- and sediment-control devices during ground-disturbing activities and until all disturbed soils have been stabilized. Control devices include rice straw, hydromulch, geofabrics, wattles, sediment traps, check dams, drainage swales, and sand bag dikes. Materials must be certified weed-free to prevent the introduction of wheat, barley, and other nonnative plant seeds. Erosion-control materials must be constructed of natural fibers (e.g., coconut fiber mats, burlap and rice straw wattles, etc.) and may not be constructed with plastic monofilaments or other materials that could entrap snakes or amphibians.
- Conduct a worker training program for all field personnel involved with the proposed road and trail management project prior to project initiation. The program will consist of a brief presentation by people knowledgeable about the special-status species. The program will include the following: a photograph and description of the special-status species, a description of its ecology and habitat needs, an explanation of the measures being taken to avoid or reduce adverse impacts, and the workers' responsibility under applicable environmental regulations. The worker training may be conducted in an informal manner (e.g., as part of a routine tailgate safety meeting).
- If impacts cannot be avoided, contact the U.S. Fish and Wildlife Service and/or the California Department of Fish and Wildlife to obtain the necessary permits before initiating road and trail management activities. Permit conditions will likely require presence of a biological monitor, installation of exclusion fencing, surveys to relocate or avoid the species, and/or possibly timed or staged road and trail management activities that avoid the species or reduce potential for take or harm.
- If a special-status plant species is detected during work activities, stop work immediately at that location and contact the U.S. Fish and Wildlife Service and/or the California Department of Fish and Wildlife within two working days. Work will not resume at that location until authorization is obtained from the appropriate agency (unless prior approval has already been granted).
- Notify the U.S. Fish and Wildlife Service and/or the California Department of Fish and Wildlife within 24 hours of finding any damaged special-status plant species or any unanticipated damage to plant habitats associated with the proposed action. Notification must include the date, time, and precise location of the specimen/incident, and any other pertinent information. Dead plants should be sealed in a zip lock bag containing a piece of paper indicating the location, date, and time when it was found, and the name of the person who found it; the bag should be frozen in a freezer in a secure location. The MCOSD will contact the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service within two days and transmit the specimen in the appropriate manner.
- If work occurs during the dry season and is greater than 100 feet from special-status plant species habitat, erosion control and water quality protection measures generally will not be necessary.

Special-Status Plants-3: Ensure Proposed Actions are Consistent with Ongoing Special-Status Plant Management Programs

Some MCOSD preserves (e.g., Ring Mountain and Old Saint Hilary's) have ongoing special-status plant management and monitoring programs. In these locations the MCOSD will ensure that all new proposed road and trail management activities are consistent with the ongoing management of these sites:

- Review existing management plans and analyze proposed actions for consistency against adopted procedures.
- Ensure that new road and trail management projects do not interfere with ongoing management and maintenance activities.

Special-Status Plants-4: Earthwork near Special-Status Plant Populations

Many special-status plants are closely associated with specific soil types or geologic conditions (e.g., serpentine or ultramafic soils). To protect these species, the MCOSD will implement the following practices:

- Use native soil in all MCOSD road and trail management projects in natural habitat areas.
- Do not allow the introduction of incompatible fill near special-status plant populations. Fill will consist of clean, native soils and aggregate materials from other projects within the preserve if available, or it will be purchased from a certified weed-free source before allowing the importation of other materials from outside the preserves. Fill materials will be approved by natural resource staff to ensure compatibility with future restoration/rehabilitation goals.
- Salvage, store, and reuse topsoil. Where activities disturb soil temporarily, the top 6 to 12 inches of topsoil will be salvaged to retain seeds, soil mycorrhizae, and fungi from the excavated or otherwise disturbed area. The salvaged topsoil will be reapplied as a topdressing or topcoat over backfill, unless it is known to contain invasive plant seeds or propagules.

Special-Status Plants-5: Erosion Potential near Special-Status Plants

The MCOSD will seek to prevent erosion near special-status plants. To protect these species, the MCOSD will:

- Unless no feasible alternative is available, avoid using heavy equipment in areas with soils that are undisturbed, saturated, or subject to extensive compaction. Where staging of heavy equipment, vehicles, or stockpiles is unavoidable, the allowable disturbance footprint will be limited and marked with flagging or fencing. Following the end of work, surface soils will be scarified to retard runoff and promote rapid revegetation.
- Maintain a 15 MPH speed limit in sensitive habitat areas. This will reduce the potential for dust impacts on vegetation. For larger projects, roads will be watered for dust control near sensitive resources.
- Immediately rehabilitate areas where project actions have disturbed soil. Areas disturbed by equipment or vehicles will be rehabilitated as quickly as possible to prevent erosion, discourage the colonization of invasive plants, and address soil compaction. Techniques include decompacting and aerating soils, recontouring soils to natural topography, stabilizing soils via erosion-control materials, revegetating areas with native plants, and removing and monitoring invasive plants.
- To minimize erosion and sedimentation, maintain erosion- and sediment-control devices to protect special-status plant populations during ground- disturbing activities and until all disturbed soils have been stabilized. Measures include rice straw, hydromulch, geofabrics, wattles, sediment traps, check dams, drainage swales, and sand bag dikes. Materials must be certified weed-free to prevent the introduction of wheat, barley, and other nonnative plant seeds, must be constructed of natural fibers (e.g., coconut fiber mats, burlap and rice straw wattles, etc.), and may not be constructed with plastic monofilaments or other materials that could entrap snakes or amphibians. If work occurs during the dry season and is more than 100 feet from special- status plant populations, erosion-control and water quality protection measures will not be necessary.

Special-Status Plants-6: Introduction of Invasive and Nonnative Plants and Plant Material

The MCOSD will prevent the introduction of invasive and other nonnative plant material into special-status plant habitats by implementing the following practices:

- To the extent feasible, use plant seeds, cuttings, and other propagules that are collected from the same area as the project site (usually the same watershed or preserve). Allow collection of no more than 5% of any native plant population to prevent over collecting of wild plant material sources.
- To minimize erosion and sedimentation, maintain erosion- and sediment-control devices during ground- disturbing activities and until all disturbed soils have been stabilized. Measures include rice straw, hydromulch, geofabrics, wattles, sediment traps, check dams, drainage swales, and sand bag dikes. Only weed-free materials will be used as erosion- and sediment control devices. Materials must be certified weed- free to prevent the introduction of wheat, barley, and other nonnative plant seeds. Erosion-control materials must be constructed of natural fibers (e.g., coconut fiber mats, burlap and rice straw wattles, etc.) and not of plastic monofilaments or other materials that could entrap snakes or amphibians.
- Do not allow the introduction of incompatible fill near special-status plant populations. Fill will consist of clean, native soils and aggregate materials from other projects within the preserve if available, or it will be purchased from a certified weed-free source before allowing the importation of other materials from outside the preserves. Fill materials will be approved by natural resource staff to ensure compatibility with future restoration/rehabilitation goals.
- Segregate and treat soils and vegetation contaminated with invasive plant seeds and propagules. To prevent the spread of invasive plants, treatment of contaminated soils may include disposal on site within already infested areas, chipping or pile burning and mulching to eliminate viable seeds, or disposal at an approved cogeneration plant or green-waste facility.
- Clean vehicles of contaminated soil, invasive plant seeds, or plant parts before entering the MCOSD preserves, whenever moving equipment between areas within the preserves, and before leaving the preserves. Vehicle-cleaning areas will be established for this purpose. Within the cleaning areas, tires and interior and exterior of vehicles and equipment will be brushed off or hosed down.
- Inspect construction equipment for soil or invasive seeds or plant parts. Contractors will be required to make equipment available for inspection before entering the MCOSD preserves, when moving between sites within the preserves, and before leaving the preserves.

Special-Status Plants-7: Revegetation with Native, Geographically Appropriate Plant Species

The MCOSD will revegetate areas where construction and ground disturbance has occurred, to promote a species composition and vegetative structure that integrates with the surrounding natural community, to the maximum extent possible. This will be accomplished by implementing the following:

- Revegetate with annual grasses and forbs. Use of annual grasses and forbs can provide rapid vegetative cover and initial soil stabilization, and erosion control, promote habitat for native species, and provide a more desirable visual cover.
- Prepare a project-specific revegetation plan. The MCOSD natural resource staff will develop a revegetation plan for projects as needed.
- Wherever possible use locally collected native plant materials from the project footprint and surrounding areas. If possible, plant materials should be collected from within the same watershed or preserve. The MCOSD will allow collection of no more than 5% of any native plant population to prevent over collection of wild plant material sources. If sufficient local plant materials are not available for collection prior to project activities, geographically appropriate native plant materials will be purchased from a local nursery or seed supplier.

Special-Status Plants-8: Worker Awareness Training

The MCOSD will conduct a worker awareness training for all field personnel involved with proposed road and trail management activities prior to initiating the project. The program will include the following:

- a photograph and description of each special-status species, sensitive resource, or invasive plant known from the project area
- a description of its ecology and habitat needs
- potentially confusing resources (e.g., similar species or habitats)
- an explanation of the measures being taken to avoid or reduce adverse impacts
- reporting and necessary actions if sensitive resources are encountered
- workers' responsibility under the applicable environmental regulation

Special-Status Plants-9: Relocation of Special- Status Plants

If special-status species are located in the project area and impacts to these species are unavoidable, plants and/or propagules will be relocated to suitable habitat off site prior to the commencement of construction or management activities. Alternatively, off-site mitigation for impacts could be considered. If special-status wildlife species are located on site, the appropriate resource agency will be contacted, and a qualified biologist possessing any necessary permits will relocate individuals to suitable habitat off site as applicable.

Special-Status Plants-10: Road and Trail Inspections

Regularly inspect road and trail features and associated infrastructure to ensure they are well maintained and posing no threat to surrounding special-status plant resources. Staff will record information pertaining to the spread of invasive, exotic plants that could affect special-status plant habitats and to the status and quality of any known special-status plant populations in the immediate vicinity that could be affected by road or trail use, maintenance, or management activities. Staff will report any findings and make recommended corrective actions if appropriate.

Special-Status Plants-11: Reuse and Replanting of Native Trees and Shrubs

Where feasible, replant excavated trees and shrubs, removed from unstable fill slopes and cut banks, on graded contours to restore the areas with native vegetation and promote native plant habitat. These plants will represent the most locally appropriate materials for restoration and conform to the vegetation types of the surroundings.

Special-Status Plants-12: Ripping and Recontouring Roads

Rip and de-compact road and trail surfaces where appropriate. Ripping surfaces provides a more suitable substrate for recolonization or revegetation by native plant materials. Decommissioned road and trail surfaces will be recontoured and sloped away from wetlands and water bodies to prevent the potential for erosion into these features. Any shoulders, ditches, or embankments will also be removed, and the area graded to a natural contour.

INVASIVE PLANTS BMPs

Invasive Plants-1: Compliance with Integrated Pest Management Ordinance

All herbicide use will be administered under Marin County's Integrated Pest Management (IPM) Ordinance, and work will only be conducted under the supervision of a certified pest control applicator. All herbicide use for vegetation management actions will be posted and reported consistent with the ordinance.

Invasive Plants-2: Herbicide Use near Sensitive Natural Resources

Limit herbicide use within 100 feet of sensitive natural resources. Hand control, mechanical control, and cultural control will be used wherever possible to minimize the use of herbicides near sensitive resources.

Invasive Plants-3: Survey and Control of Invasive Plants in Project Footprint

Before ground-disturbing activities begin, inventory, and prioritize invasive plant infestations for treatment within the project footprint and along access routes. Controlling priority invasive plant infestations at least a year prior to the planned disturbance, if feasible, will minimize invasive plant seeds in the soil.

- Where feasible, survey the road shoulders of access routes for invasive plant species and remove priority invasive plants that could be disturbed by passing vehicles.
- Avoid establishing staging areas in areas dominated by invasive plants. If populations of priority invasive plants occur within or near staging areas, their perimeters will be flagged so that vehicle and foot traffic can avoid them.
- Clean vehicles of contaminated soil, invasive plant seeds, or plant parts before entering the MCOSD preserves, whenever moving equipment between areas within the preserves, and before leaving the preserves. Vehicle-cleaning areas will be established for this purpose. Within the cleaning areas, tires and the insides and outsides of vehicles and equipment will be brushed off or hosed down.
- Inspect construction equipment for soil or invasive seeds or plant parts. Contractors will be required to make equipment available for inspection before entering the MCOSD preserves, when moving between sites within the preserves, and before leaving the preserves.

Invasive Plants-4: Limited Soil Disturbance

Soil disturbance during road and trail projects will be minimized to reduce the potential for introduction or spread of invasive plant species, to protect topsoil resources and to reduce available habitat for new invasive plant species:

- Plan all road and trail management activities to disturb as little area as possible.

Invasive Plants-5: Cleaning of Heavy Equipment, Maintenance Tools, and Fire Management Vehicles

The MCOSD will implement the following procedures when working in or near infested areas:

- Clean vehicles of contaminated soil, invasive plant seeds, or plant parts before entering the MCOSD preserves, whenever moving equipment between areas within the preserves, and before leaving the preserves. Vehicle-cleaning areas will be established for this purpose. Within the cleaning areas, tires and the insides and outsides of vehicles and equipment will be brushed off or hosed down.
- Inspect construction equipment for soil or invasive seeds or plant parts. Contractors will be required to make equipment available for inspection before entering the MCOSD preserves, when moving between sites within the preserves, and before leaving the preserves.

Invasive Plants-6: Reducing Potential for Establishment of Invasive Plants on Disturbed Soil Surfaces

To minimize the establishment of invasive species in disturbed soil areas, the MCOSD will implement one or more of the following actions:

- To minimize erosion and sedimentation, maintain erosion- and sediment-control devices during ground- disturbing activities and until all disturbed soils have been stabilized. Control devices include rice straw, hydromulch, geofabrics, wattles, sediment traps, check dams, drainage swales, and sand bag dikes. Materials must be certified weed-free to prevent the introduction of wheat, barley, and other nonnative plant seeds. Erosion-control materials must be constructed of natural fibers (e.g., coconut fiber mats, burlap and rice straw wattles, etc.) and may not be constructed with plastic monofilaments or other materials that could entrap snakes or amphibians.
- Do not allow the introduction of incompatible fill. Fill will consist of clean, native soils and aggregate materials from other projects within the preserve if available, or it will be purchased from a certified weed- free source before allowing the importation of other materials from outside the preserves. Fill materials will be approved by natural resource staff to ensure compatibility with future restoration/rehabilitation goals.
- Segregate and treat soils and vegetation contaminated with invasive plant seeds and propagules. To prevent the spread of invasive plants, treatment of contaminated soils may include disposal on site within already infested areas, chipping or pile burning and mulching to eliminate viable seeds, or disposal at an approved cogeneration plant or green-waste facility.

Invasive Plant Management-7: Monitor and Control of Invasive Plants in Road and Trail Management Work Areas

- Periodically monitor areas subject to road and trail management activities for a minimum of three years following project completion for the presence of invasive plant species. If invasive plants threaten to become established or spread as a result of project activities, they will be treated in conformance with the Vegetation and Biodiversity Management Plan.

Invasive Plant Management-8: Protection of Streambanks and Water Quality During Invasive Plant Removal

- Install approved erosion-control devices following the removal of invasive plants from streambanks to prevent sediment movement into watercourses and to protect bank stability. The MCOSD will obtain and comply with necessary wetland permits and integrated pest management procedures related to work in and near wetlands. Where appropriate, the MCOSD will also seek guidance from a fisheries biologist regarding the amount of material permissible to remove from stream corridors when controlling large patches of invasive plants, so as to prevent changes in water temperature and quality. If work occurs during the dry season near seasonally wet areas, erosion-control and water quality protection measures generally will not be necessary.

Invasive Plant Management-9: Road and Trail Inspections

Regularly inspect road and trail features and associated infrastructure to ensure they are well maintained and posing no threat to surrounding sensitive biological resources. Inspectors will record information pertaining to invasive exotic plant populations and new infestations that may be threatening sensitive species and habitats. Inspectors will report any findings and make recommended corrective actions if appropriate.

Invasive Plant Management-10: Monitoring Decommissioned Areas

Monitor areas of decommissioned roads and trails for the presence of invasive plant species for two years following decommissioning to ensure no infestations develop. If invasive species are detected at this time, corrective actions will be taken as appropriate.

CONSTRUCTION CONTRACTS BMP

Construction Contracts-1: Standard Procedures in Construction Contracts

When using contractors to perform road and trail management, the MCOSD will include some or all of the following standard procedures into construction contracts.

Time of work. The contractor will work with the MCOSD natural resource staff to determine the optimal timing of contracted work. Many timing restrictions relate to avoiding migration, gestation, or flowering periods for special-status species. Other types of timing restrictions relate to avoiding the spread of invasive plants or scheduling work in wetlands during the dry season.

Work in and near water bodies and wetlands. To protect water quality, the contractor will be required to prepare and implement a stormwater pollution prevention plan for road and trail management work in or near wetlands, ponds, seeps, creeks, tidal areas, or stream crossings. The following practices will be followed to protect these habitats:

- Avoid construction work within a buffer of 100 feet from the ordinary high-water mark of any water body, wetland, or tidally influenced area. If construction work cannot be fully avoided in water bodies, wetlands and riparian areas, the appropriate state and federal agencies will be consulted and permits obtained.
- Within the buffer, restrict activities to the least-harmful methods. For example, herbicides will be restricted to those that are EPA-approved for use near water. Activities that disturb soil or could cause soil erosion or changes in water quality will be prohibited.
- Within the buffer, limit work that may cause erosion to low-flow periods. Low-flow months for local creeks are typically August to October. For tidal areas, work will not occur within two hours of high-tide events at construction sites when high tide is greater than 6.5 feet as measured at the Golden Gate Bridge, using corrections for areas near individual MCOSD preserves. Tide charts are available online from the National Oceanic and Atmospheric Agency/National Weather Service (http://www.wrh.noaa.gov/mtr/sunset.php).

Work in and near invasive plant infestations. The contractor will work with the MCOSD natural resource staff to identify any priority invasive plants that occur near the project work area, including the project footprint, access roads, staging areas, and similar work areas. The contractor will agree to comply with requirements to reduce the spread or transport of priority invasive plants related to construction activities. Requirements may include some or all of the following:

- Conduct a training program for all field personnel involved with the proposed road and trail management project prior to initiating the project. The program will consist of a brief presentation by persons knowledgeable about the special-status species, sensitive resource, or invasive plants known from the project area. The program will include the following: a photograph and description of each special-status species, sensitive resource, or invasive plant known from the project area; a description of its ecology and habitat needs; an explanation of the measures being taken to avoid or reduce adverse impact; and the workers' responsibility under the applicable environmental regulation. The worker training may be conducted in an informal manner (e.g., as part of a routine tailgate safety meeting).
- Restrict work to periods when invasive plants are not in fruit or flower.
- Clean vehicles of contaminated soil, invasive plant seeds, or plant parts before entering the MCOSD preserves, whenever moving equipment between areas within the preserves, and before leaving the preserves. Vehicle-cleaning areas will be established for this purpose. Within the cleaning areas, tires and insides and outsides of vehicles and equipment will be brushed off or hosed down.

- Inspect construction equipment for soil or invasive seeds or plant parts. Contractors will be required to make equipment available for inspection before entering the MCOSD preserves, when moving between sites within the preserves, and before leaving the preserves.
- Dispose of green waste in a manner that does not spread invasive plants. Disposal practices may include on-site disposal in an already infested area or off-site disposal in a cogeneration plant or an approved green-waste composting facility.

Work in environmentally sensitive areas. The MCOSD natural resource staff will identify any environmentally sensitive areas in or near construction projects prior to the start of the project. The following practices will be followed to protect these resources: Environmentally sensitive areas may include special-status plant or wildlife species or their habitats; wetlands; creeks, streams, and related riparian areas; and sensitive vegetation types as described in this report.

- Avoid work in environmentally sensitive areas. If work cannot be fully avoided, any applicable regulatory agencies will be consulted and the necessary permits obtained.
- Use locally collected plant materials for revegetation projects. Whenever possible, locally collected native plant materials from the project footprint and surrounding area will be used for revegetation. Plant materials should be collected from within the same watershed or the MCOSD preserve if possible. The MCOSD will allow collection of no more than 5% of any native plant population to avoid over collection of wild plant material sources. If sufficient local plant materials are not available for collection prior to project activities, geographically appropriate native plant materials will be purchased from a local nursery or seed supplier. The contractor will allow the MCOSD to inspect and approve all plant materials and seed prior to use on site.
- Comply with requirements of the MCOSD project permits to protect special-status species and their associated habitats. For road and trail management work in or near special-status species habitat, the contractor is required to comply with requirements of the MCOSD project permits to protect special-status species and their associated habitats before and during construction, and to cooperate with the MCOSD in implementing any state and federal permits and agreements for the project. The special-status species population plus a buffer will be designated as an environmentally sensitive area using lath and flagging, pin flags, or temporary fencing (depending on resource sensitivity to work). The contractor will be required to avoid all designated environmentally sensitive areas during construction. For any special-status species or their habitats that cannot be fully avoided, the contractor will work with the MCOSD to obtain and comply with federal and state Endangered Species Acts, the federal Migratory Bird Treaty Act, and the California Fish and Game Code permits and agreements.
- Restrict soil disturbance and import of nonnative soil or fill material. To reduce the potential for damage of native plants and/or introduction of invasive plants, the contractor will be required to minimize the footprint of soil disturbance to the minimum amount necessary to complete the contracted work. This includes the footprint of access roads, staging areas, and areas of temporary disturbance. The contractor and its staff and subcontractors will agree not to drive off road or drive or park on native vegetation unless approved in advance by the MCOSD natural resource staff. The contractor will agree that if soil excavation is required, every attempt will be made to have a balanced cut-and-fill project that reuses all native soils on site. Nonnative soil or fill material will not be used unless preapproved by the MCOSD natural resource staff.
- To minimize erosion and sedimentation, maintain erosion- and sediment-control devices during ground- disturbing activities and until all disturbed soils have been stabilized. Control devices include rice straw, hydromulch, geofabrics, wattles, sediment traps, check dams, drainage swales, and sand bag dikes. Materials will be certified weed-free to prevent the introduction of wheat, barley, and other nonnative plant seeds. Erosion-control materials will be constructed of natural fibers (e.g., coconut fiber mats, burlap and rice straw wattles) and may not be constructed with plastic monofilaments or other materials that could entrap snakes or amphibians.

Other procedures:

- Keep all entry gates to the project site locked during non-construction hours or locked at all times if not needed for construction access.
- Equip all vehicles with a suitable fire extinguisher.
- Immediately rehabilitate areas where project actions have disturbed soil. Areas disturbed by equipment or vehicles will be rehabilitated as quickly as possible to prevent erosion, discourage the colonization of invasive plants, and address soil compaction. Techniques include de-compacting and aerating soils, recontouring soils to natural topography, stabilizing soils via erosion-control materials, revegetating areas with native plants, and removing and monitoring invasive plants.

CULTURAL RESOURCES BMPs

Cultural Resources-1: Historical and Archaeological Resource Mapping

Prior to constructing any project that would involve ground disturbance outside road or trail beds or other areas previously disturbed when constructing the road and trail system, the MCOSD staff will determine whether or not the project area is located within an area that is mapped as “historically or archaeologically sensitive” according to map 4-1 (Historical Resources) in the Marin Countywide Plan and/or identified as culturally sensitive on other confidential maps on file with the county that list prehistoric or archeological sites. If the project area is identified as sensitive on any of these maps, the site will be field surveyed by a state-qualified archeologist or an archeological consultant recommended by the Federated Indians of Graton Rancheria, who will make recommendations and develop proposals for any procedures deemed appropriate to further investigate and/or mitigate adverse impacts to those resources.

Cultural Resources-2: Consultation with Northwest Information Center

Prior to constructing any project that would involve ground disturbance outside road or trail beds or other areas previously disturbed when constructing the road and trail system, the MCOSD staff will contact the Northwest Information Center of the California Historical Resources Information System and request a records search of known historic and cultural resources within and adjacent to the proposed project area, and seek the determination of the information center coordinator regarding the potential for cultural resources on the site. Should the records request or the recommendation of the coordinator indicate the presence of sensitive resources, the site will be field surveyed by a state-qualified archeologist or archeological consultant recommended by the Federated Indians of Graton Rancheria, who will make recommendations and develop proposals for any procedures deemed appropriate to further investigate and/or mitigate adverse impacts to those resources.

Cultural Resources-3: Tribal Consultation

The following tribal consultations will be conducted prior to any new ground disturbance related to road or trail construction:

- Send the road and trail project description information to the Native American Heritage Commission and request contact information for tribes with traditional lands or places located within the geographic areas affected by the proposed changes.
- Contact each tribe identified by the commission in writing and provide them the opportunity to consult about the proposed project.
- Organize a consultation with tribes that respond to the written notice within 90 days.
- Refer proposals associated with proposed road and trail modifications to each tribe identified by the commission at least 45 days prior to the proposed action.
- Provide notice of a public hearing at least 10 days in advance to tribes and any other persons who have requested that such notice be provided.

Cultural Resources-4: Alteration of Historic Structures

Limit the modification of ranch structures or other historical features to maintain the aesthetic quality, historical setting, and rural character of the preserves.

Cultural Resources-5: Permanent Protection

Where road and trail activities cannot avoid sensitive cultural resources, require modifications to the actions to incorporate the resource and include a resource protection plan for its maintenance and future protection.

Cultural Resources-6: Construction Discovery Protocol

If cultural resources are discovered on a site during construction activities, halt all earthmoving activity in the area of impact until a qualified archeological consultant examines the findings, assesses their

significance, and develops proposals for any procedures deemed appropriate to further investigate and/or mitigate adverse impacts to those resources.

Cultural Resources-7: Human Remains

In the event that human skeletal remains are discovered, discontinue work in the area of the discovery and contact the County Coroner. If skeletal remains are found to be prehistoric Native American remains, the coroner will call the Native American Heritage Commission within 24 hours. The commission will identify the person(s) it believes to be the most likely descendant of the deceased Native American. The most likely descendant will be responsible for recommending the disposition and treatment of the remains. The most likely descendant may make recommendations to the landowner or the person responsible for the excavation/grading work for means of treating or disposing of the human remains and any associated grave goods as provided in section 5097.98 of the California Public Resources Code.

Cultural Resources-8: Community Awareness

Increase public awareness of local history and archeology, and the need to protect cultural resources. This may be accomplished by highlighting cultural resources along a road or trail with interpretive signs and information kiosks, and/or by placing a historical marker along the road or trail segment to inform trail users about the importance of the site and/or event.

WATER QUALITY BMPs

Water Quality-1: Modifications to Road and Trail Management Actions to Protect Water Bodies, Wetlands, and Tidally Influenced Areas

Road and trail management activities will be restricted near wetlands and other waters to reduce the potential for sediment or pollutants to enter water bodies or wetlands. If work occurs during the dry season and is greater than 100 feet from creeks and wetlands, erosion control and water quality protection measures will not be necessary.

- If possible, avoid work around water bodies, wetlands, and tidally influenced areas, including a buffer area of 100 feet around these areas (i.e., as measured from the top bank of creeks, streams, or ponds).
- If construction work in wetlands, riparian areas, or tidally influenced areas cannot be fully avoided, consult with the appropriate state and federal agencies. This consultation may result in wetland delineation, permit applications, and mitigation that meets Countywide Plan and other regulatory requirements.
- Within the 100-foot buffer, limit construction activities. Limit activities to least-harmful methods; restrict herbicides to those that are EPA-approved for use near water. Prohibit activities that disturb soil or could cause soil erosion or changes in water quality.
- Within the 100-foot buffer, limit work that might cause erosion to low-flow or low-tide periods. Low-flow months for local creeks are typically August to October. For tidal areas, work will not occur within two hours of high-tide events at construction sites when high tide is greater than 6.5 feet as measured at the Golden Gate Bridge, using corrections for areas near individual MCOSD preserves. Tide charts are available online from the National Oceanic and Atmospheric Agency/National Weather Service (https://tidesandcurrents.noaa.gov/).
- Within the 100-foot buffer, minimize erosion and sedimentation by maintaining erosion- and sediment- control devices during ground-disturbing activities and until all disturbed soils have been stabilized. Control devices include weed-free straw, hydromulch, geofabrics, wattles, sediment traps, check dams, drainage swales, and sand bag dikes. Materials must be certified weed-free to prevent the introduction of wheat, barley, and other nonnative plant seeds. Erosion-control materials must be constructed of natural fibers (e.g., coconut fiber mats, burlap and rice straw wattles) and may not be constructed with plastic monofilaments or other materials that could entrap snakes or amphibians.

Water Quality-2: Temporary Erosion and Sediment Control

Temporary sediment-control practices will be implemented when new trail construction or existing trail improvements will result in greater than 1 acre of disturbance. Temporary practices may also be required when disturbance is less than 1 acre but close to a sensitive resource or has the potential to discharge a significant amount of sediments or pollutants to surface water. Several of the listed temporary practices can also be used as post-construction stabilization measures: Information and standard details for temporary erosion-control BMPs can be found in the California Stormwater BMP Handbook – Construction (CASQA 2009).

- Install temporary fencing around staging areas and along limits of construction when work areas are immediately adjacent to sensitive resources. This will limit the disturbance footprint and help protect resources, including native vegetation, wetlands, and streams, during grading operations.
- Install linear sediment barriers to slow and filter stormwater runoff from disturbed areas. Fiber or straw roll barriers can also be spaced along the contours of a disturbed area after construction to prevent concentrated flow and stabilize the area until there is sufficient vegetation coverage.
- Apply one or more of the following to restore or protect areas disturbed by excavation or grading operations:

    - tilling (minimum 6-inch depth) and seeding
    - hydromulch and tackifier
    - planting
    - straw or wood mulch
    - coir (jute) netting
    - biodegradable erosion-control blankets
    - plastic sheeting (only as an interim protection during storm events when construction site is still active)
- Cover soil and loose material stockpiles with weighted plastic sheeting when inactive or prior to storm events.
- Active and inactive material stockpiles will be encircled at all times with a linear sediment barrier.
- Manage sediment when diverting streamflow. When constructing trail or road stream crossings, a temporary clear-water diversion may be required. The following options will be considered for isolating the work area and protecting resources when diverting streamflow via gravity-fed flexible pipe or active pumping around the work area: sand or gravel bag coffer dam enclosed in plastic sheeting, water-filled dam (e.g., Aquadam), sheet piling, and turbidity curtains.
- Manage sediment during dewatering operations. The following options will be considered for applying or containing and treating sediment-laden water produced during dewatering operations: sprinkler system to open area (as long as there is no visible surface runoff), temporary constructed sediment basin or trap, rented sedimentation tank (e.g., Baker Tank).

Water Quality-3: Erosion Control Measures

- Avoid the use of heavy equipment in areas with soils that are undisturbed, saturated, or subject to extensive compaction.
- If no feasible alternative is available and staging of heavy equipment, vehicles, or stockpiles is unavoidable, limit the disturbance footprint and flag or mark the allowable disturbance area in the field. Following the end of work, newly disturbed soils will be scarified to retard runoff and promote rapid revegetation.
- Immediately rehabilitate areas where project actions have disturbed soil. Require areas disturbed by equipment or vehicles to be rehabilitated as quickly as possible to prevent erosion, discourage the colonization of invasive plants, and address soil compaction. Techniques include decompacting and aerating soils, recontouring soils to natural topography, stabilizing soils via erosion-control materials, revegetating areas with native plants, and removing and monitoring invasive plants.
- Leave the roots of target invasive trees and shrubs in place in areas with highly erosive soils or steep slopes. Stumps may be cut or ground down to the ground level.

If work occurs during the dry season and is greater than 100 feet from water bodies and wetlands, erosion control and water quality protection measures will not be necessary.

Water Quality-4: Preventing or Reducing the Potential for Pollution

- Include spill prevention and clean-up in annual staff training sessions.
- Properly use, store, and dispose of chemicals, fuels, and other toxic materials according to manufacturer’s specifications and agency regulations.
- Prohibit or restrict equipment refueling, fluid leakage, equipment maintenance, and road surfacing activities near wetlands. Fuel storage and refueling will occur in safe areas well away from wetlands; safe areas may include paved or cleared roadbeds and other contained areas, such as lined truck beds.

- Equipment and vehicles will be inspected regularly for hydraulic and oil leaks, and leaking vehicles will not be allowed on the MCOSD preserves. Drip pans will be placed underneath equipment stored on site. Vehicles and construction equipment will be maintained in good working condition, and any necessary on-site servicing of equipment will be conducted away from the wetlands.
- Require all contractors to possess, and all vehicles to carry, emergency spill containment materials.
- Absorbent materials will be on hand at all times to absorb any minor leaks and spills.

Water Quality-5: Road and Trail Inspections

Inspect roads and trails for conditions that might adversely affect water quality or other resources. Road and trail maintenance staff will use road/trail inspection forms to facilitate complete and consistent data capture and reporting of the following conditions:

- concentrated flows on roads and trails that cause erosion, rilling, or gullying
- runoff and effects to water quality of nearby habitats
- the spread of invasive exotic plants near wetlands and waters
- the status and quality of any known sensitive resources in the immediate vicinity that could be affected by road or trail use and/or maintenance

Staff will report any findings and make recommended corrective actions if appropriate.

Water Quality-6: Grading Windows

Restrict grading activity to the dry months (generally May 15 – October 15), when associated erosion will be reduced to the maximum extent possible.

Water Quality-7: Culvert Inspection

Inspect culverts on a regular basis. Inspections will ensure that culverts do not clog with sediment or debris. Blocked culverts may affect water quality, change the water course, increase erosion or sediment runoff, or affect wildlife. Any materials blocking culverts will be removed and disposed of outside of the watercourse in an area not subject to erosion. If a significant blockage or sedimentation exists, the MCOSD will plan and implement corrective actions as necessary. Excavation of sediments within streams may require a maintenance permit from the USACE, the California Department of Fish and Wildlife, and/or the San Francisco Water Quality Control Board.

Water Quality-8: Proper Disposal of Excess Materials

Avoid resource impacts when disposing of materials. Any excess material related to new construction, maintenance, or decommissioning (including soils, debris, trash, or other materials that need to be removed as part of management activities) will be disposed of at an appropriate site where materials could not impact sensitive resources. For example, grading-related excess soils or removed debris will not be placed in or around a water body or wetland, where the materials could be subject to erosion that would affect water quality.

Water Quality-9: Sidecasting Construction Material

Avoid sidecasting, or at a minimum contain and remove sidecast material when it has the potential to reach surface waters. The following “rules of thumb” based on Fishnet 4C Guidelines (2007) will be used as guidance:

Slope Gradient	Distance to Watercourse	Sidecast Rule
Any Slope	Will likely enter watercourse	Not Allowed
Less than or equal to 20 percent	Greater than 150 feet	Allowed
Less than or equal to 50 percent	Greater than 300 feet	Allowed
Greater than 50 percent	Long vegetated slope	Allowed
Greater than 50 percent	Shorter, sparsely vegetated slope	Not Allowed

GEOLOGIC HAZARDS BMPs

Geologic Hazards-1: Assessment and Requirements in Areas of Potential Geologic Hazard

Given the unique and potentially high risks associated with geologic hazards, general best management practices for these types of potential impacts are not appropriate. Instead, when new trails or trail improvements are proposed in preserve areas with a propensity for geologic instabilities, including slides or debris flows in the more elevated areas and subsidence or liquefaction in the low-lying areas, a site assessment will be conducted by a certified geologist or geotechnical engineer. If geologic hazards are confirmed in the area, the site assessment will propose adequate avoidance measures or engineering elements to ensure trail and infrastructure stability and maintained public safety.

Geologic Hazards-2: Construction in Areas of Slides and Debris Flows

In areas of identified slide and debris flow hazards, locate and design new trails, drainage improvements, or irrigation so as not to alter the shape or stability, or change the drainage or groundwater conditions, of an existing slide area. Such alterations would potentially result in reactivation or further destabilization of the slope.

Geologic Hazards-3: Construction in Areas of Erodible and Expansive Soils

Use avoidance tactics or engineered grading to mitigate adverse geologic conditions and potential hazards. Prior to final road or trail project design, consult with engineering geologists and/or geotechnical engineers to identify and implement mitigating road or trial designs for new facility locations or when improving existing facilities.

Geologic Hazards-4: Construction in Areas of Collapsible Soils

In any of the lower elevation preserves (i.e., those near sea level) assess soil type and the potential for subsidence to determine optimum trail location and structural foundations necessary to avoid collapsible soils. In consultation with a certified geologist or geotechnical engineer, design roads and trails to avoid or reduce this potential hazard through optimizing location or by implementing appropriate engineering designs.

AIR QUALITY BMPs

Air Quality-1: Implement BAAQMD Measures

As part of the review process required under the California Environmental Quality Act, the MCOSD will use the current Bay Area Air Quality Management District guidelines to evaluate the significance of air quality impacts from road and trail management plans and projects, and to establish appropriate mitigation requirements.

Air Quality-2: Minimize Dust Control Emissions during Construction

The MCOSD will require its staff or contractors to implement appropriate Bay Area Air Quality Management District control measures for emissions of dust during construction of all road and trail modifications and improvements. The following basic control measures cover routine operation and maintenance and day-to-day upkeep of roads and trails, minor road and trail reconstruction, and minor decommissioning activities, they also cover changes in use, the conversion of a road to a trail, or any proposed action that does not involve construction activities, but an increase or decrease in the level of activity:

- Water all active construction areas at least twice daily.
- Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard (vertical space between the top surface of the material and the top of the hauling container).
- Pave, apply water three times daily, or apply nontoxic soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites.
- Sweep daily (with water sweepers) all paved access roads, parking areas, and staging areas at construction sites.
- Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.

Air Quality-3: Enhanced Dust Control during Construction

The following enhanced control measures cover major road and trail reconstruction, rerouting, and decommissioning activities, such as repairing, replacing, or restoring heavily used and wide road and trail segments; they also cover resurfacing, replacing, and restoring trailhead areas and installing new water quality and drainage features:

- Hydroseed or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for ten days or more).
- Enclose, cover, water twice daily, or apply nontoxic soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 miles per hour.
- Install sandbags or other erosion-control measures to prevent silt runoff to public roadways.
- Replant vegetation in disturbed areas as quickly as possible.

Air Quality-4: Dust Control during Construction in Sensitive Resource Areas

The MCOSD will require its staff or contractors to implement appropriate Bay Area Air Quality Management District optional control measures for emissions of dust during construction of all road and trail modifications and improvements that are large in area, located near sensitive resources, or which for any other reason may warrant additional emission reductions. The following measures cover rerouting road and trail alignments, significant decommissioning or restoration activities, and the construction of a new road and trail alignment on undisturbed land to connect previously unconnected points:

- Install wheel washers for all exiting trucks or wash off the tires or tracks of all trucks and equipment leaving the site.
- Install wind breaks, or plant trees/vegetative wind breaks, at windward side(s) of construction areas.
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 miles per hour.

- Limit the area subject to excavation, grading, and other construction activity at any one time.

NOISE BMPs

Noise-1: County Noise Ordinance Requirements

For all maintenance and construction projects using powered or heavy equipment, implement the day and time restrictions for equipment operation and maintenance specified by Marin County Ordinance 3431, Construction Noise.

Noise-2: Noise Control during Construction within and adjacent to Sensitive Wildlife Populations

- Ensure that equipment and vehicles utilize the best available noise-control techniques (e.g., improved mufflers, equipment redesign, and use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds) to prevent disturbance of nearby wildlife populations.

Except for emergency projects, prohibit nighttime operations or planned operations during breeding season in areas adjacent.