Draft Initial Study/Mitigated Negative Declaration

for the proposed

Cascade Canyon Bridges and Trail Improvement Project

at

Cascade Canyon Open Space Preserve

and

Elliott Nature Preserve

Public Comment Period: February 16 – March 19, 2021



Prepared by the Marin County Open Space District
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OPEN SPACE DISTRICT

This document has been prepared pursuant to the

California Environmental Quality Act of 1970, as amended

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PROJECT INFORMATION

Project Title

Cascade Canyon Bridges Project and Trail Improvement Project

Lead Agency Name and Address

Marin County Open Space District (MCOSD)
3501 Civic Center Drive, Suite 260
San Rafael, California 94903

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Project Location

Cascade Canyon Open Space Preserve, Fairfax
Elliot Nature Preserve, Fairfax

General Plan Designation

APN 197-100-16: Public Open Space (OS) (Marin County)
APN197-100-05: Public Open Space (Town of Fairfax)

Zoning

APN 197-100-16: Open Area (OA) (Marin County)
APN197-100-05: RS-6 (residential, single-family) (Town of Fairfax)

INTRODUCTION

The Marin County Open Space District (MCOSD) is proposing the Cascade Canyon Bridges and Trail Improvement Project (proposed project) within Cascade Canyon Open Space Preserve. This Initial Study has been prepared to provide information to the public and decision makers regarding the scope of the proposed project, the potentially significant environmental impacts that could result from implementation of the proposed project, and mitigation measures that would reduce potentially significant environmental impacts to a less than significant level in compliance with the California Environmental Quality Act (CEQA).

PROJECT NEED, PURPOSE, AND OBJECTIVES

Project Need

Cascade Canyon Open Space Preserve is a popular recreational corridor for pedestrians, cyclists, and equestrians traveling in between residential areas of Fairfax and Camp Tamarancho. San Anselmo Creek contains sensitive aquatic habitats that support federally- and state-listed steelhead, candidate for federally and state-listed foothill yellow-legged frog and other native species. Recreational traffic through four existing low-water rock ford creek crossings within the San Anselmo Creek channel puts visitors at risk of injury during high creek flows in the rainy season and can also mobilize fine sediment that could negatively impact downstream steelhead redds[1] and the upstream passage of young fish into summer rearing habitat. Additionally, foothill yellow-legged frogs in aquatic habitats could potentially incur physical impacts from park visitors using the rock fords. The MCOSD has also determined that the High Water Trail is substandard in design and safety.

Project Purpose

The purpose of the proposed Project is to implement the MCOSD's Road and Trail Management Plan (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. Additionally, the proposed Project would be fully compliant with the Marin County Parks Inclusive Access Plan (IAP). The RTMP and IAP are described in the Project Development section of this document.

Project Objectives

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

- Provide safe and sustainable year-round access to the Canyon Fire Road and the interior of Cascade Canyon Open Space Preserve;
- Eliminate the need to cross San Anselmo Creek using the rock fords located within the creek;
- Enhance habitat protection for listed species
- Improve trail safety;
- Improve visitor access compliant with MCOSD's Inclusive Access Plan;
- Reduce trail erosion and sedimentation to the Corte Madera Creek watershed; and
- Reduce the number of redundant trails and habitat fragmentation in an area rich in sensitive species.

[1] A salmon redd is a nest, which can contain up to 1,000 eggs.
Source: https://www.fws.gov/fisheries/fishmigration/steelhead_trout.html

SUMMARY OF THE PROPOSED PROJECT

The proposed Project includes the following elements, which are summarized below and fully described in the Project Description section of this document:

New Trail Bridges

- Bridge 1 at the Lower Crossing along the Canyon Trail
- Bridge 2 at the Upper Crossing along the Canyon Trail

Trail Improvements

- Realign the Canyon Trail and install bicycle speed control features between Cascade Canyon Fire Road and the south end of Bridge 1
- Change use on the segment of the Canyon Trail between Cascade Canyon Fire Road and the south end of Bridge 1 from hiker/equestrian only to a multi-use, which would provide hiker, equestrian, and cyclist trail use
- Realign trail to align with the bridge approaches
- Install new fencing and signage
- Install a bicycle rack at the preserve entrance

Trail Decommissioning and Restoration

- The High Water Trail
- The Canyon Trail spur segment connecting to the Cascade Canyon Fire Road

EXISTING SETTING

Project Location, Surrounding Land Uses, and Access

The project area is located within the 504-acre Cascade Canyon Open Space Preserve, which includes the Elliott Nature Preserve. Cascade Canyon Open Space Preserve is located on the eastern flank of Mount Tamalpais adjacent to the Town of Fairfax and approximately 3.5 miles west of San Rafael and within the Corte Madera Creek Watershed. It is surrounded by single-family residential development in the Town of Fairfax to the south and east, Camp Tamarancho and the White Hill Open Space Preserve to the north, the Mount Tamalpais Watershed to the west, and the Meadow Club golf course to the southwest. Most of the proposed Project lies within the Elliott Nature Preserve portion of the Cascade Canyon Open Space Preserve. The Elliott Preserve was transferred to the MCOSD in 1987, however the Town of Fairfax retains approval authority over any improvements in the Elliott Nature Preserve.[2] The project area includes a portion of the Cascade Canyon Fire Road, the High Water Trail, and a portion of the Canyon Trail.

Access to the project area is from Cascade Drive via Bolinas Road in the Town of Fairfax. There is very limited roadside parking along Cascade Drive but no dedicated visitor parking within Cascade Canyon Open Space Preserve. Cascade Canyon Open Space Preserve can be accessed from the adjoining open space preserves and other public lands.

Figure 1 shows the trail map for Cascade Canyon and White Hill Open Space Preserves

Figure 2 shows the Elliott Nature Preserve within Cascade Canyon Open Space Preserve

Project Area

Cascade Fire Road. Cascade Fire Road is an earthen access road that extends from the end of Cascade Drive up the valley bottom of Cascade Canyon. Within the project area, the fire road crosses San Anselmo Creek four times at rock ford crossings, which are used to cross San Anselmo Creek during low water

[2] Memorandum of Understanding Between the Town of Fairfax and the Marin County Open Space District Consenting to the Construction of Two Bridges in the Elliot Nature Preserve Within Cascade Canyon Open Space Preserve. May 23, 2017.

conditions. The fire road provides the primary access to the interior of Cascade Canyon Open Space Preserve and connects with Marin Municipal Water District lands to the west. It is designated as multi use within the MCOSD trail system and is used for year-round recreational trail use as well as for seasonal maintenance, fire, and emergency vehicle access. The four rock ford crossings are impassable during periods of high storm runoff. During these times, pedestrian access is via the High Water Trail.

High Water Trail. The High Water Trail is a narrow trail extending 1,200 feet up the north bank of San Anselmo Creek. The trail provides trail access during the winter when San Anselmo Creek is at high flows and crossing the creek using the existing rock fords is not possible. Portions of this trail are eroding and have been determine by MCOSD to be substandard in design and safety per MCOSD trail evaluation part of the Region 2 trail designation process due to steep slopes and active erosion into San Anselmo Creek. The High Water Trail is no longer a designated trail within the MCOSD trail system and is not shown on the trail map.

Canyon Trail. The Canyon Trail is a 1,600-foot long trail paralleling the south side of San Anselmo Creek. The trail is located along a flat fluvial terrace with one wooden footbridge at Carey Camp Creek. The trail is within the designated MCOSD trail system and is currently designated as a hiker/equestrian trail.

PROJECT DESCRIPTION

The proposed project would construct two bridges and realign the existing trail to create approaches to the bridges; implement speed control features, a change in use on a segment of the Canyon Trail, and decommission a section of the Canyon Trail; and decommission the High Water Trail. These actions would meet the project purpose and objectives by reducing environmental impacts of current visitor access, improving the user experience and accessibility for all trail users, and improving the sustainability of the trail consistent with the RTMP policies, applicable BMPs, and trail design standards. Implementation of the proposed project would substantially reduce the potential for accelerated erosion and sedimentation into the San Anselmo Creek Watershed that could adversely impact water quality and listed aquatic species and their habitats. The proposed project would incorporate erosion control techniques recommended in the Engineering Report,[3] including placement of straw wattles at the base of graded turns, surfacing the approaches to the proposed bridges with aggregate base rock, and placing a seed and mulch on disturbed ground.

The proposed project would be designed and implemented in compliance with the MCOSD's RTMP including applicable policies, BMPs, and trail design standards. Appendix A of this document consists of the RTMP policies and BMPs. The proposed project would incorporate recommendations included in the Engineering Report, summarized in the Project Development section of this document and would be compliant with the MCOSD's IAP.

Figure 3 shows the location of the proposed project elements

Figure 4 shows construction access and the proposed project overview

New Trail Bridges

Both of the proposed bridges would be 6-feet wide prefabricated weathered steel connector style truss recreational bridges with reclaimed redwood decks. They would be located above the 100-year flood elevation. The proposed bridges would be constructed offsite in sections and would be assembled onsite. The proposed bridges would incorporate concrete spread footings that would be offset from the edge of the San Anselmo Creek channel bank, as recommended in the Engineering Report.

The approaches to both sides of the proposed bridges would be built up on compacted fill wedges leading up to the bridge structure. The approaches would guide visitors at a grade of less than 8.3 percent to the

[3] Best, Timothy C., CEG. Engineering Geology and Hydrology. "Engineering Geologic and Geotechnical Review Cascade Canyon Trail Bridge Project." June 2018.

bridge deck and away from the existing rock fords. The existing rock fords would be left in place for MCOSD and emergency vehicle access.

Minor grading and temporary fill placement may be required at the existing rock fords to reduce the approach angle for construction equipment access. If needed, temporary fill would be placed within San Anselmo Creek at the base of the channel bank for a length of 15 to 20 feet on each side of the channel and a width of 10 to 14 feet with a maximum depth of three feet. A maximum of 25 cubic yards of temporary fill may be required within a maximum 750 square foot area at existing rock fords 1 and 2. Temporary fill would be sourced onsite from excavation of the lip of the San Anselmo Creek channel bank or from an approved borrow site outside of the San Anselmo Creek channel. Temporary fill would be placed on top of approved erosion control fabric to avoid mixing with the native channel bed material. At the conclusion of project implementation, an excavator would remove the temporary fill, which would be spread on-site at an approved location and erosion control measures, such as straw wattles, would be applied. The erosion control fabric would be disposed of at an approved landfill.

Split rail fencing and signage would be installed along the existing trail approaches to the rock fords to discourage visitor use of the rock fords and direct visitors to the trail bridges. Detachable rail systems at the existing rock fords would allow MCOSD and emergency vehicle access. The installation of fencing and signage is consistent with the Town of Fairfax Memorandum of Understanding (MOU), described in the Project Development section of this document. Fencing and signage are specifically discussed later in this project description.

Bridge 1 (Lower Crossing)

Bridge 1 would be located near the entrance of Cascade Canyon Fire Road, 140 feet downstream of the first of the four low water ford crossings over San Anselmo Creek and at the downstream end of a meander bend in the creek. The proposed bridge would be a 90 foot-long consisting of two or three sections.

Photos 1 and 2 show the proposed Bridge 1 location

The existing rock riprap on the south side of San Anselmo Creek would be repaired and augmented as needed to provide the required bridge abutment protection, requiring approximately 40 cubic yards of new rock. Placement of the new rock would occur below the ordinary highwater.

The flat open area on the north side of the San Anselmo Creek would be used for a staging area. Large equipment such as an excavator, trucks, and compactor would need to ford San Anselmo Creek during the dry season to access the bridge sites. Vegetation removal would include one 8-inch diameter at breast height (DBH) madrone sapling and some small brush. Roots of some of the larger trees by the south bridge abutment may be impacted during the excavation of the bridge footings, including one 24-inch DBH oak and one 24-inch California bay laurel. Minimal excavation would be employed to avoid any unnecessary impacts to tree roots. One 6-inch DBH big leaf maple may be pruned to avoid damage when the bridge is swung into place.

Figure 5 is the proposed Bridge 1 site plan

Bridge 2 - Upper Crossing

Bridge 2 would be located approximately 1,000 feet upstream of Bridge 1. The proposed bridge would be 60 feet in length and would consist of two prefabricated sections. The existing rock riprap on the south side of San Anselmo Creek would be repaired and augmented to provide the required bridge abutment protection, which would require placement of approximately 40 cubic yards of new rock below the ordinary highwater mark. The open area on both sides of the crossing would be used for a staging area. No trees removal has been identified at the Bridge 2 site although several trees may be pruned to avoid damage when the bridge sections are delivered.

Photo 3 shows the proposed Bridge 2 site

Photo 4 shows the existing rock ford crossing near the proposed Bridge 2 site

Figure 6 is the proposed Bridge 2 site plan

Trail Improvements

Trail improvements include realignments associated with the new bridges, the proposed change in use designation for the Canyon Trail, bike rack installation at preserve entrance and proposed fencing and signage.

Trail Realignment

Existing trails would be realigned to connect to the new bridge approaches. The proposed trail realignments would be compliant with the MCOSD's IAP. The proposed trail realignments would improve site drainage by blending the finished trail grade to the existing surrounding slopes without abrupt changes in grade. The proposed trail realignments associated with the approaches to the new bridges are shown in green hatched lines on Figure 3 – Project Site.

Bridge 1 Trail Realignment

The Cascade Fire Road from the entrance gate at the end of Cascade Drive to the Bridge 1 north approach would be improved to fully comply with the IAP criteria. These improvements would consist of minor regrading and resurfacing, which would be limited to the existing fire road footprint. The proposed trail alignment on the north approach to the new Bridge 1 along Cascade Fire Road would consist of approximately 100 linear feet of 6-foot wide trail. The proposed trail alignment on the south approach to the new Bridge 1 along the Canyon Trail would consist of approximately 20 linear feet of 6-foot wide trail to match the existing grade of the Canyon Trail. Additional trail improvements to accommodate the proposed change in use on the Canyon Trail are discussed under Canyon Trail Change in Use.

Bridge 2 Trail Realignment

Approximately 180 linear feet of new, 6-foot wide trail on the north side of bridge would be realigned in a sinuous manner to maximize visitor safety while reducing environmental impacts. The south approach would be approximately 50 linear feet of new, 6-foot wide trail, which also would be realigned in a sinuous manner. The bridge approaches will guide visitors at a grade of less than 8.3 percent to the bridge deck and away from the existing creek ford. Physical obstructions would be created to discourage recreational use towards the existing rock ford within San Anselmo Creek and the High Water Trail. Trail treatments may include knicks,[4] rolling dips,[5] outsloped trail,[6] and grade reversals.[7] New trail tread would be well drained to ensure that there is no pooling, puddling, or buildup of volume or velocity of water running down the length of the trail. The finished trail grade would be IAP compliant and match existing surrounding conditions with smooth transitions and avoid grade changes.

Canyon Trail Change in Use

The proposed project would change the use designation of the Canyon Trail from hiker and equestrian only use to multiuse, which would allow bicycle use in addition to hiking and equestrian use. The proposed Canyon Trail Change in Use is shown in yellow highlight on Figure 3 – Project Site. To safely accommodate the addition of bicycles on this segment of trail consistent with the Town of Fairfax MOU, speed control features known as chicanes would be installed along the Canyon Trail on the south side of Bridge 1 approximately 75 feet from bridge approach. Chicanes would be placed at intervals to slow bike riders

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4 A knick is a shaved down semicircle about 10 feet) long that is outsloped about 15 percent in the center, providing a smooth and subtle drainage feature and should be unnoticeable to users.

5 Rolling dips are excavated into the trail to convey water off the trail. The rolling dip consists of a lead-in section, a flat bottom section where water is conveyed off the trail, and a lead-out section. The lead-in and lead-out sections are steeper than the original trail

6 Outsloped trail are shaped to drain all surface water to the downhill or fill shoulder side where it flows away from the trail and is dispersed over, or absorbed into, the slope below the road to avoid concentration of surface runoff on the trail.

7 Grade reversals take advantage of natural dips in the terrain. The grade of the trail is reversed for about 10 to 15 feet, then "rolled" back over to resume the descent. The trail user's experience is enhanced by providing an up-and-down motion as the trail curves up and around large trees or winds around boulders.

down and promote trail user compatibility. They would consist of a minimum of two boulders/logs on the inside of two tight corners, in some cases it may be necessary to use additional boulders/logs to block any undesirable lines to avoid the chicane. The chicanes would have at least 18 feet of straight trail before reaching the chicane to avoid heavy braking and thereby would reduce erosion before the chicane. The Canyon Trail is of a sufficient width to accommodate the proposed change in use and it would not be widened.

Photos 5 and 6 show the Canyon Trail

Fencing and Signage

Consistent with the Town of Fairfax MOU, the project proposes to install approximately 150 linear feet of split-rail fencing at the north sides of the new bridges, designed to safely redirect visitors to the newly constructed bridge approaches and discourage use of the existing rock fords within San Anselmo Creek. The split-rail fencing would limit access to the existing rock fords to necessary MCOSD maintenance and emergency vehicle access only. A section of rail would be installed that can be detached to allow for emergency and maintenance vehicle access. Appropriate colors and textures would be utilized to blend with the surroundings.

Consistent with the Town of Fairfax MOU, new signage would be installed along the Canyon Trail to indicate the change in use from hiker/horse to multiuse status. Additionally, signage would be installed along the realigned trail on the south approach to the new Bridge 1 along the Canyon Trail to inform visitors that bicycles are not allowed egressing the Canyon Trail to Canyon Road.

Trail Decommissioning and Restoration

The proposed project would decommission and restore the existing High Water Trail and decommission a spur segment of the Canyon Trail, as proposed as part of the Region 2 trail designation process.

High Water Trail Decommissioning

The High Water Trail currently provides an alternative route to the Canyon Trail during the winter when San Anselmo Creek is flowing and uncrossable via the existing rock fords, rendering the Canyon Trail inaccessible. It was named the High Water Trail to reflect the high-water use condition in San Anselmo Creek during the winter. Implementation of the proposed bridges over San Anselmo Creek along the Canyon Trail would remediate this current condition by providing safe access over San Anselmo Creek when the creek is full.

The High Water Trail is a well-used narrow trail, ranging in width between two and five feet. Sections are located on cut and fill and other sections are on bedrock. It extends 1,200 feet up the north bank of San Anselmo Creek. Most of the existing trail gradient is moderate at less than 15 percent several short segments of up to 40 percent gradient, and some segments traverse very steep slopes of greater than 70 percent. There are three watercourse crossings along the trail alignment, including one ford, one puncheon[8], and one bridge. Two segments of the High Water Trail are supported by retaining walls. Portions of the High Water Trail are actively eroding and the MCOSD has determined it to be substandard in design and safety per MCOSD trail evaluation part of the Region 2 trail designation process due to steep slopes and active erosion into San Anselmo Creek. The High Water Trail was not designated for adoption into the MCOSD trail system during the Region 2 road-and-trail planning process.

Photos 7 and 8 show the High Water Trail

The proposed project would decommission the High Water Trail by removing the existing bridge, puncheon, and ford and then restoring the trail contour back to the original slope whenever possible. Access would be restricted using woody vegetation, and exposed soil would be revegetated on areas of exposed soil with

[8] A puncheon is a log or timber structure built close to the ground, three feet or less, used to cross small drainages and/or wet areas. It usually consists of mud sills, stringers, and wood decking. Hand rails may or may not be included.

native species where supported by soil conditions. Annual grassland and Valley Oak Woodland species would be utilized for revegetation. These plant communities are described in greater detail in the Biological Resources section of the CEQA Checklist. The ends of the trail would be decommissioned with equipment such as a mini excavator and a Sweco, which is a small tractor, and the middle of the trail would be decommissioned utilizing hand tools only.

Canyon Trail spur segment connecting to the Cascade Canyon Fire Road Decommissioning
The Canyon Trail spur is a heavily used, 50-foot long, narrow trail connecting the Canyon Trail to the first rock ford crossing within San Anselmo Creek. The spur trail is located approximately 250 linear feet north of the south approach of the proposed Bridge 1. The trail spur provides an access route that directs trail users through the creek channel during wet and dry seasons. The existing trail is 5 to 7 feet wide with a moderate gradient at less than 15 percent. The proposed project would decommission the Canyon Trail spur by removing old trail signs, de-compacting the trail surface, blocking access and revegetating areas as needed. The work would be completed with a mini excavator, Sweco (small tractor) and hand work as needed.

Fencing and Signage

The installation of fencing and signage would be consistent with the Town of Fairfax MOU with the purpose of safely redirecting visitors onto the new bridge approaches and discouraging use of the existing rock fords within San Anselmo Creek.

Approximately 150 linear feet of wooden split-rail fencing at the north side of the bridges to accomplish this purpose. At the rock fords a section of detachable split rail would be installed to provide MCOSD and emergency vehicle access.

New signage would be installed along the Canyon Trail to indicate the change in use from hiker/horse to multiuse status, along the realigned trail on the south approach to the new Bridge 1 along the Canyon Trail to inform visitors that bicycles are not allowed egressing the Canyon Trail to Canyon Road, and at the High Water Trail regarding the decommissioning of that trail.

Canyon Trail Change in Use

The project proposes to change the use designation of the Canyon Trail from hiker/horse to Multiuse, which would allow hiker, horse, and bicycle access. To safely accommodate the addition of bicycles on this segment of trail speed control features known as chicanes would be installed on the south side of Bridge 1, approximately 75 feet back away from bridge approach and placed at intervals to slow bike riders down and promote trail user compatibility. Chicanes at this location would consist of a minimum of two boulders/logs on the inside of two tight corners, in some cases it may be necessary to use additional boulders/logs to block any undesirable lines to avoid the chicane. The chicanes would have at least 18 feet of straight trail before reaching the chicane to avoid heavy braking and thereby reduce erosion before the chicane.

Construction

Construction of the proposed project would implement the Road and Trail Standards and applicable Road and Trail Management Plan (RTMP) BMPs. The RTMP is described in the Project Development section of this Initial Study and the RTMP Policies and BMPs are included in Appendix A of this Initial Study.

Construction would be phased as a result of timing requirements for sensitive species and for wet weather considerations. Construction would begin after August 1st or after pre-construction surveys determined that sensitive species are not present in the project area. Construction related to water crossings and earthwork requiring use of heavy equipment would be limited to the dry season, generally May 15 – October 15 or as permitted through regulatory permits. Construction equipment would utilize the existing rock ford crossings to access portions of the project area. Minor grading and temporary fill placement at the existing ford crossings may be required to accommodate the large vehicles. The fill work would occur in the late summer when San Anselmo Creek is dry. Equipment with noise levels 20 dBA above ambient noise levels would

not be used during nesting season for Northern spotted owl, February 01- July 31 or before pre-construction surveys determined that sensitive species are not present in the project area.

Construction would occur Monday through Friday, from 7:00 a.m. to 6:00 p.m. and would require approximately two months. Equipment would include a large crane, excavator, loader, compactor, cement truck, cement mixers, roller compactor, rubber track carrier, generators, dump truck, ATVs, generators, 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. Construction staging areas have been described in the project description and will be shown on the construction plans. Access to the project site for construction vehicles and equipment would be from Cascade Drive. Traffic may be slowed and isolated areas along Cascade Drive may be posted to prohibit street parking on days that construction equipment and the bridge sections would be delivered to the project area and for equipment to exit the project area.

During construction, trails within the project area would be closed for recreation for safety purposes. Emergency access would be maintained during construction.

Operation and Maintenance

After project construction, recreational use of the trail would continue similar to existing conditions for hiking, biking, dog walking, and other allowable recreational purposes. The new trail configuration would be designated into the Region 2 trail system and would be published on trail maps. The project does not include any parking or other amenities to improve access to the trail system, increases in trail use are anticipated to be minor and largely proportional with regional population growth. The new trail configuration would improve access for rangers and emergency responders on foot or using small all-terrain vehicles. Emergency vehicle and park ranger access would remain over the existing rock ford crossings within San Anselmo Creek through the detachable sections of split rail fencing.

Once the trails are incorporated into the MCOSD trail system, they would be maintained by MCOSD staff. As the trails are designed to improve existing trail sustainability, this level of maintenance is expected to be low and similar to existing trail maintenance. Regular maintenance of the trail surface and drainage includes brushing the trail corridor and clearing trail obstructions, such as fallen trees and tree branches, as needed. As part of the 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.

Project Design Features

The MCOSD would design the project and plan the construction in compliance with the RTMP. Appendix A of this document contains a list of all BMPs incorporated into the project. The following trail design features have been incorporated into the project design.

Figure 7 shows a typical grade reversal for trail drainages

Figure 8 shows a typical Rock Armored Swale typical trail drainage

Figure 9 shows a typical rock spillway for drainage dip or cross drain

Figure 10 shows a typical rock spillway for culvert outlet

Figure 11 shows a typical rock retaining wall

Figure 12 shows a typical trail profile wall

Figure 13 shows a typical insloped turn

Figure 14 shows an 8 percent average grade trail

Figure 15 shows a typical outsloped trail

Figure 16 shows typical knicks for trail drainage

Figure 17 shows typical rolling drainage dips for trail drainage

Figure 18 shows a typical chicane

Figure 19 shows a typical split rail fence

Permits and Approvals

The proposed project incorporates requirements included in the Memorandum of Understanding between the MCOSD and the Town of Fairfax. The proposed project requires the following permits and approvals, which would be obtained prior to construction:

- U.S. Army Corps of Engineers, Section 404 of the Clean Water Act
- 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

PROJECT DEVELOPMENT

Preliminary Trail Report

A preliminary trail report that included the proposed project was prepared by Timothy C Best, CEG Engineering Geology and Hydrology in 2013. MCOSD representatives met with neighbors on-site in December 2013, and during this meeting, the possibility of vehicular bridges across the creek was eliminated from further consideration. The preliminary trail report was utilized during the RTMP trail designation process, a process that included public outreach and public comment. The designation process for Region 2 occurred in late 2015 and included a public workshop held on October 3, 2015 and a Region 2 Designation Meeting on November 30, 2015.

Project Proposal

The proposed project originated as a proposal submitted to MCOSD for consideration by Friends of Corte Madera Creek Watershed and the Marin County Bicycle Coalition on April 14, 2016. The purpose of this meeting was to provide the community with information on project planning and hear public comments. Additionally, Daniel Logan a Fishery Biologist from the National Marine Fisheries Service presented information on San Anselmo Creek fish populations and the benefits of reduced erosion and sedimentation expected of the proposed project. After MCOSD reviewed the proposal as required by the RTMP and accepted it as a project, A public meeting on the project was held at the Fairfax Women's Club on September 8th, 2016. The purpose of this meeting was to provide the community with information on project planning and hear public comments. Additionally, Daniel Logan a Fishery Biologist from the National Marine Fisheries Service presented information on San Anselmo Creek fish populations and the benefits of reduced erosion and sedimentation expected of the proposed project. The proposal was evaluated and scored using methodology approved as part of the RTMP and then accepted as a proposed project.

Town of Fairfax Memorandum of Understanding

In December 2016, the proposed project was presented to the Fairfax Town Council in open session to seek authorization to proceed. Authorization form the Fairfax Ton Council is needed because most of the project area is located within the Elliott Nature Preserve portion of the Cascade Canyon Open Space Preserve. The Elliot Nature Preserve was transferred to the MCOSD in 1987 from the Town of Fairfax, however the Town of Fairfax retains approval authority over any improvements within this portion of the

Cascade Canyon Open Space Preserve through a deed restriction. At this meeting, the Fairfax Town Council voted to approve a Memorandum of Understanding (MOU).[9]

Consistent with the requirements of this deed restriction, the MOU provides that the Town of Fairfax *"…expressly consents to the proposal to construct two non-vehicular bridges across San Anselmo Creek along the Cascade Fire Road, replace one bridge across Carey Camp Creek,[10] designate a portion of the Canyon Trail for multiple use, and decommission the High Water Trail within the Elliott Nature Preserve portion of the Cascade Canyon Open Space Preserve."* The MOU also specified certain design features which the MCOSD agreed to incorporate into the subsequent planning for the project, including:

a. The installation of "No Bike" signs at the intersections of the re-designated portion of Canyon Trail, where bicycles will be allowed, at the intersection with the Carey Camp Trail, at intersection of the unaffected portions of the Canyon Trail upon which bicycles will not be allowed, and any other trail where bicycles are not allowed. The signs will inform users that bicycles are not allowed on these other trails. The MCOSD will also install a sign at the west end of the Canyon Trail where it intersects with the Cascade Fire Road informing users that they are on a shared-use trail and requesting that bicyclists ride slowly.

b. The implementation of bicycle speed-control measures, including chicanes, along the re-designated portion of the Canyon Trail.

c. The installation of a bike rack near the main entrance of the preserve, at the end of Cascade Drive.

d. Project design features or signs that will direct users away from the creek fords and towards the new bridges.

e. An agreement to monitor trail visitation following implementation and to employ an adaptive management strategy to any issues that may emerge.

Figure 20 is from the MCOSD – Town of Fairfax MOU

Additional Outreach

The design of the proposed project was also informed by members of the community. MCOSD engaged the community through a series of stakeholder meetings and field visits to further facilitate the opportunity for feedback about the proposed project. In addition to the above described outreach, there have been several other conversations between Marin County Parks and various stakeholders on this topic involving stakeholders.

Environmental Round Table

The MCOSD Environmental Round Table 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 Round Table is to facilitate a natural resources focused discussion and exchange of ideas between MCOSD and the environmental community as it relates to natural resources management and project development. The proposed project has been presented at Environmental Round Table meetings regularly throughout the past three years, supplemented by a site visit on May 14, 2019. The Environmental Round Table has expressed general support for the proposed project because the improvements would support the project objectives. Some representatives have expressed concern regarding vegetation removal, particularly tree removal, and construction-related impacts to northern spotted owl due to equipment noise. To address these concerns, the orientation of

[9] Memorandum of Understanding Between the Town of Fairfax and the Marin County Open Space District. May 23, 2017. Op Cit.

[10] The Carey Camp bridge is not included as part of the proposed project.

Bridge 1 was modified to reduce tree removal, and the timing of project implementation has been limited to avoid nesting season for northern spotted owl.

Marin County Parks and Open Space Commission
The Parks and Open Space Commission advises the Marin County Board of Supervisors regarding parks and open space policy and conducts public hearings on parks and open space matters considered for recommendation to the Board when appropriate. There are seven members appointed by the Board, each having demonstrated expertise and interest in subject areas and disciplines beneficial to the county's provision of parks and open space stewardship, facilities, programs and services. MCOSD staff have presented the proposed project at three Commission meetings. The Commission has expressed general support of the proposed project.

Marin Project Coordination Meetings
Marin County Stormwater Pollution Prevention Program (MCSTOPPP) holds monthly project coordination meetings to review and guide projects through the environmental and regulatory permit process. These informal meetings are intended to provide a forum for interaction and input from regulatory agency representatives to assist with project design and implementation to minimize impacts to natural resources. Input provided at MPC meetings does not replace the formal comments and input from regulatory agencies that are provided as part of the permit application process. Representatives from regulatory agencies including the United States Army Corps of Engineers, National Oceanic and Atmospheric Administration Fisheries, the San Francisco Regional Water Quality Control Board, California Department of Fish and Wildlife, the Bay Conservation and Development Commission, and County of Marin.

MCOSD staff have presented the proposed project at three MPC meetings and have supplemented these presentations with two site visits in December 2016 and February 2018. The MPC has expressed general support of the proposed project and has provided advice regarding the regulatory permits that MCOSD would need to obtain prior to initiating project implementation.

Neighborhood Outreach
In addition to a public meeting in 2016 and a site visit with Board member Katie Rice in 2017, MCOSD staff met with the neighborhood on November 5, 2018 to discuss foothill yellow legged frog protection and the proposed project. MCOSD staff met with neighbors via ZOOM in July 2020.

Town of Fairfax
MCOSD and Town of Fairfax staff have met on several occasions. The Fairfax Town Council approved the MOU discussed in the previous section.

Federated Indians of Graton Rancheria
MCOSD staff provided notification of project to FIGR on February 02, 2017 and asked if FIGR would like to initiate a consultation process pursuant to Assembly Bill 52. The notification satisfies RTMP BMP Cultural Resources-3: Tribal Consultation. FIGR provided an email confirming receipt of this notification but no further comments. MCOSD will include FIGR in the public notice for public review of this Initial Study.

Project Development Studies and Report

Engineering Geologic and Geotechnical Review.
In June 2018, Timothy Best, CEG prepared an *Engineering Geologic and Geotechnical Review* (Engineering Report) of the proposed project in association with Haro, Kasunich and Associates, Inc., Waterways Consulting, and Mayone Structural Engineering.[11] The purpose of Engineering Report was to evaluate the geologic, geotechnical and hydrologic conditions at the project site, and develop recommendations and design parameters for the proposed trail bridges and trail upgrades. The Engineering Report included review of available published and unpublished geologic literature of the area; topographic

[11] Best, Timothy C., CEG. June 2018. Op Cit.

site surveys of the two bridge sites; geologic and geomorphic field mapping; data analysis; and recommendations for design and construction of the proposed project. Recommendations including bridge locations and elevations, bridge abutments, bridge site grading, rock slope protection along the banks of San Anselmo Creek; site drainage; erosion control and water pollution prevention; fire road and trail surfacing; inspections; and decommissioning of the High Water Trail. These recommendations have been incorporated into the proposed project design.

Haro, Kasunich and Associates conducted a geotechnical investigation of the two proposed bridge sites to explore the surface and subsurface conditions at the site and develop geotechnical recommendations for the design and construction of the proposed bridge foundation system. The recommendation to utilize concrete spread footings offset from the edge of San Anselmo Creek instead of deep-pier foundations resulted from this investigation and has been incorporated into the project design. The geotechnical investigation determined that deep-pier foundations would be difficult to drill through the rocky soils located at the bridge sites and would result in greater environmental impacts than would concrete spread footings.

Waterways Consulting conducted a hydrologic and hydraulic analysis to quantify flow rates, associated water surface elevations, and other parameters associated with the 100-year return period storm event along San Anselmo Creek. This analysis included exploratory test pits to evaluate subsurface deposits. The hydrologic and hydraulic analysis concluded that the 100-year flood elevation at the proposed Bridge 1 location to be at elevation 194 and at 207.2 at the proposed Bridge 2 location. At both proposed bridge locations, flood waters are contained within the active channel banks of San Anselmo Creek. These findings are consistent with the Flood Emergency Management Agency's (FEMA) flood insurance maps and MCOSD field staff observations. The Bridge 2 site is located within the FEMA designated Zone A special flood hazard area, though the base flood elevation has not been determined for this site. The bottom of both proposed bridges would be a minimum of three feet above the 100-year flood elevation, which would be elevation 198 for proposed Bridge 1 and elevation 210 for proposed Bridge 2.

Mayone Structural Engineering, Inc. analyzed structural elements for the two bridges and recommended the bridge structures be prefabricated single span steel. This recommendation has been incorporated into the project design and is included on the project plans.

The Engineering Report concluded that the proposed bridges are located in a geologically active area as the project area is in close proximity to the San Andreas Fault Zone, a major potential source of severe seismic shaking. High ground accelerations would be expected during a large earthquake on this fault or other nearby faults. To mitigate for this potential hazard, the proposed bridges and bridge abutments would be designed in accordance with the latest California Building Code (CBC) seismic design standards. Incorporating the recommendations included in the Engineering Report would reduce these potential risks to a level of less than significant for recreational trail use while at the same time minimizing environmental impacts. The primary goal of these recommendations is to protect health and safety, but not necessarily to avoid structural damage, since such design may be economically and environmentally prohibitive. Damage to the proposed bridges could occur in the event of extreme seismic shaking and/or runoff events and subsequent repairs would then be necessary. The Engineering Report determined there is no evidence of recent shallow or deep-seated landsliding were observed in the immediate vicinity of the proposed bridge locations, and that the landslide hazard at the proposed bridge locations appears to be low. The risk of flood damage from a 100-year flood was also determined to be low.

Figure 21 is from the Engineering Report and shows the Project Area Geology

Figure 22 is from the Engineering Report and shows the Project Area Watersheds

Figure 23 is from the Engineering Report and shows the proposed Erosion Control Methods

Biological Resource Studies

The Cascade Canyon Bridges Project Biological Habitat Evaluation Report was prepared by Pacific Biology (Pacific Biology Report)[12] in 2018 to assess biological resources within the project area, evaluate potential impacts to these resources from the implementation of the study project, and recommend mitigation measures to reduce the effect of potential impacts to a less than significant level. Protocol-level surveys for special-status plants were conducted by Vollmar Natural Lands Consulting in 2017 and 2019.

The study area evaluated in the Pacific Biology Report included approximately 6-acres, including the project area and a surrounding area buffer. While the Pacific Biology Report describes the biological resources occurring or potentially occurring with the study area, only some portions of the study area would be disturbed by project-related improvements and activities. The Biological Resources section of the CEQA Checklist includes a broader summary of the Pacific Biology Report and biological resources within the project area.

Figure 24 is from the Pacific Biology Report and shows the Biological Resources Study Area

Figure 25 is from the Pacific Biology Report and shows the mapped plant communities

Figure 26 is from the Pacific Biology Report and shows the mapped special status species

Plant Communities

The Pacific Biology report mapped 25 plant communities[13] including urban development and water. For analysis purposes, the Pacific Biology Report then combined the plant communities into the following five plant communities based on the dominant overstory species, the names conforming to commonly accepted nomenclature of the Manual of California Vegetation[14] classification:

Valley Oak Woodland - approximately 39 percent
Annual Grassland - approximately 29 percent
Mixed Broadleaf Woodland - approximately 19 percent
California Bay Forest - approximately 9 percent
Coast Live Oak Woodland - approximately 4 percent

Sensitive plant communities are that are of limited distribution statewide or within a county or region. The California Department of Fish and Wildlife's List of California Terrestrial Natural Communities and the Manual of California Vegetation[15] indicate which plant communities are sensitive within the state of California classification. Within the study area, the Valley Oak Woodland and the California Bay Forest plant communities are considered sensitive plant communities. Valley Oak Woodland is ranked "S3G3" the Manual of California Vegetation, indicating it is rare or threatened within the state and globally. California Bay Forest is ranked "S3G4," indicating it is rare or threatened within the state and is a relatively common non-sensitive plant community within the global scale.

The study area includes riparian tree species along the edge of San Anselmo Creek, interspersed with the Valley Oak Woodland, Annual Grassland, and Mixed Broadleaf Woodland plant communities. For this reason, the Pacific Biology Report combined the Valley Oak Riparian and Valley Oak/Grass plant communities in the Valley Oak Woodland plant community. Wetland-associated plant species also occur within and along the margins of San Anselmo Creek, but do not form significant wetland habitat.

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[12] Pacific Biology. Cascade Canyon Bridges Project Biological Evaluation Report. September 2018

[13] Plant communities are groups of plants that share a common environment and interact with each other, animal populations, and the physical environment. Plant communities are generally defined by the dominant plant species, which is a method to organize biological information, creating mappable units for land management and conservation planning.

[14] Sawyer, John O., Todd Keeler-Wolf, and Julie M. Evans. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society Press.

[15] ibid

Additionally, almost the entire Mt. Tamalpais watershed, including the study area, is within designated critical habitat for the northern spotted owl.

At the Bridge 1 site, vegetation removal would include one 8-inch diameter at breast height (DBH) madrone sapling and some small areas of brush, confined to an area of less than 0.02 acre. One 6-inch DBH big leaf maple may be pruned to avoid damage when the bridge is swung into place. Tree roots may potentially be impacted during the excavation of the bridge footings for some of the larger trees by the south bridge abutment, including one 24-inch DBH oak and one 24-inch California bay laurel. Minimal excavation would be employed to avoid any unnecessary impacts to tree roots. No trees are would require removal at the Bridge 2 site although several trees may be pruned to avoid damage when the bridge sections are delivered. MCOSD would implement applicable RTMP BMPs to protect biological resources. The Pacific Biology Report recommended an additional mitigation measure to require MCOSD to replace and restore any sensitive or jurisdictional habitats disturbed by project implementation. This recommended mitigation measure is included in the Biological Resources section of the CEQA Checklist portion of this document. In combination with implementation of applicable RTMP BMPs, implementation of this mitigation measure would reduce potential impacts to a less than significant level.

San Anselmo Creek

The Cascade Canyon Open Space Preserve is located within the Corte Madera Creek Watershed, which includes the upper reaches of San Anselmo, Carey Camp, and Cascade creeks. Cascade Creek runs through the project area. San Anselmo Creek is perennial, meaning that water flows throughout the year. Within the project area, San Anselmo Creek has surface water during the rainy season and groundwater flow during the dry season. It is a 5th-order stream based on the Strahler method of establishing stream hierarchy, 5th order relating to the degree of separation from the headwaters by branching of higher order stems. San Anselmo Creek may include jurisdictional Waters of the State and Waters of the United States. Steelhead/rainbow trout *(Oncorhynchus mykiss)* are known to occur in San Anselmo Creek though there was no evidence of spawning detected during surveys conducted by MCOSD staff biologists during 2014-2018.

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. Special-status plant surveys were conducted on the study area on April 6, April 23, and June 26, 2017, March 8, April 10, and June 27, 2019. A total of 187 plant taxa[16] were identified within the study area, none of which are designated as special-status or otherwise considered to be rare. Given the negative survey results, no special-status plant species are expected to occur in the study area and implementation of the proposed project is not expected to negatively impact special-status plant species. MCOSD would incorporate applicable RTMP Special Status Plants BMPs, which were designed to minimize or avoid potential environmental 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. The Pacific Biology Report did not recommend additional mitigation measures associated with special-status plants.

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 Pacific Biology Report evaluated data collected and maintained by the MCOSD, a review of the CNDDB, and other sources. The

[16] 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.

Pacific Biology Report identified two special-status wildlife species that are known to occur within the study area and seventeen special-status wildlife species that have the potential to occur within the study area.

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

Central California coast steelhead *(Oncorhynchus mykiss irideus)*
Foothill yellow-legged frog *(Rana boylii)*

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

Marin Hesperian *(Vespericola marinensis)*
California giant salamander *(Dicamptodon ensatus)*
California red-legged frog *(Rana draytonii)*
Western pond turtle *(Actinemys marmorata)*
Cooper's hawk *(Accipiter cooperi)*
Oak titmouse *(Baeolophus inornatus)*
Olive-sided flycatcher *(Contopus cooperi)*
Yellow warbler *(Dendroica petechial brewsteri)*
"Marin" Chestnut backed Chickadee *(Parus rufescens neglectus)*
Northern spotted owl *(Trix occidentalis caurina)*
Pallid bat *(Antrozous pallidus)*
Western red bat *(Lasiurus blossevillii)*
Hoary bat *(Lasiurus cinereus)*
Long-eared myotis *(Myotis evotis)*
Fringed myotis *(Myotis thysanodes)*
Long-legged myotis *(Myotis Volans)*
Yuma myotis *(Myotis yumanensis)*

The MCOSD commissions Point Blue Conservation Science to conduct annual nesting and activity center surveys for northern spotted owls *(Strix occidentalis caurina)* and conducts steelhead *(Oncorhynchus mykiss)* spawning surveys. The MCOSD commissions Garcia and Associates to conduct surveys for foothill yellow-legged frog *(Rana boylii)* in the immediate project area.

Cultural and Historical Resources Studies

Holman & Associates prepared an *Archaeological Survey Report* (ASR) for the proposed project in 2019. It included a cultural resources literature search completed at the Northwest Information Center of the California Historical Resources Information System (CHRIS), initial Native American Consultation with the Native American Heritage Commission, an archaeological survey of the project area, and mapped the Area of Potential Effects (APE) required for the United States Army Corps of Engineers regulatory permitting process. The ASR will also assist with the Section 106 compliance process of the National Historic Preservation Act, as amended. The ASR satisfies the following RTMP BMP Cultural Resources-1: Historical and Archaeological Resource Mapping and Cultural Resources-2: Consultation with Northwest Information Center.

CHRIS records search identified no cultural resources within or adjacent to the Project APE. The entire APE had been previously studied, but only a small portion, approximately two percent, had been previously surveyed. Holman & Associates conducted a field survey on March 19, 2019. No cultural artifacts were identified and nor were there any indications of fossil soils in the creek's banks. No historic resources/or properties are listed on federal, state, or local inventories within or abutting the project. The Native American Heritage Commission responded that no resources were identified and provided a contact list of two people with the Federated Indians of Graton Rancheria. Holman & Associates did not recommend any additional work, and recommended that if buried, or previously unrecognized archaeological deposits or materials of any kind are inadvertently exposed during any construction activity, work within 50 ft. of the find shall cease until a qualified archaeologist can assess the find and provide recommendations for further

treatment, if warranted. Construction and potential impacts to the area(s) within a radius determined by the archaeologist shall not recommence until the assessment is complete. This recommendation has been incorporated into the proposed project through RTMP BMP Cultural Resources – 6: Construction Recovery Protocol and RTMP BMP Cultural Resources-7: Human Remains.

MCOSD AUTHORITY, MISSION, AND LEADERSHIP

The MCOSD is an independent legal entity and a special district operating pursuant to the California Public Resources Code, with 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)[17] (MCOSD, 2014a and 2014b). 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) tol 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.

[17] State Clearinghouse Number 2011012080

The RTMP covers six regions Within Marin County, and 34 open space preserves. Region 2, which includes the project site, covers the open space preserves listed below:

- French Ranch
- Maurice Thorner Memorial
- Roy's Redwoods
- Gary Giacomini
- Loma Alta
- White Hill
- Cascade Canyon

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 2 occurred in late 2015. The Region 2 Designation Workshop was held on October 3, 2015. Following the workshop, the public had an opportunity to view and comment on the proposed road and trail system for Region 2. The RTMP supersedes the 2005 Cascade Canyon and White Hill Open Space Preserves Draft Land Management Plan and associated Environmental Impact Report.

Figure 27 shows the MCOSD Preserves by RTMP Region

Figure 28 shows the Region 2 trail designations

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 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 the proposed Project would meet the accessibility trail design guidelines and is fully compliant with 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.

Cascade Canyon Open Space Preserve is classified as consisting of all four management zones Legacy Zone, Sustainable Natural Systems Zone, Natural Landscape Zone, Highly Disturbed Zone. The majority of the proposed project would occur within the Highly Disturbed and Legacy Zones.

Figure 29 shows the Region 2 VBMP classification

Figure 1 shows the Trail Map for Cascade Canyon and White Hill Open Space Preserves.

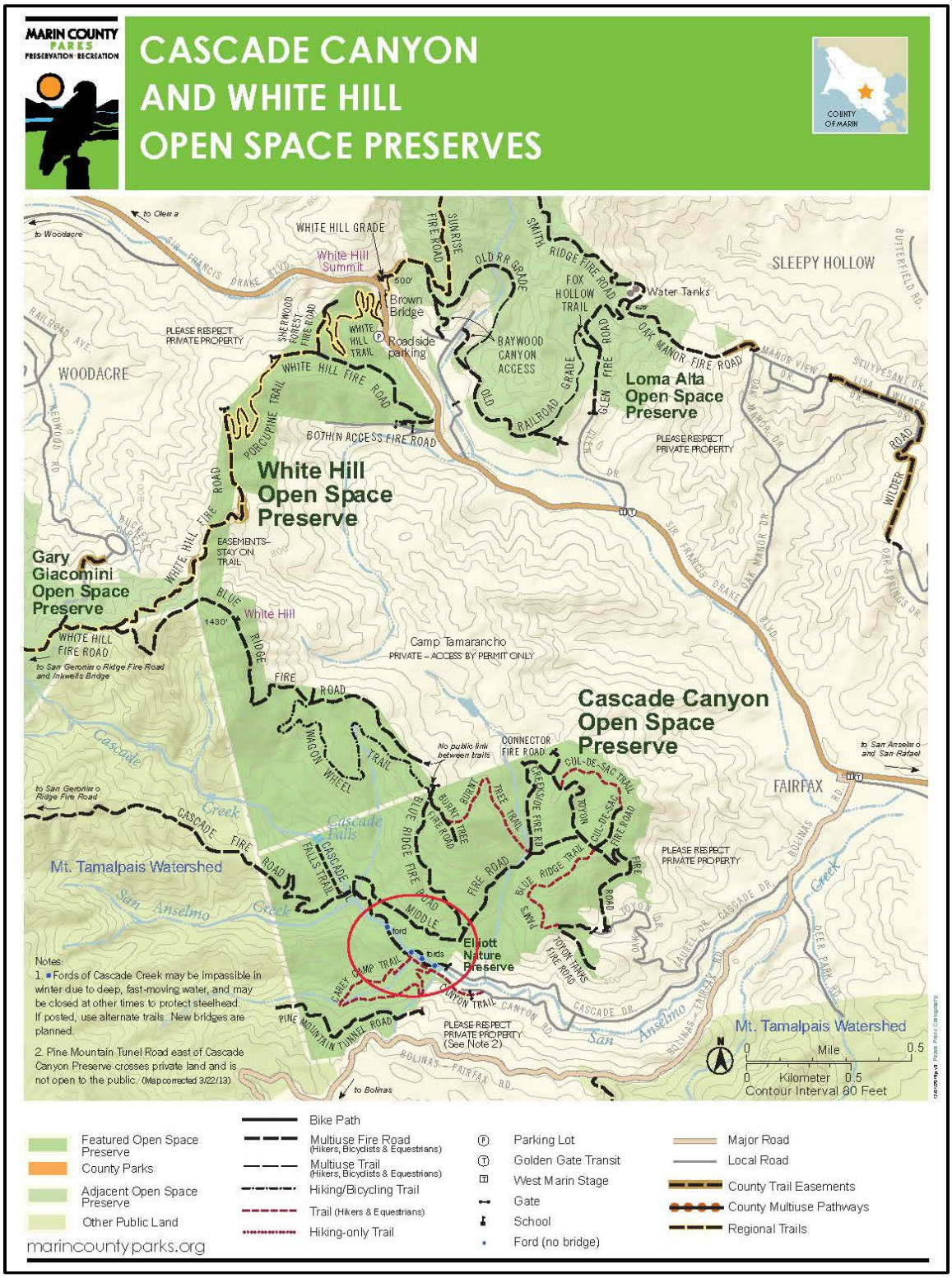


Figure 2 shows the Elliott Nature Preserve within the Cascade Canyon Open Space Preserve.

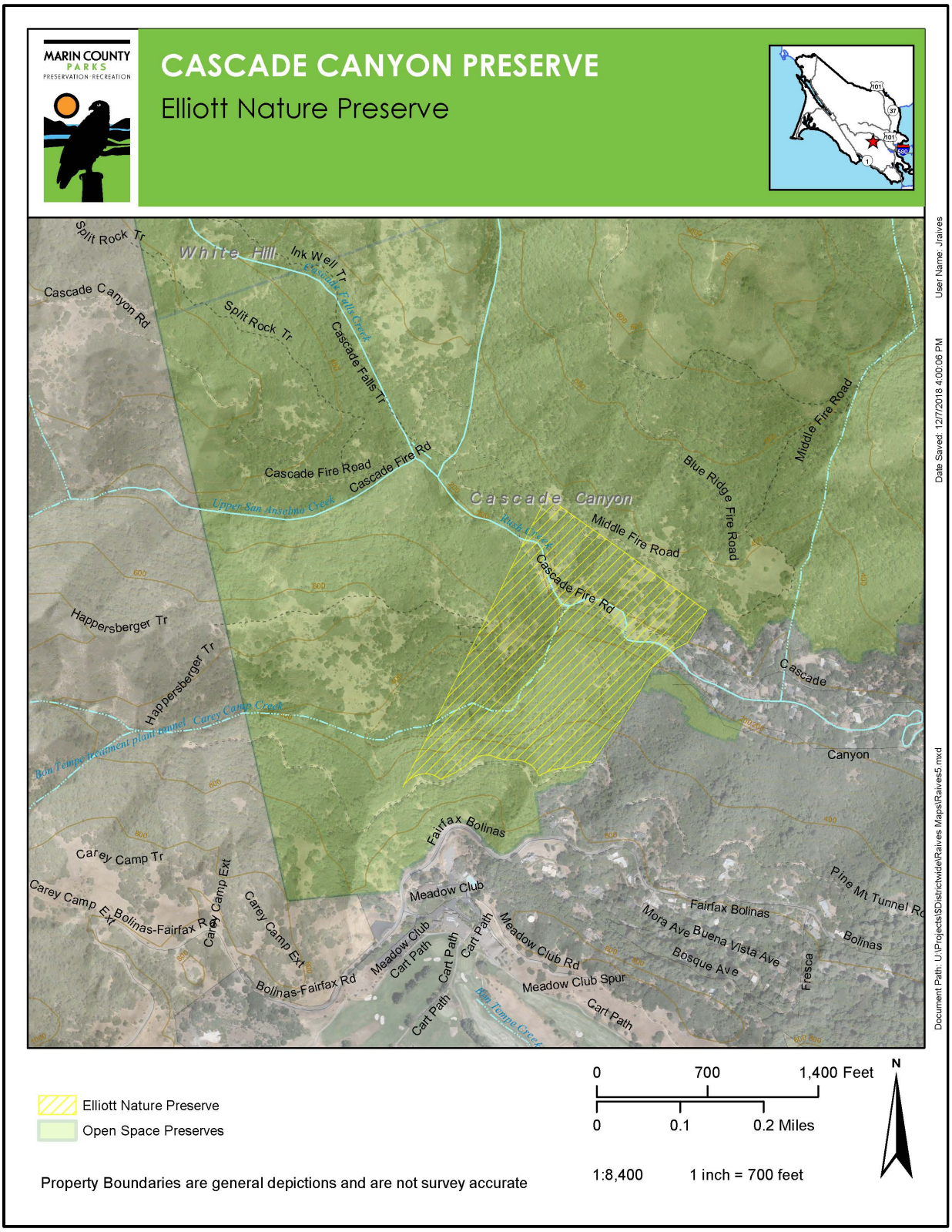


Figure 3 shows the Location of the Proposed Project Elements in Aerial View.

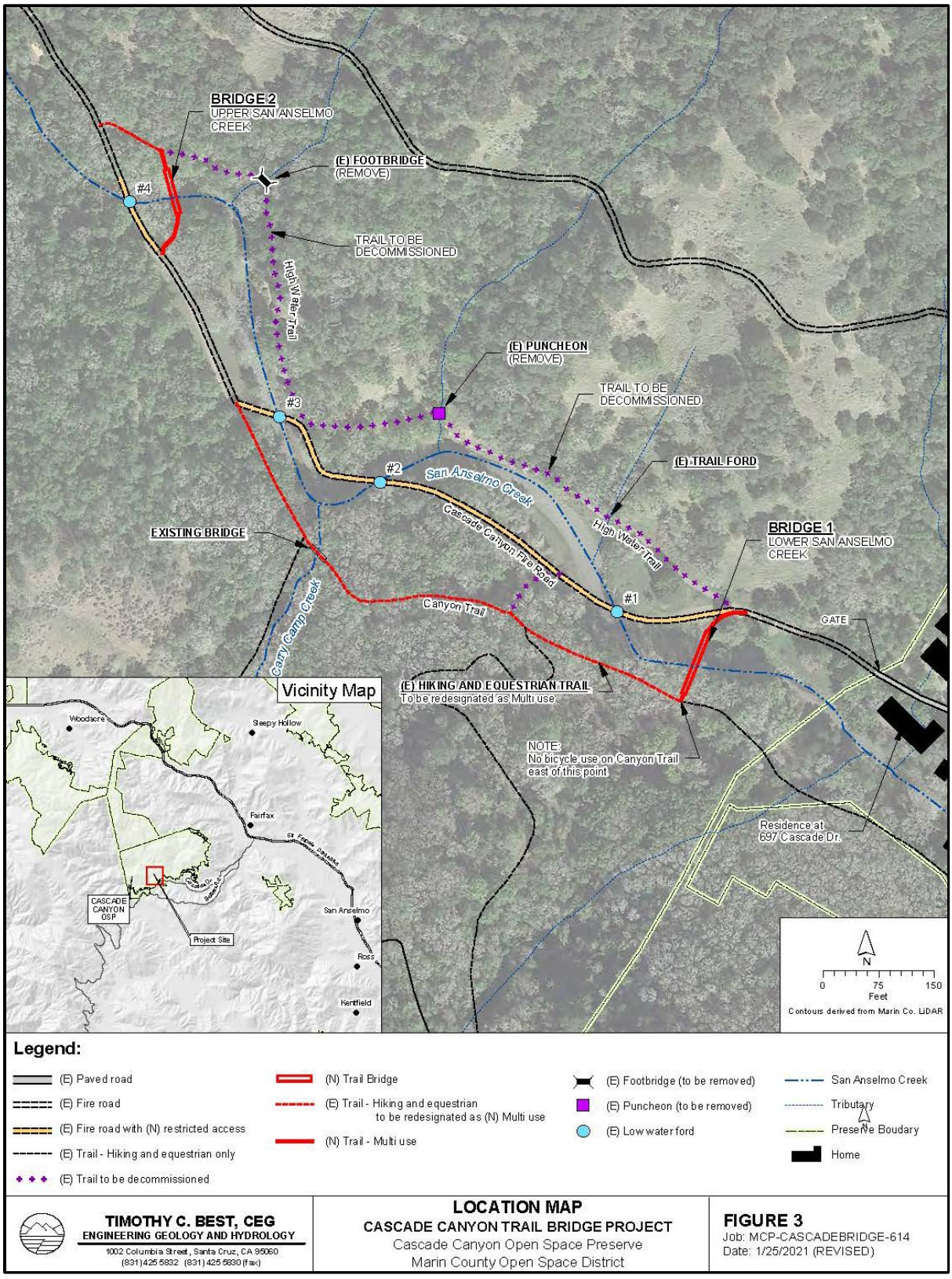


Figure 4 shows the Location of the Proposed Project Elements in Plan View.

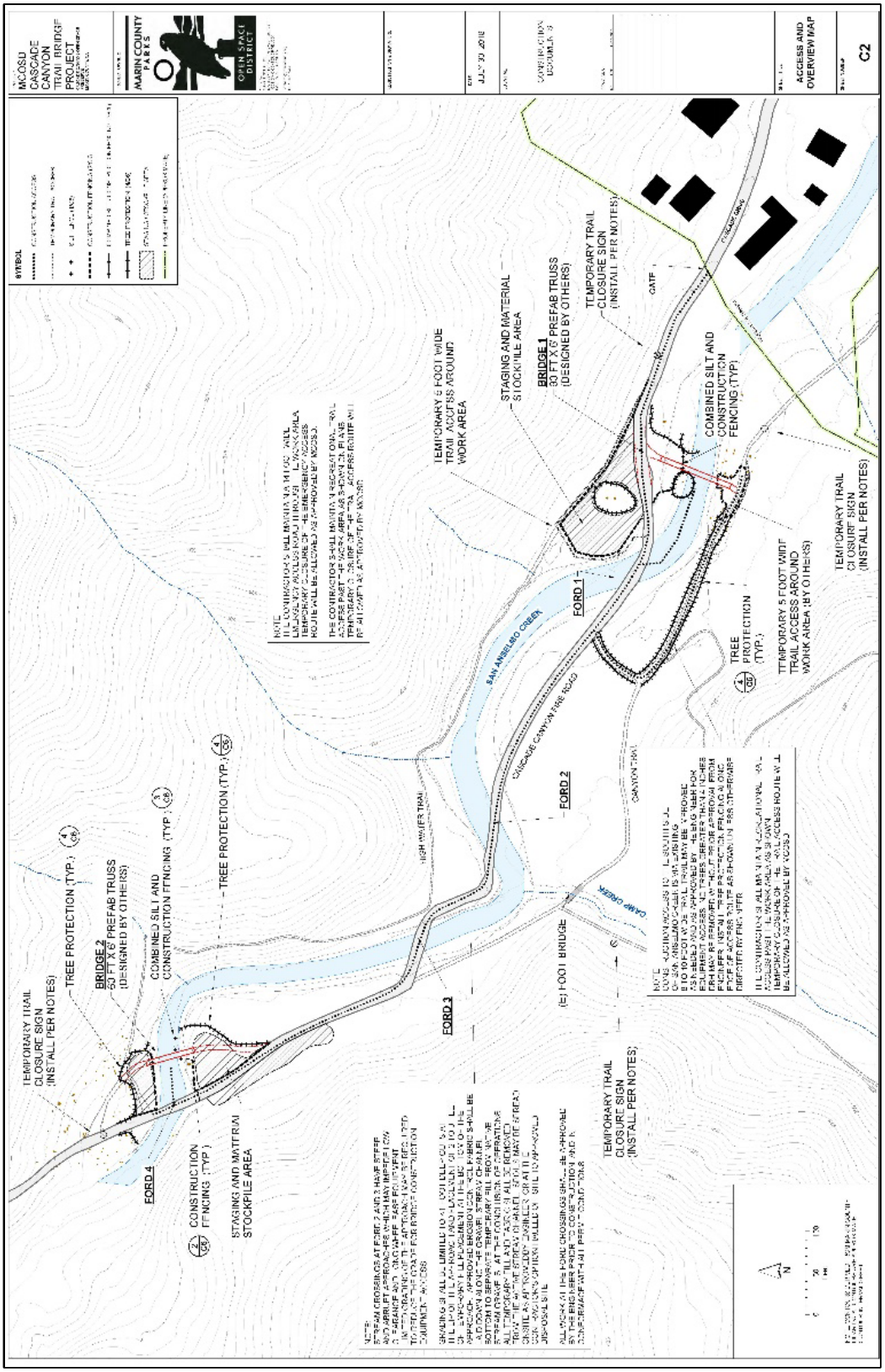


Figure 5 is the Proposed Bridge 1 Site Plan.

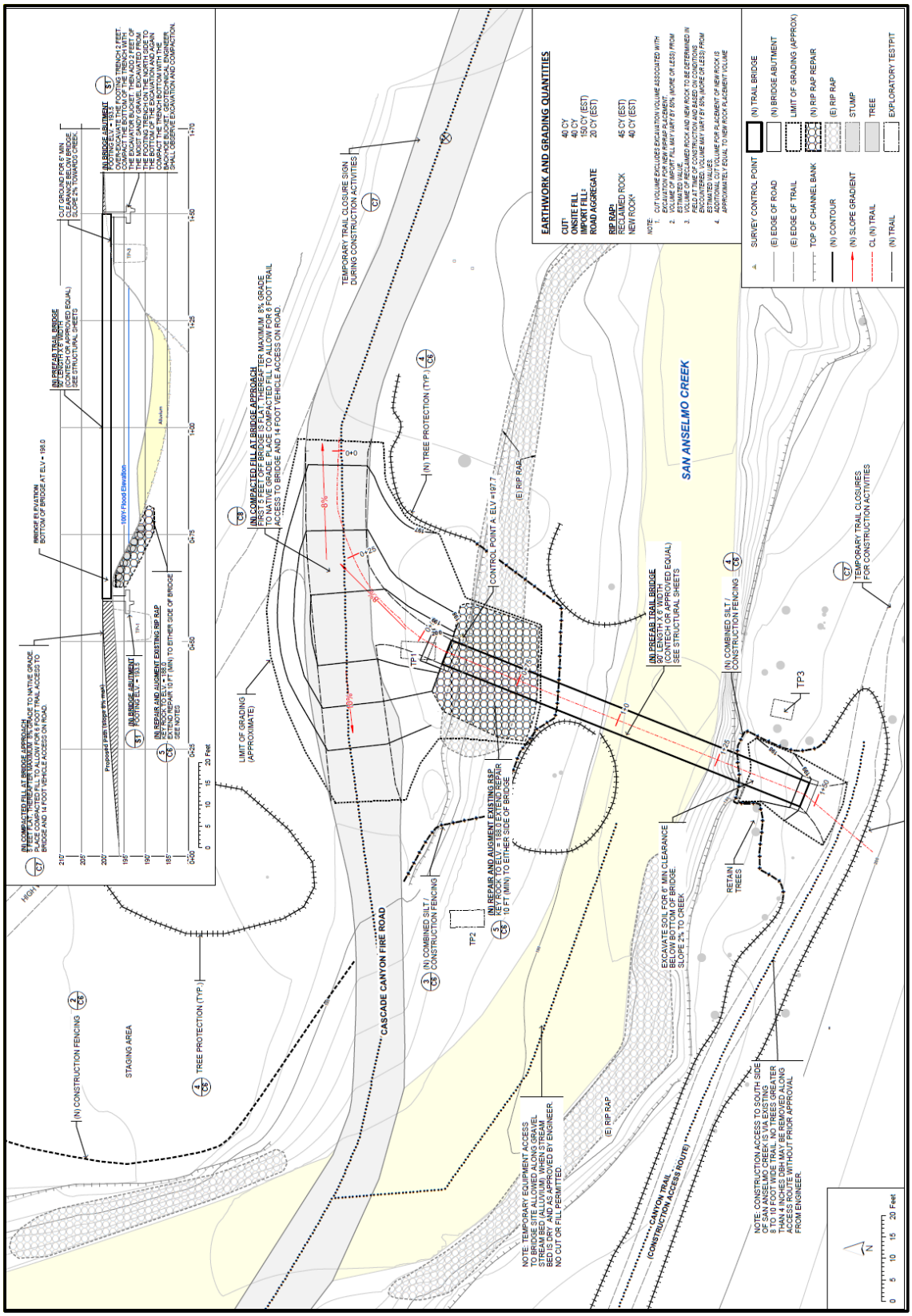


Figure 6 is the Proposed Bridge 2 Site Plan.

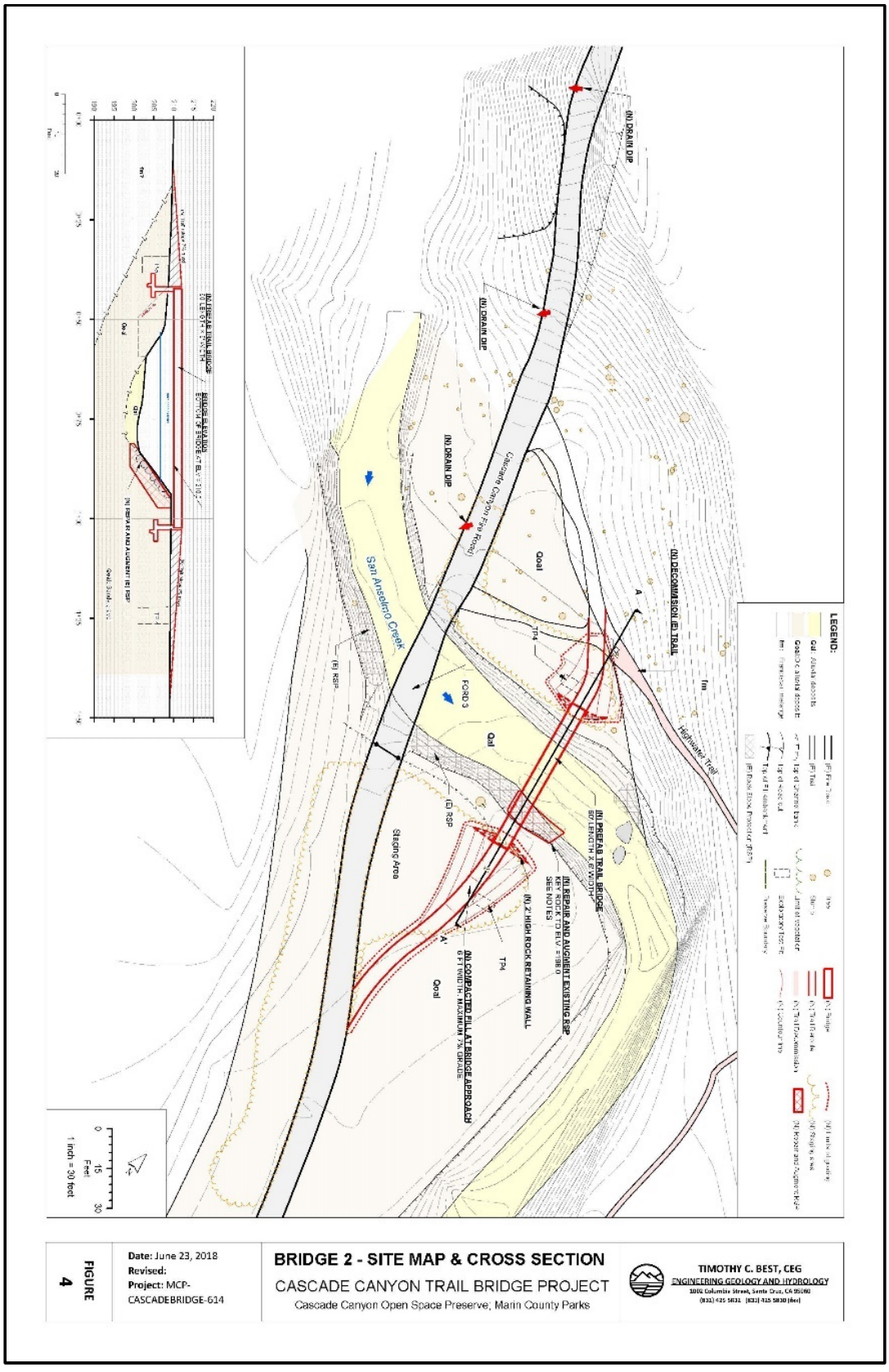


Figure 7 shows a Typical Grade Reversal for Trail Drainage.

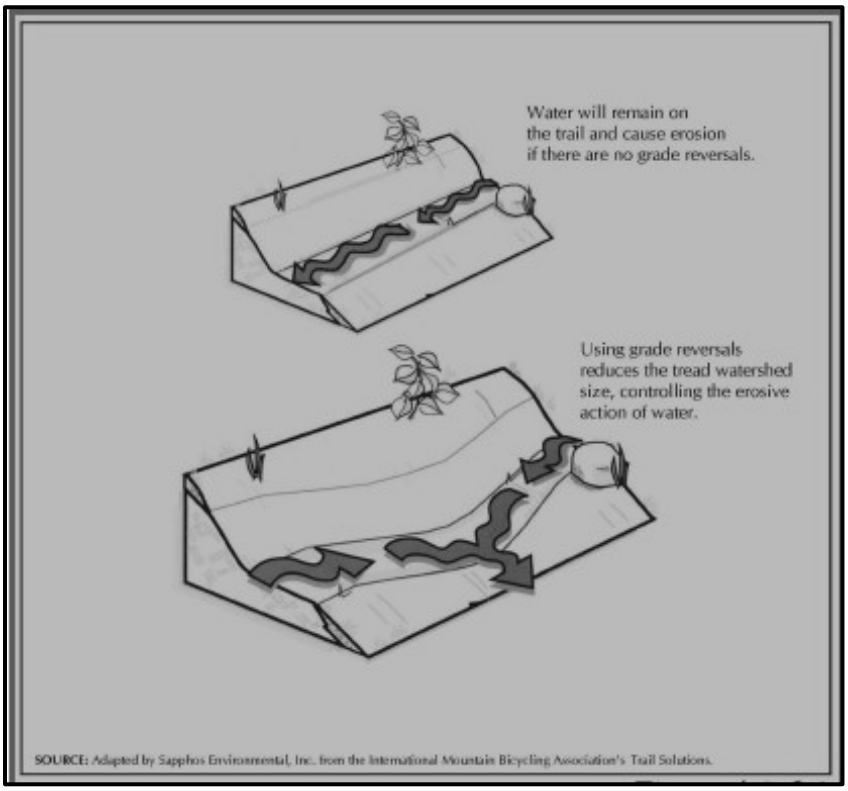


Figure 8 shows a Typical Rock Armored Swale for Trail Drainage.

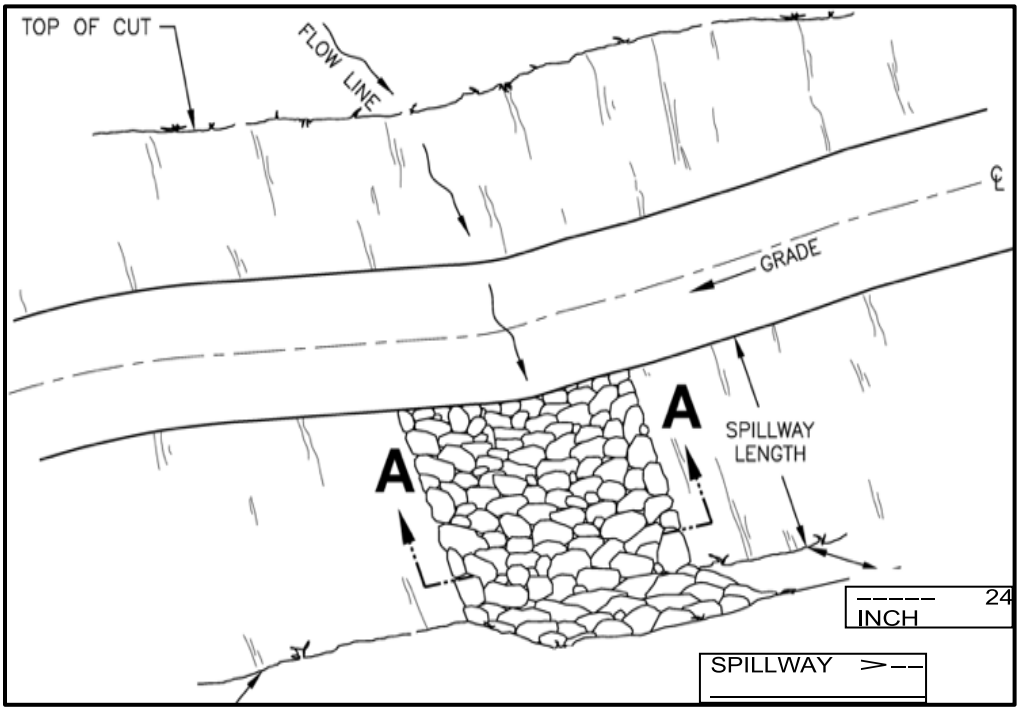


Figure 9 shows a Typical Rock Spillway for a Drainage Dip or Cross Drain.

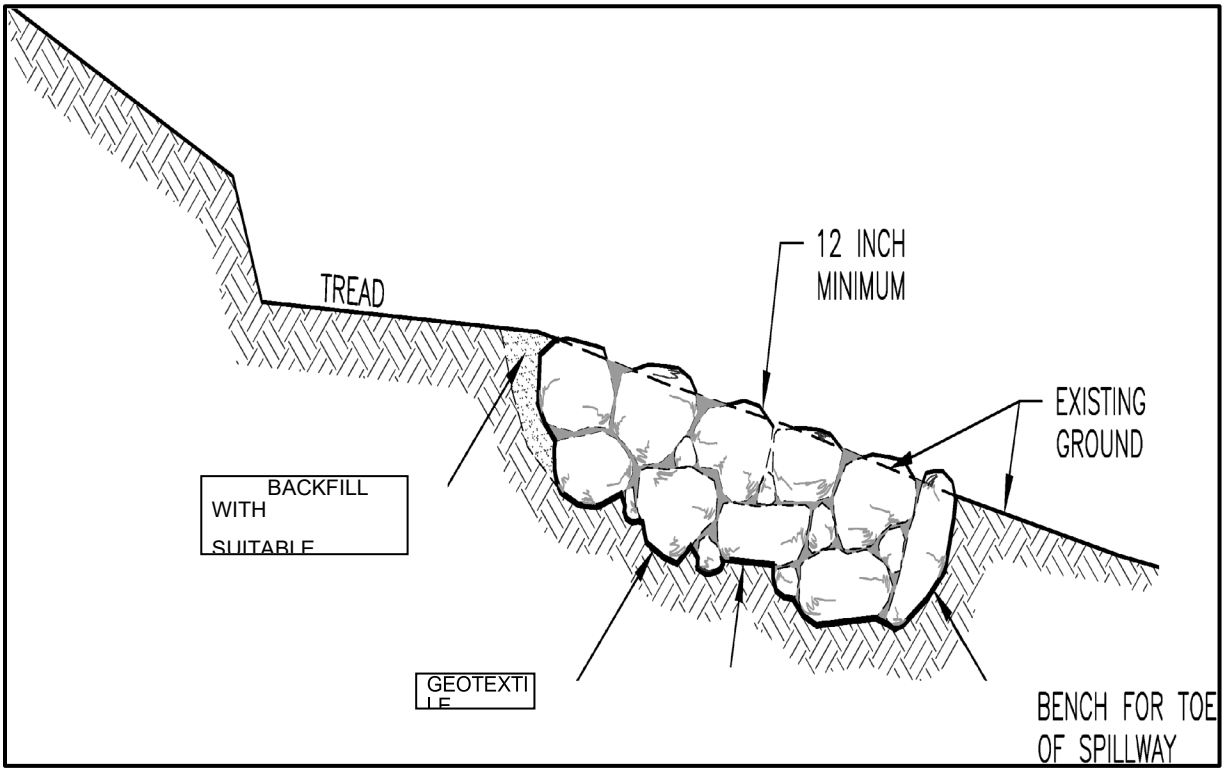


Figure 10 shows a Typical Rock Spillway for a Culvert Outlet.

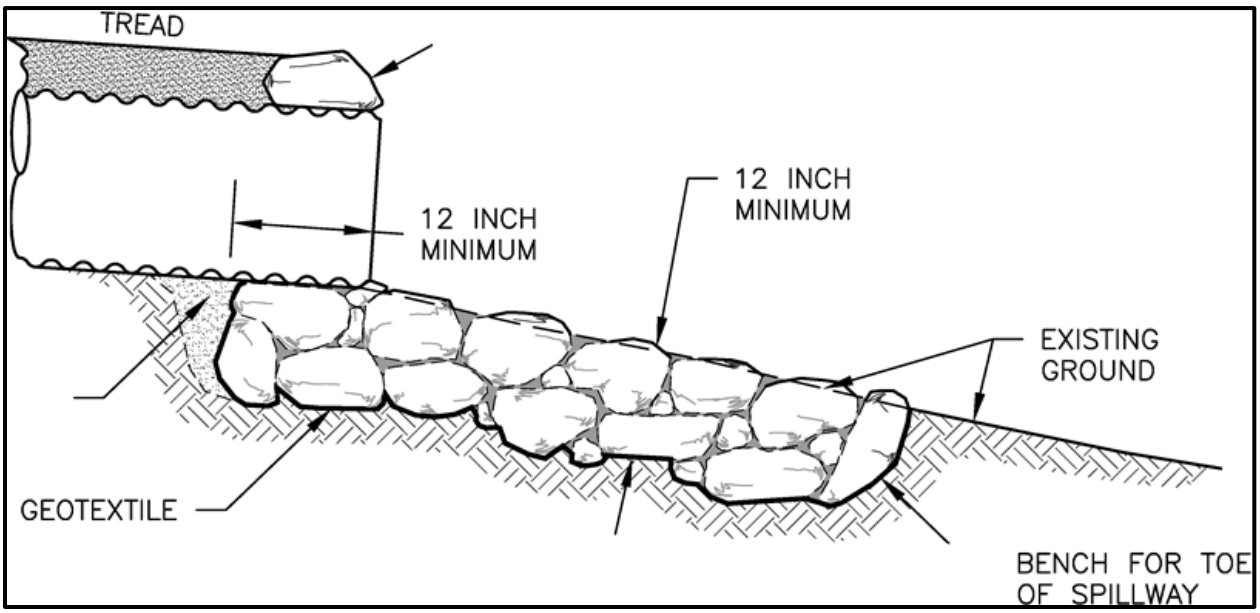


Figure 11 shows a Typical Rock Retaining Wall.

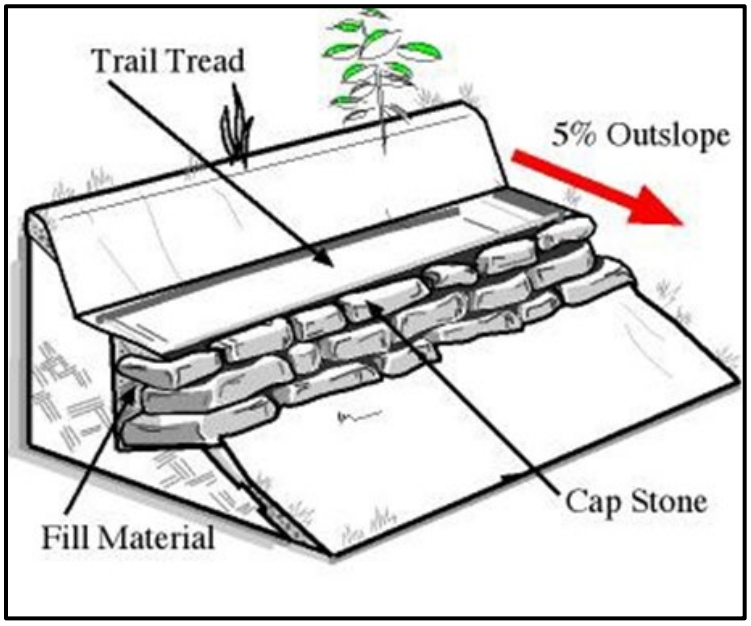


Figure 12 shows a Typical Trail Profile Wall.

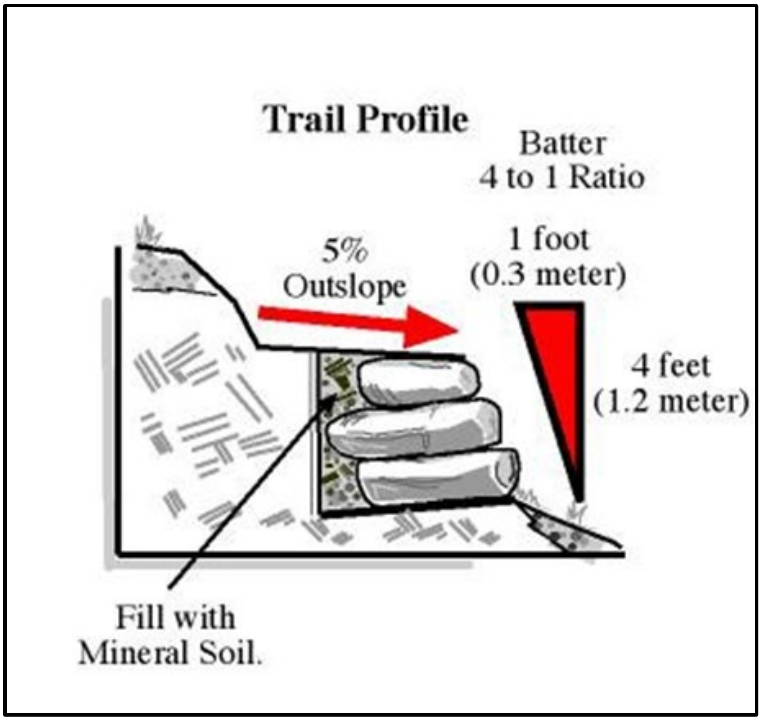


Figure 13 shows a Typical Insloped Turn

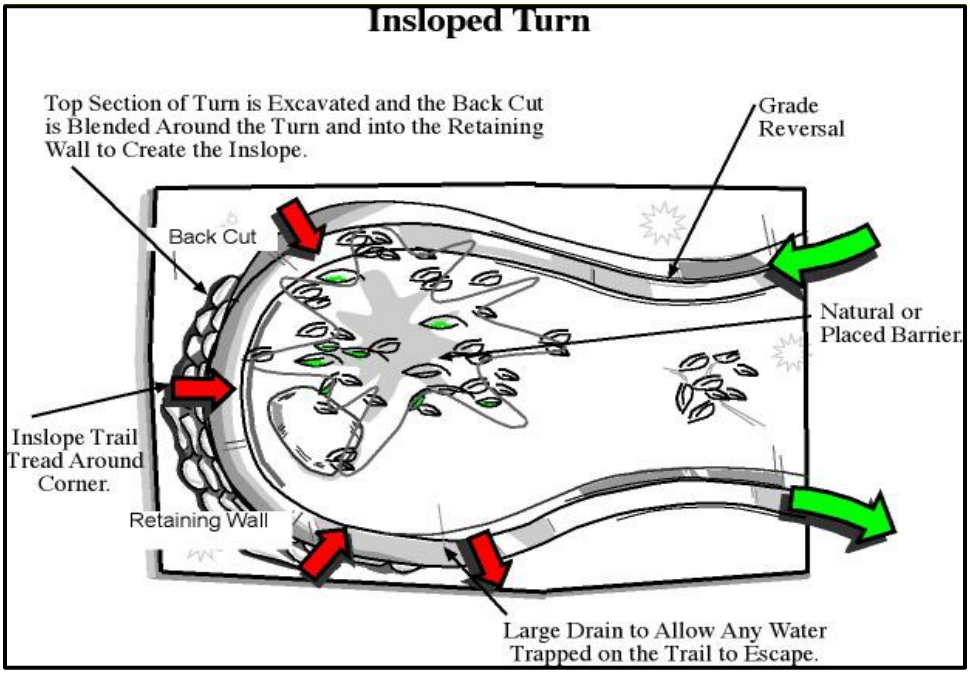


Figure 14 shows an 8 Percent Average Grade Trail.

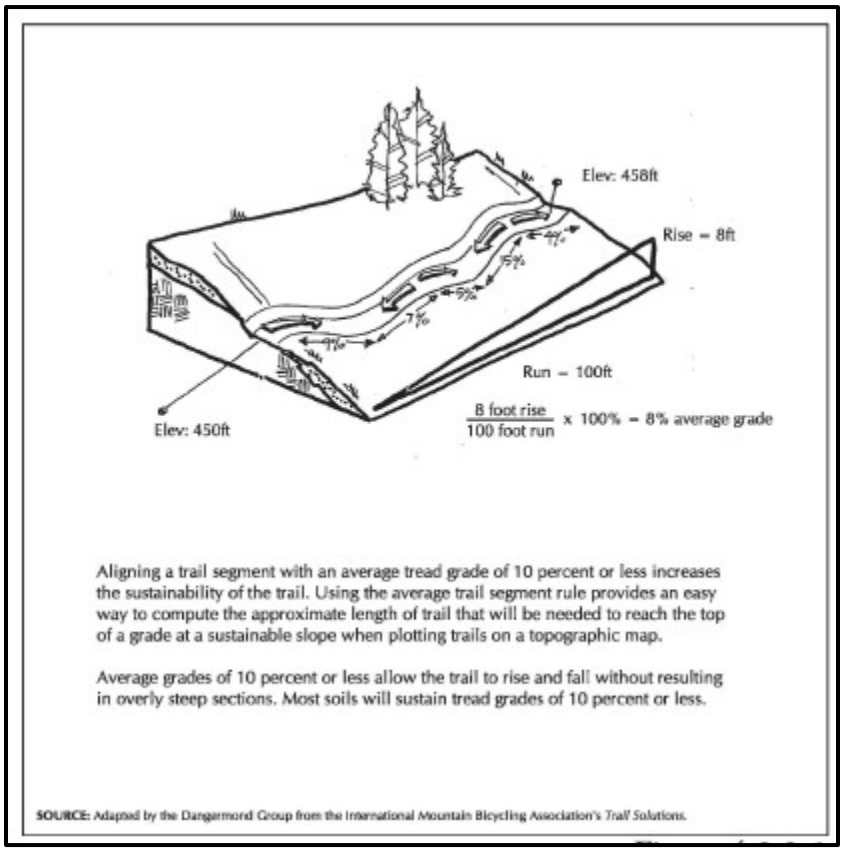


Figure 15 shows a Typical Outsloped Trail.

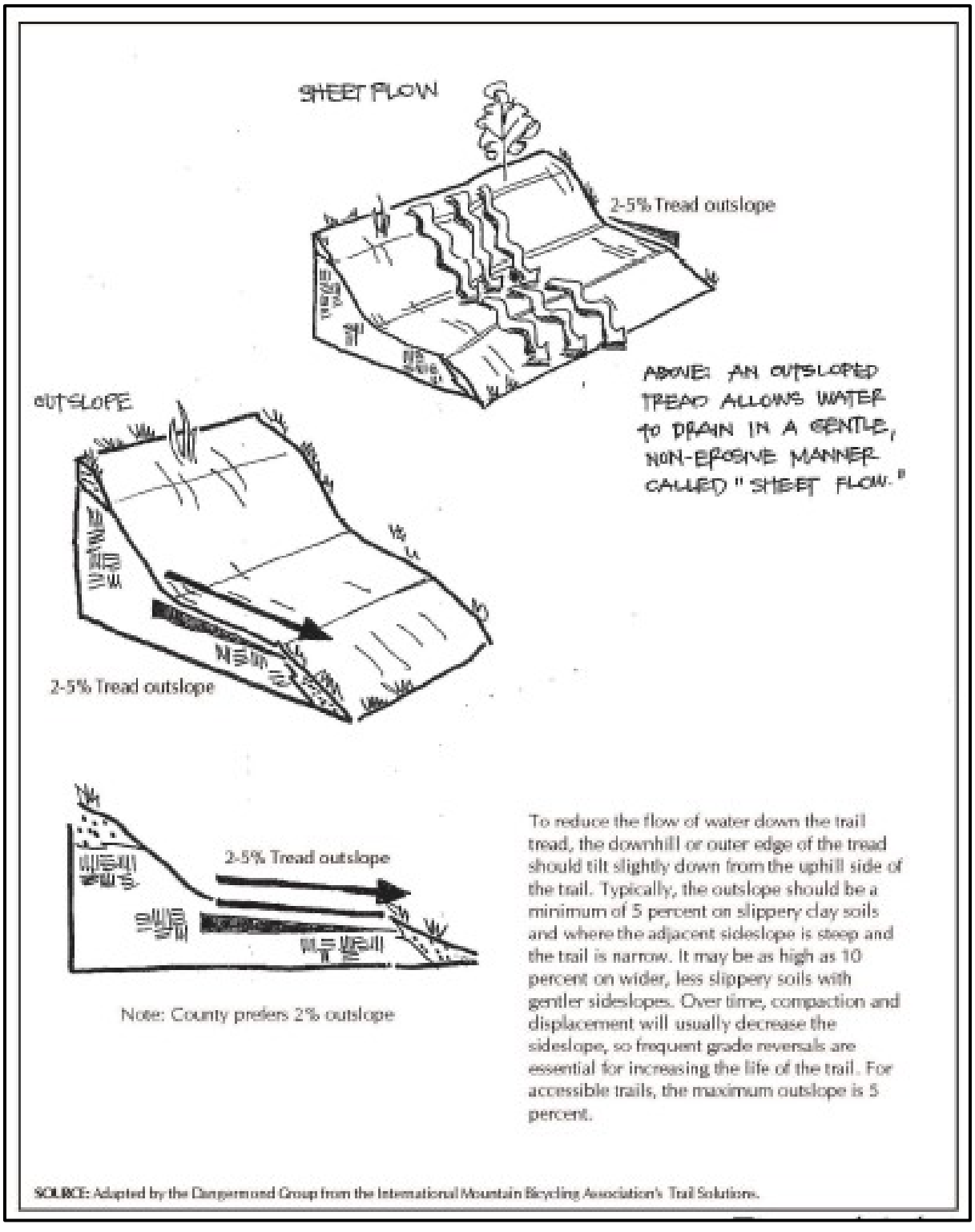
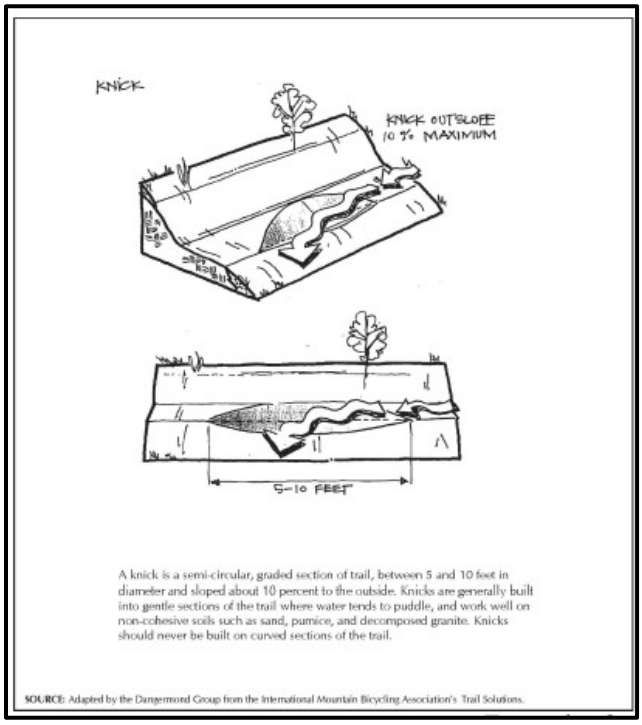


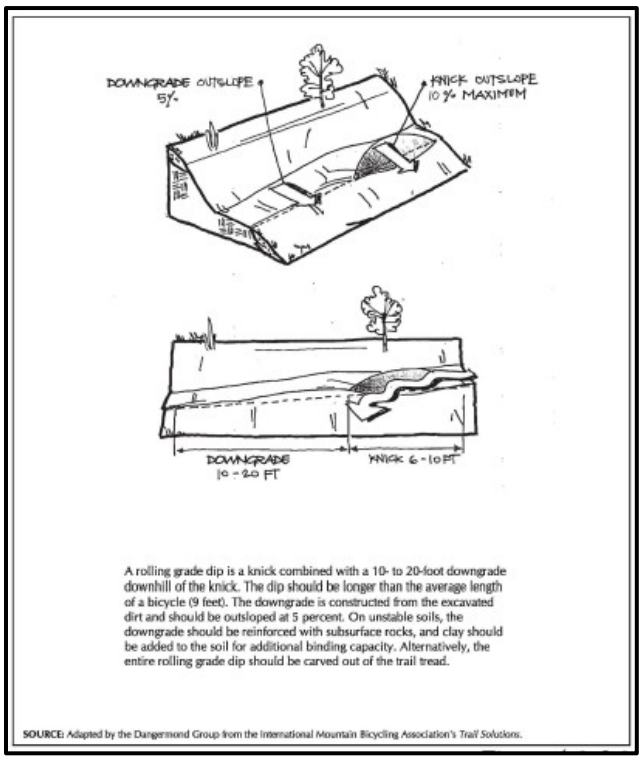
Figure 16 shows Typical Knicks for Trail Drainage.



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 17 shows Typical Rolling Drainage Dips for Trail Drainage.



A rolling grade dip is a knick combined with a 10- to 20-foot downgrade downhill of the knick. The dip should be longer than the average length of a bicycle (9 feet). The downgrade is constructed from the excavated dirt and should be outsloped at 5 percent. On unstable soils, the downgrade should be reinforced with subsurface rocks, and clay should be added to the soil for additional binding capacity. Alternatively, the entire rolling grade dip should be carved out of the trail tread.

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

Figure 18 shows Typical Chicanes.

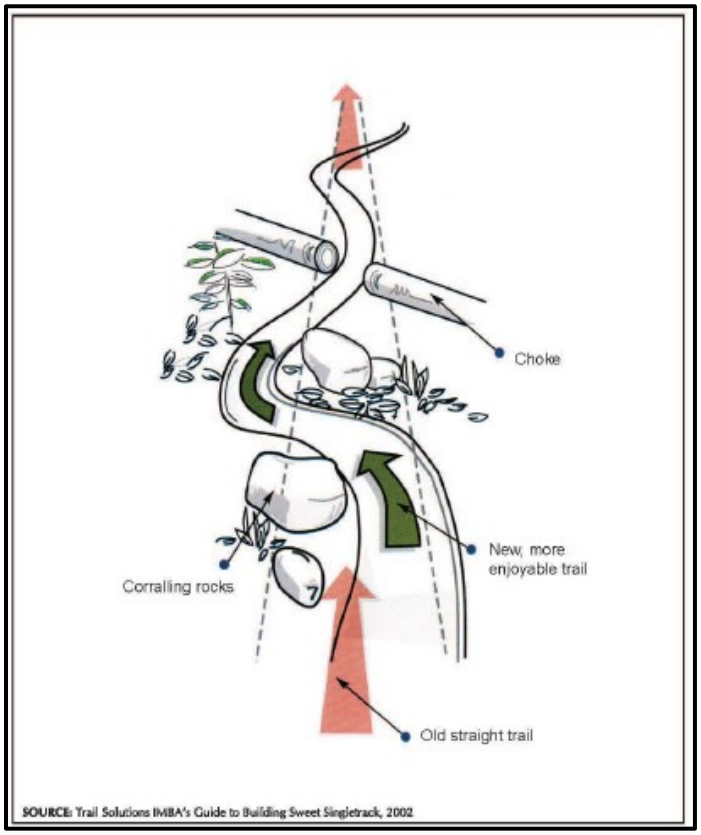


Figure 19 shows a Typical Split Rail Fence.

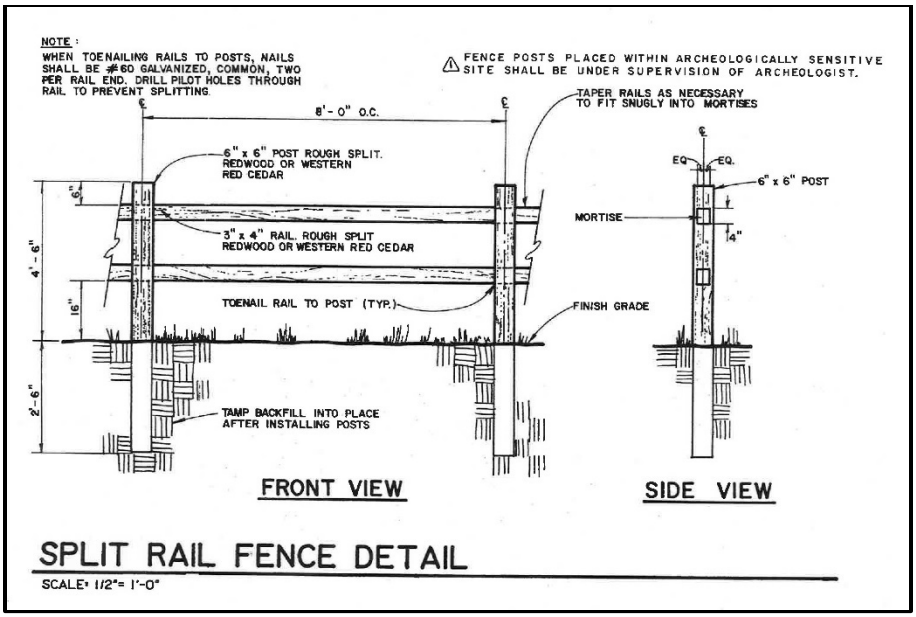


Figure 20 shows Elements of the Proposed Project Subject to the MCOSD -Town of Fairfax MOU.

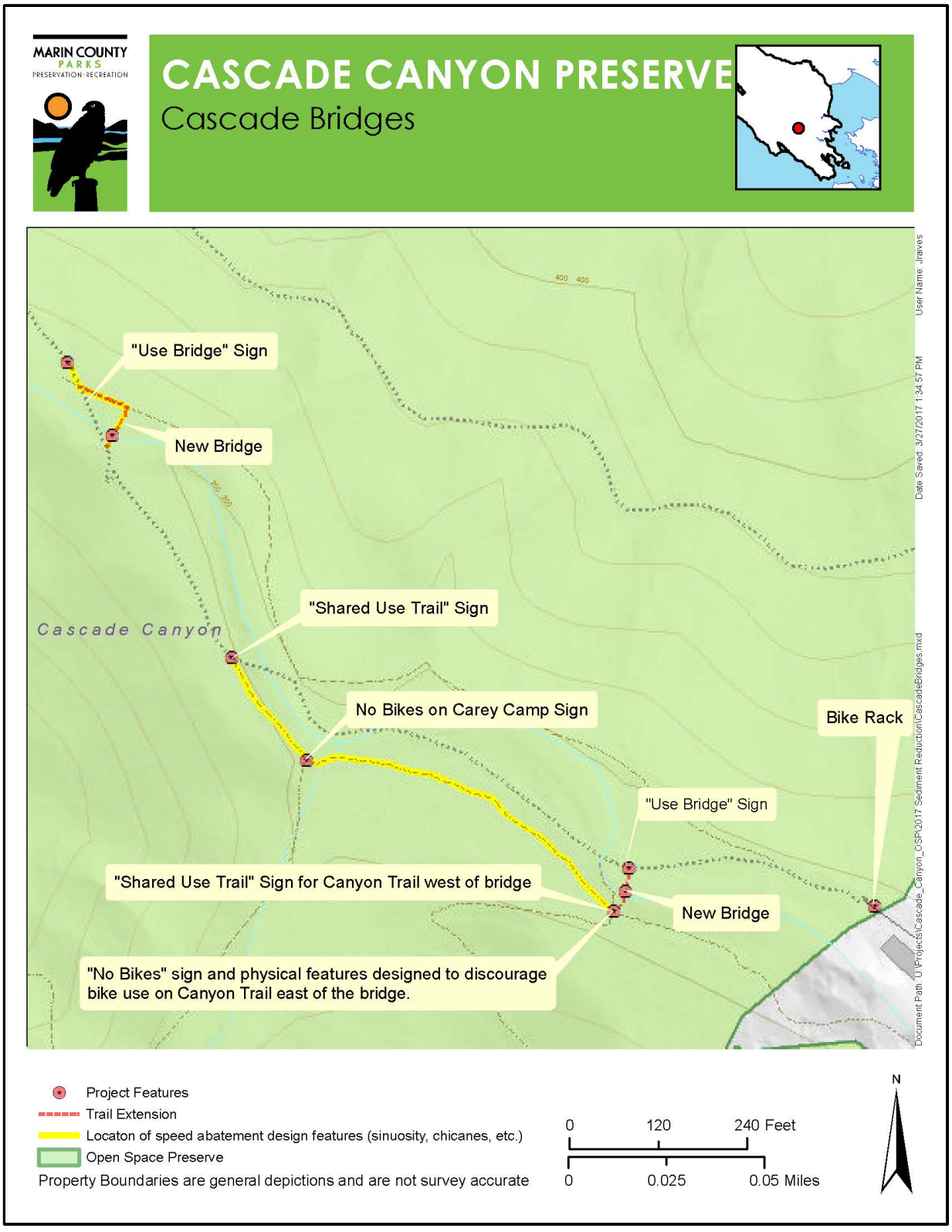


Figure 21 shows the Geology of the Project Area.

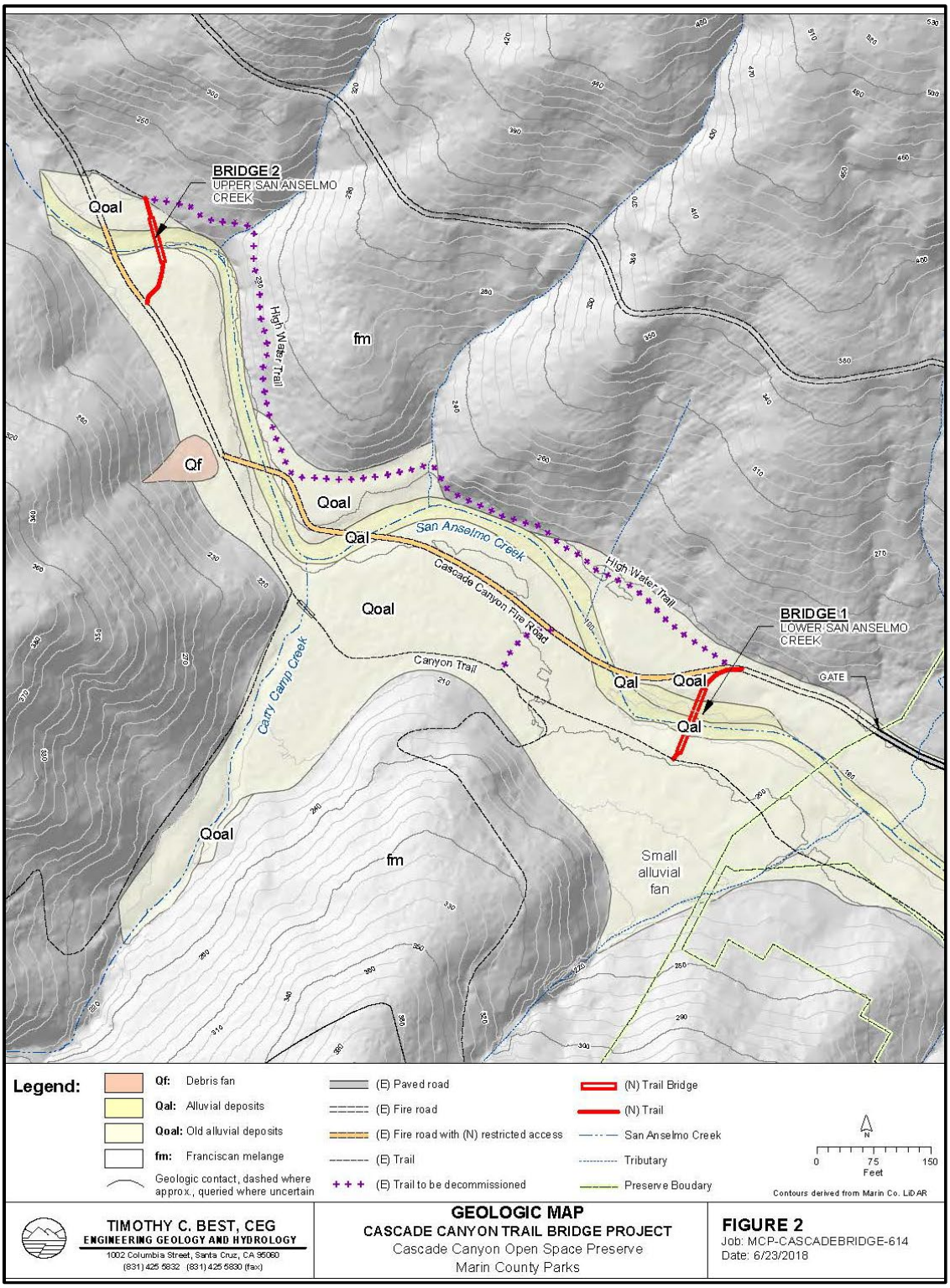


Figure 22 shows the Proposed Project Relative to Watersheds.

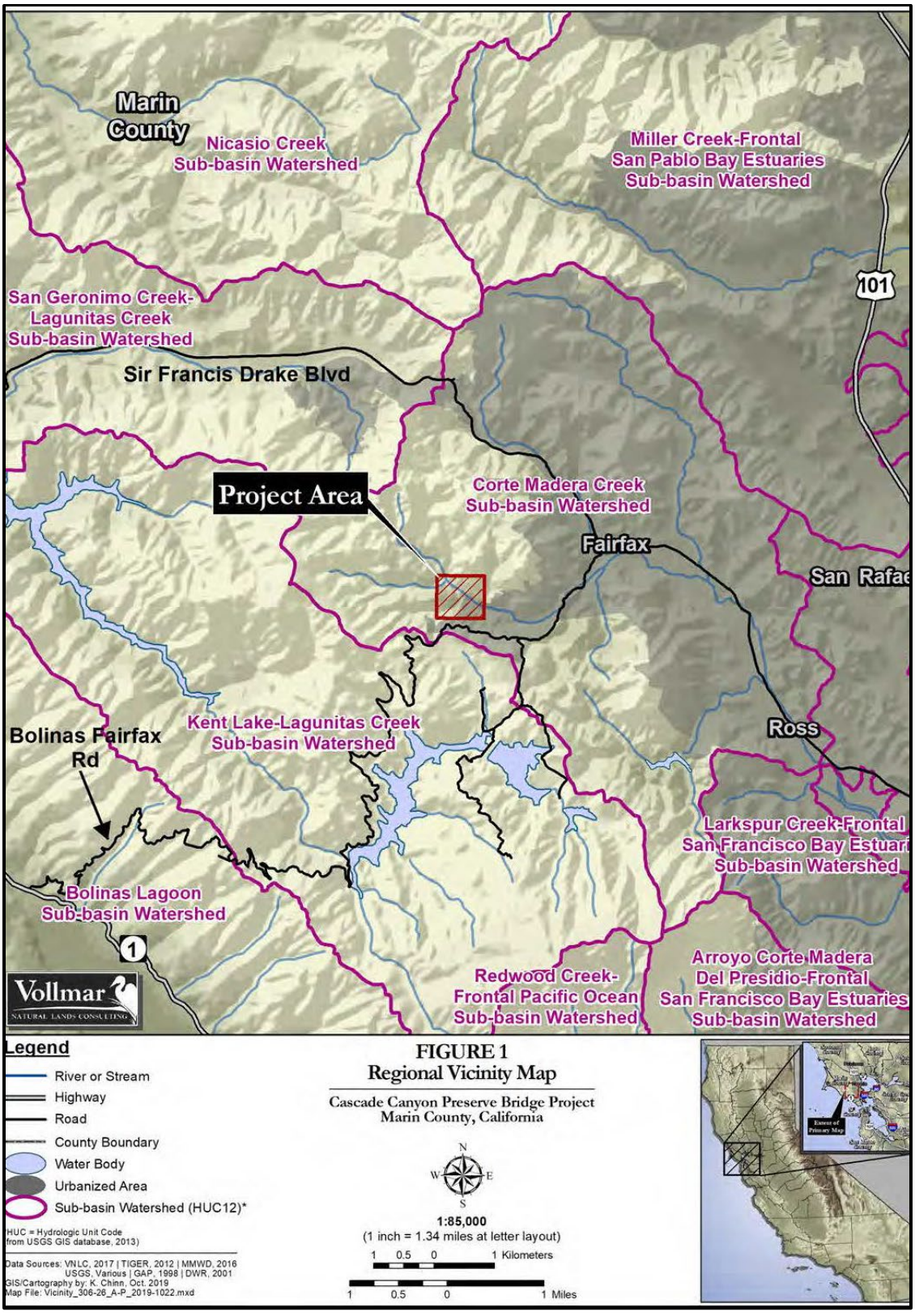


Figure 23 shows the Proposed Erosion Control Plan.

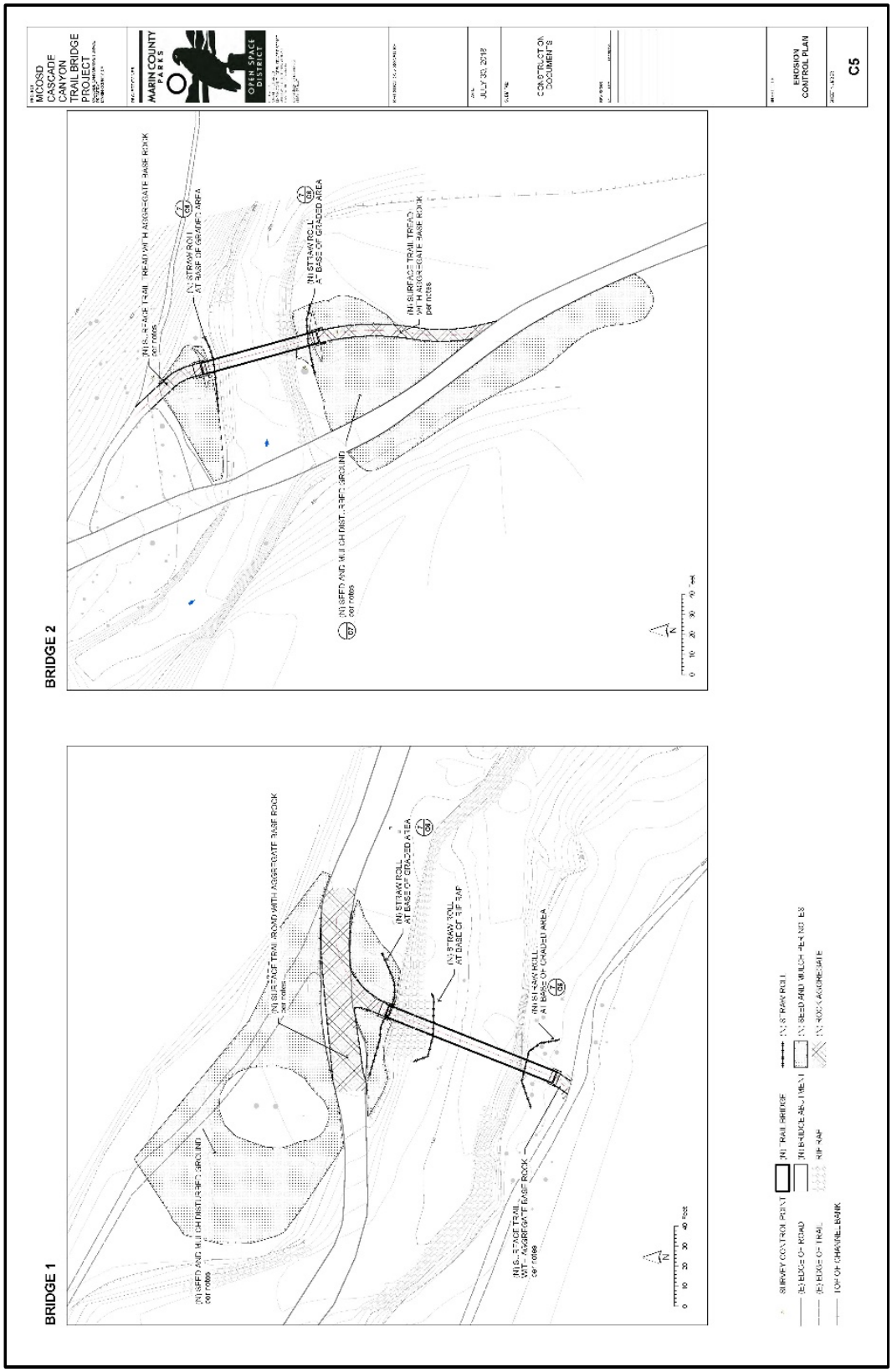


Figure 24 shows the Biological Resources Study Area and Elements of the Proposed Project.

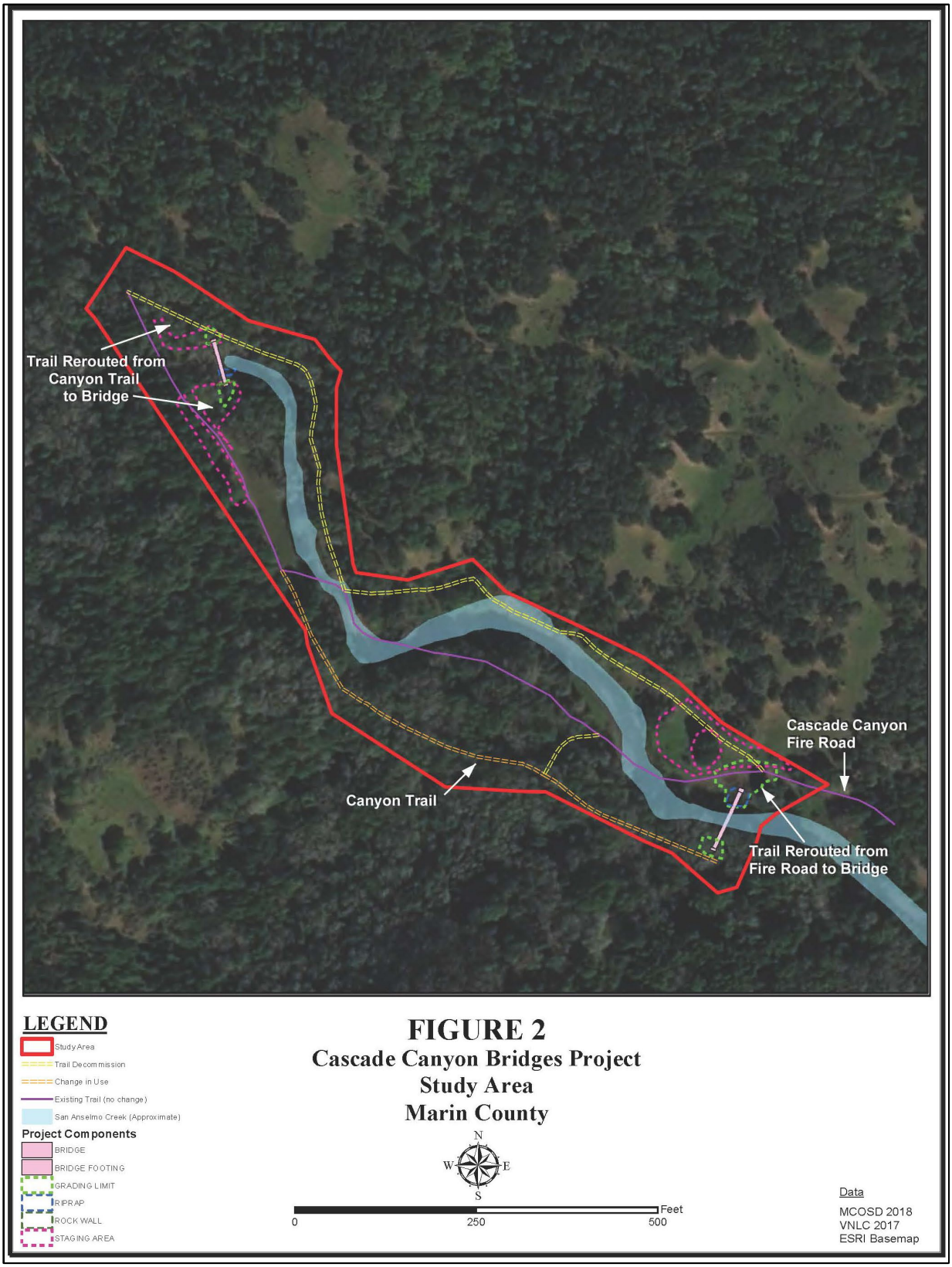


Figure 25 shows the Plant Communities in the Biological Resources Study Area.

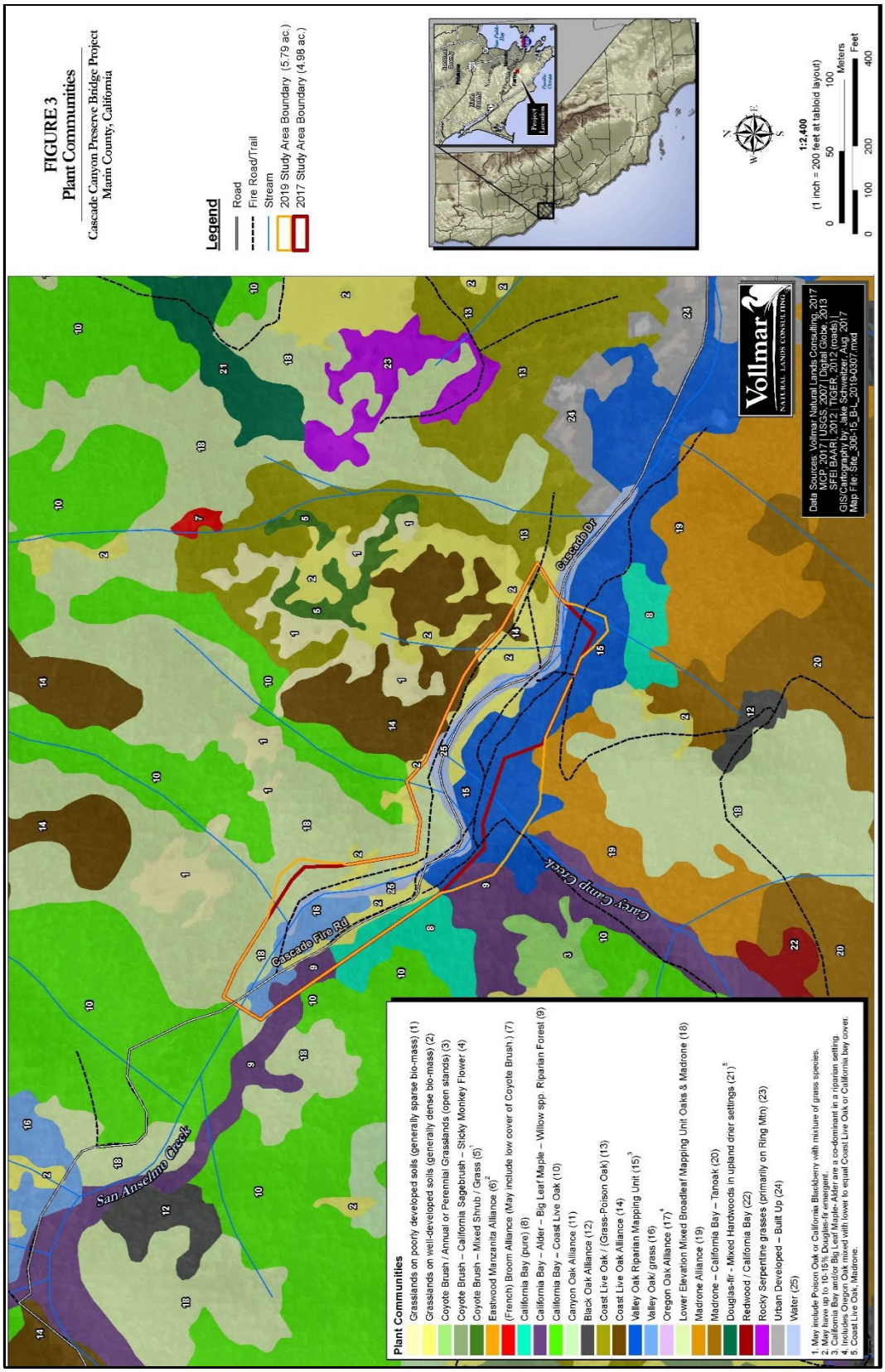


Figure 26 shows the Occurrences of Special-status Species.

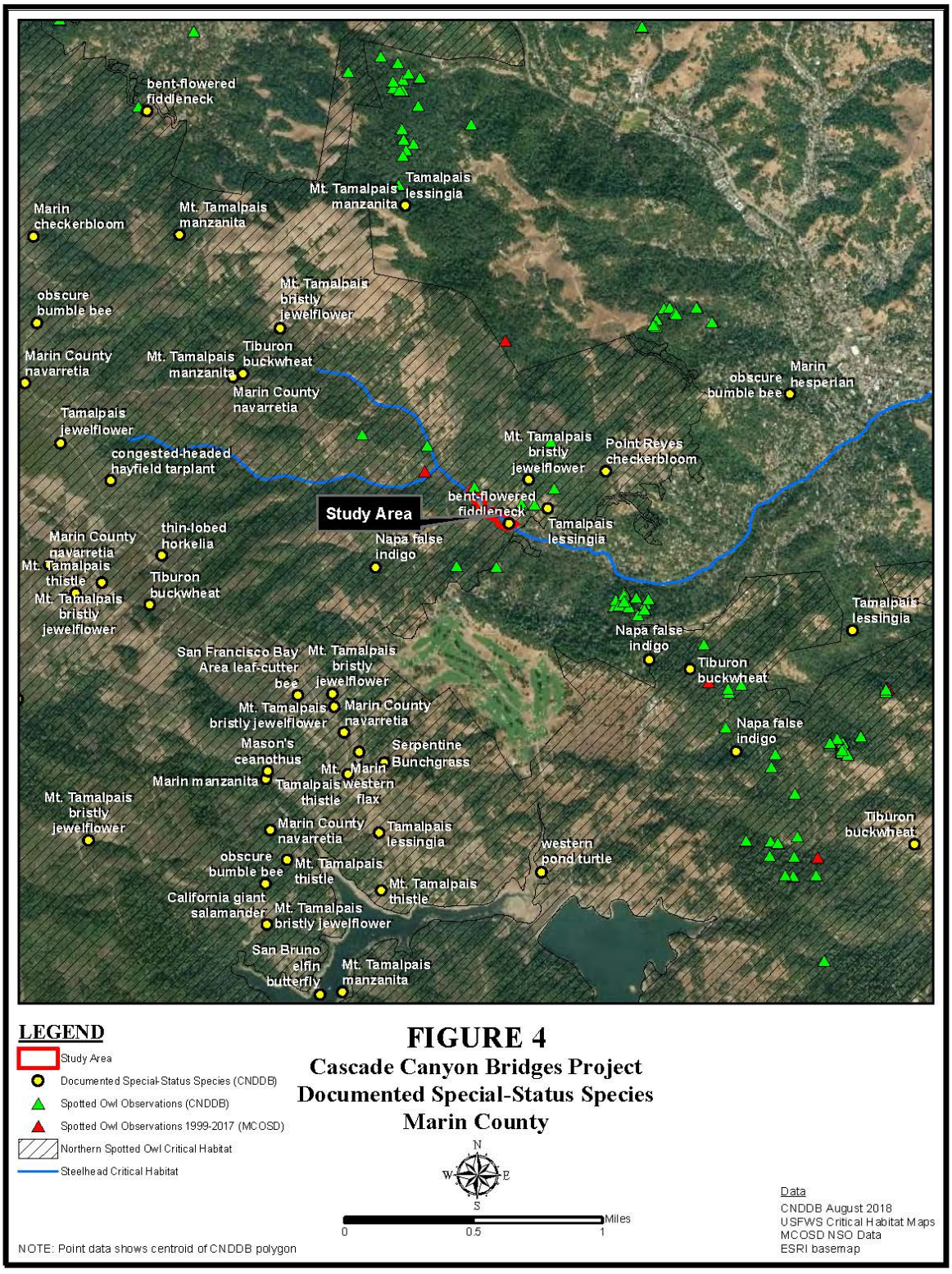


Figure 27 shows the MCOSD Preserves by RTMP Region.

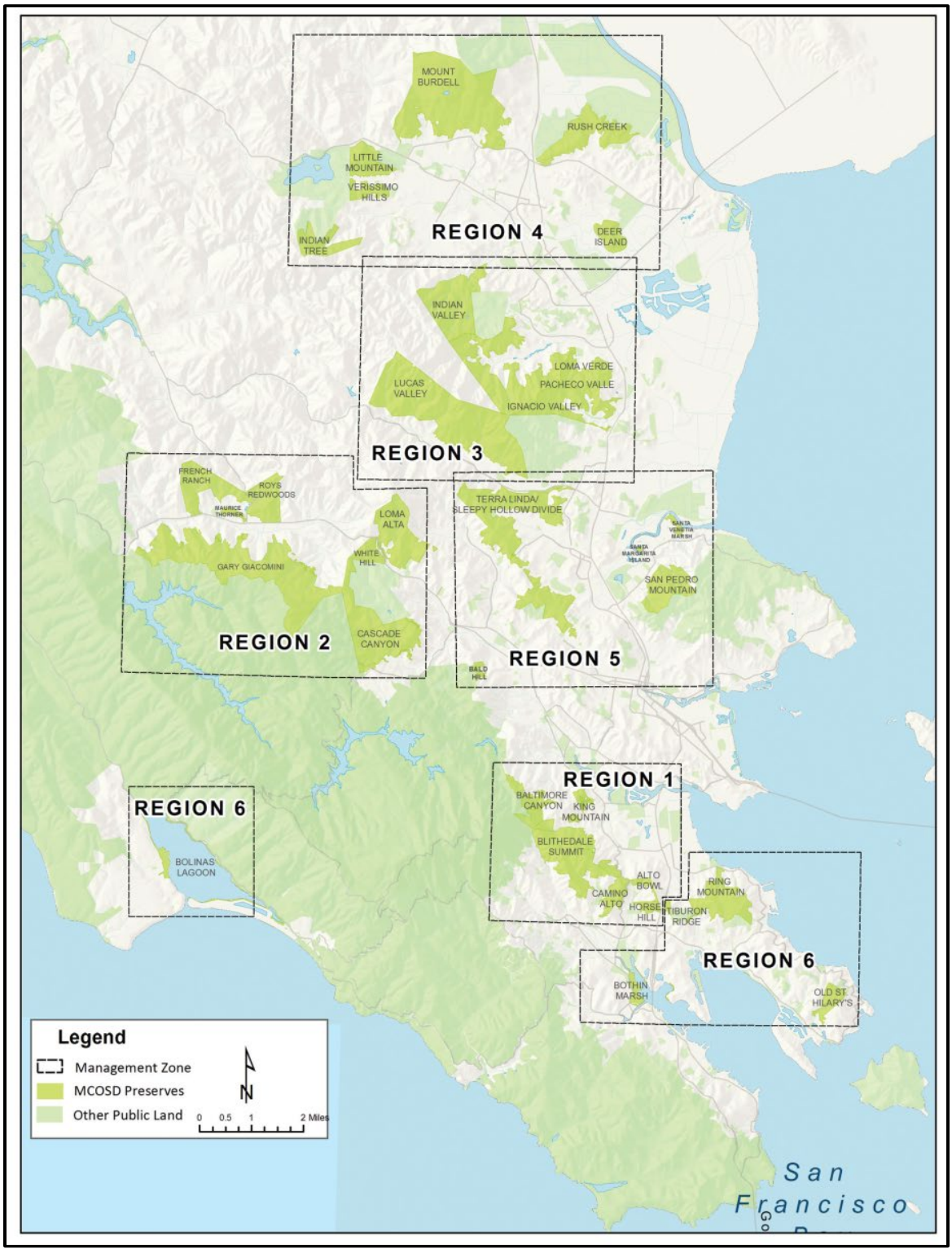


Figure 28 shows the Region 2 Trail Designations.

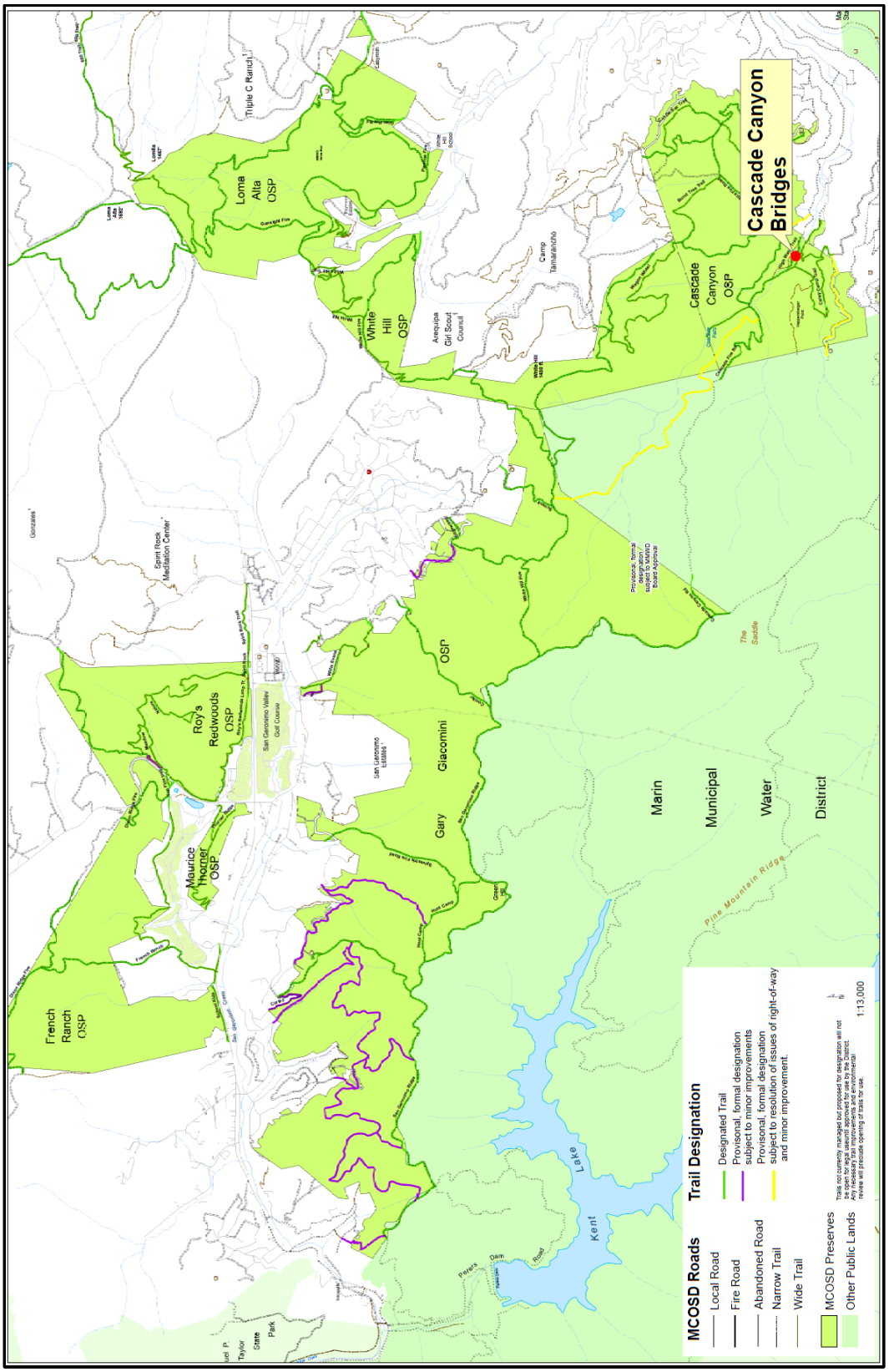
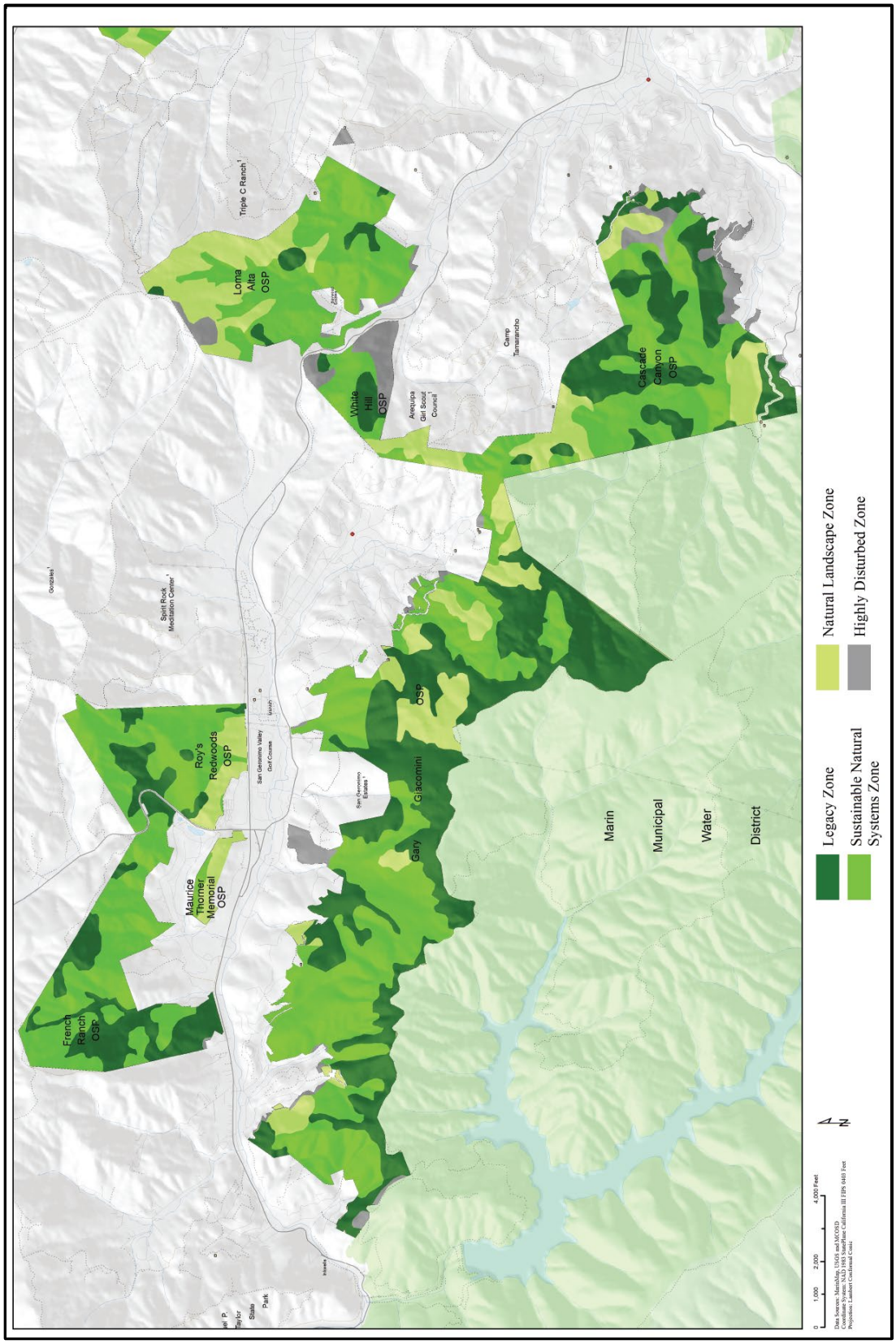


Figure 29 shows the Region 2 VBMP Classifications.



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. Mitigation Measures have been included to address potentially significant impacts and/or augment RTMP BMPs in the Biological Resources and Transportation topic areas, which are provided beginning on the next page and within the applicable 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

Special-Status Plants

The following mitigation measure addresses the section of the Canyon Trail proposed for change in use that was not included in the botanical surveys completed as part of the Pacific Biology Report.

Mitigation Measure BIO-1: Preconstruction Special-Status Plant Survey

Qualified MCOSD staff or consultant shall conduct a botanical survey of the 350-foot section of the Canyon Trail proposed for a change in use prior to initiating the proposed change in use. If special-status plants are found, MCOSD shall implement protection measures to avoid impacts to any special-status plants, which could include placement of rocks or logs to protect the plant while allowing trail use.

Foothill Yellow-Legged Frog

Implementation of the proposed project is not expected to result in potential impacts to Foothill yellow-legged frog, primarily because activities would occur during the dry season when the frogs are not expected to be present and the aquatic habitat of San Anselmo Creek would not be affected. The following avoidance measures were recommended by the California Department of Fish and Wildlife (CDFW) at the February 2, 2019 Marin Project Coordination meeting and would be implemented to supplement the RTMP MBPs required by the RTMP:

Mitigation Measure BIO-2: Additional Foothill Yellow-Legged Frog Avoidance Measures

The qualified biologist(s) conducting surveys/inspections for foothill yellow-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 foothill yellow-legged frog using a CDFW approved methodology. The results of the surveys shall be provided to CDFW prior to construction. If foothill yellow-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 foothill yellow-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 foothill yellow-legged frog 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 foothill yellow-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 foothill yellow 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.

Mitigation Measure BIO-3: 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 will not be necessary for special-status and nesting birds. The broadest nesting bird window based on Table BIO-1 would be January 01 – 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. 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 6: 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 6, 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 6: 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

Dusky-Footed Woodrat

Although not a listed species, local concern has been raised for the common dusky-footed woodrat because it is a primary prey species for the Northern spotted owl. Suitable woodland habitat for dusky-footed woodrat is present within Cascade Canyon Open Space Preserve although no woodrat nests were observed during surveys conducted for the Pacific Biology Report. However, it is possible that vegetation removal associated with implementation of the proposed project could result in the loss of a woodrat nest. The loss of or disturbance to dusky-footed woodrat or its nest would be a potentially significant impact because the loss of woodrats could indirect affect Northern spotted owl. Implementation of Mitigation Measure BIO-4 would reduce this impact to a less-than-significant level. MCOSD would implement the following measures to reduce impacts on dusky-footed woodrat:

Mitigation Measure BIO-4: Preconstruction Woodrat Survey and Nest Relocation

- Within 30 days prior to vegetation removal, a qualified biologist would inspect the potential area of disturbance and adjacent areas for woodrat houses. If none are found, then no additional measures are necessary.
- If a woodrat house is identified within a work area, an exclusion zone would be erected around the existing woodrat houses using flagging or a temporary fence that does not inhibit the natural movements of wildlife, such as steel T-posts and a single strand of yellow rope or similar materials. The work area would be relocated as necessary to avoid removing woodrat houses, even if avoidance is by only a few feet. The orientation of the work area would allow for escape routes to nearby suitable habitat, meaning that the work area would not completely surround the protected woodrat house. If woodrat houses cannot be avoided, CDFW would be contacted for approval to relocate individuals and dismantle the nest.

Creek and Riparian Habitat

The following mitigation measure was recommended in the Pacific Biology Report and would be implemented as part of the proposed project:

Mitigation Measure BIO-5: Creek and Riparian Habitat Restoration Plan

Prior to the commencement of construction, all required permits, agreements, and certifications shall be obtained from the ACOE, RWQCB, and CDFW. The MCOSD shall comply with all conditions of those permits. At a minimum, all creek and riparian habitats shall be restored to ensure a "no net loss" of wildlife value and acreage of creek and riparian habitat. If required by regulatory permit conditions, a Creek and Riparian Habitat Restoration Plan shall be prepared and submitted to ACOE, RWQCB, and CDFW for approval, which could include the following components:

- The preconstruction habitat conditions within jurisdictional areas to be impacted shall be documented by a qualified biologist.
- All temporarily disturbed areas shall be restored to pre-construction conditions or better.
- For any disturbed wetland/riparian vegetation, the plan would specify, at a minimum, the following:
  a) Location of the mitigation site(s).
  b) Procedures for procuring plants, such as transplanting or collecting cuttings from plants to be impacted, including storage locations and methods to preserve the plants.
  c) Quantity and species of plants to be planted or transplanted.
  d) Planting procedures, including the use of soil preparation and irrigation.
  e) Schedule and action plan to maintain and monitor the mitigation site for a minimum 3-year period, including monitoring the health of trees near the Bridge 1 footing excavation area.
  f) Reporting procedures, including the contents of annual progress reports.
  g) List of criteria such as growth, plant cover, and survivorship, by which to measure success of the plantings.
  h) Contingency measures to implement if the plantings are not successful such as weed removal, and/or supplemental plantings.
- For any disturbed unvegetated streambed habitat, the plan shall detail how temporarily disturbed habitats will be restored through minor grading, replacing or reconfiguring creek substrate, and/or other methods.

Tree Protection and Replacement

The RTMP does not include BMPs to address tree pruning and/or removal. While tree pruning and removal required to implement the proposed project would be minimal and would not result in a potentially significant environmental impact, the MCOSD would implement the following tree protection and replacement measures:

Measure BIO-6: Tree Protection and Replacement

Minimize tree removal and pruning. Light pruning may occur at any time of year. Heavy pruning may cause problems due to vigorous sprouting and subsequent witches broom or powdery mildew diseases. Heavy pruning on deciduous trees shall be done in the winter.

- Minimize impacts within the Root Protection Zone[1].
- Temporary protective fencing shall be installed around RPZs or, at a minimum, the dripline perimeter of trees near work areas.
- Changes in drainage within protected tree perimeters shall be avoided to the extent feasible.
- Soil compaction within protected tree perimeters shall be avoided to the extent feasible.

[1] 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 also extends approximately three feet below the soil surface.

- Heavy equipment, vehicles, and/or construction materials shall not be parked or stored beneath trees or operated within the delineated protected perimeter.
- Develop a tree replacement plan for any tree removed based on the ratios shown on Table BIO-2:

TABLE BIO-2: TREE REPLACEMENT RATIOS

Tree Type	Diameter	Replacement Ratio
Oaks	5-10 inches DBH	4:1
Oaks	10-15 inches DBH	5:1
Oaks	15 inches DBH and above	15:1
Native Trees	3-6 inches DBH	3:1
Native Trees	6 inches DBH and above	6:1
Non-Native Trees	Any DBH	1:1

Tree Health

Installation of the southern footings for Bridge 1 could impact tree roots of including one 24-inch DBH oak and one 24-inch California bay laurel. Minimal excavation would be employed to avoid any unnecessary impacts to tree roots. While excavation work is not expected to result in potentially signifiant environmental impacts, MCOSD would implement the following measures to monitor trees of which roots are cut, damaged, or removed during implementation the proposed project:

Mitigation Measure BIO-7: Monitor Tree Health

Should tree roots require cutting or removal in order to implement the proposed project or should tree roots inadvertently be damaged during project implementation, the following measures shall be implemented to ensure the health of the tree and safety of visitors:

- Cut roots consistent with International Society of Arboriculture guidelines
- 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. The mulch helps condition the soil, moderates soil temperatures, maintains moisture, and reduces competition from weeds and grass. The mulch should extend as far out from the tree as practical for the site. Backfilling and mulch may still be the best mitigation strategy as it creates 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.

Transportation

During project implementation, large construction equipment would access the project area from Cascade Drive, which is a narrow public road within a residential neighborhood. Cascade Drive climbs in elevation and has many steep turns. On-street parking is permitted. There may be a few locations in which the large construction equipment that would be required to implement the proposed project would require no on-street parking on Cascade Drive to avoid increased hazards due to a geometric design feature or incompatible uses. Additionally, emergency access on Cascade Drive would be temporarily limited when large construction equipment accesses departs the project area. For these reasons, implementation of the proposed project would result in a potentially significant temporary impact associated with substantially increasing hazards due to a geometric design feature or incompatible uses and associated with inadequate

emergency access. Implementation of Mitigation Measure Transportation – 1 would reduce the significance of this impact to a less than significant level.

Mitigation Measure Transportation – 1

The Contractor shall prepare a traffic control plan prior to initiating construction activities. The traffic control plan shall include:

- An assessment of Cascade Drive to determine if there are areas where no on-street parking would be permitted when large construction equipment is assessing or departing the project area;
- A communication plan to provide residents within the affected areas adequate notice of the temporary on-street parking prohibition;
- A communication plan to provide emergency service providers adequate notice regarding construction equipment use of Cascade Drive;
- Approvals as needed from MCOSD, Marin County Department of Public Works, and/or the Town of Fairfax.

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

Rachel Reid, Environmental Coordinator
Marin County Community Development Agency

February 16, 2021

AESTHETICS

TABLE 1: AESTHETICS CHECKLIST QUESTIONS					
	Except as provided in Pubic 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 is characterized by the creeks, plant communities, and topography within Cascade Canyon Open Space Preserve. The upper reaches of San Anselmo, Carey Camp, and Cascade creeks run through Cascade Canyon Open Space Preserve, with San Anselmo Creek running through the project area. Cascade Canyon Open Space Preserve contains approximately 25 plant communities, including Valley Oak Woodland, Annual Grassland, Mixed Broadleaf Woodland, California Bay Forest, and Coast Live Oak Woodland within the project area. The tree canopies shade the trails and the various plant communities provide wildlife habitat.

Cascade Canyon Open Space Preserve features a variety of roads and trails with designations ranging from hikers/ equestrian to multi-use, which provide access for hikers, equestrians, and cyclists. One destination is Cascade Falls, which drops 20 feet when it is running strong during the rainy season. Cascade Canyon Open Space Preserve connects to Gary Giacomini, White Hill, and Loma Alta Open Space Preserves, which are owned and managed by MCOSD and to the Mt. Tamalpais Watershed, managed by Marin Municipal Water District, forming a connected band of open space which contributes to the aesthetics of the project area. Visitors can access the adjacent White Hill Open Space Preserve and Mt. Tamalpais Watershed properties from Cascade Canyon Open Space Preserve.

Views along the valley bottom are of natural landscapes characterized by grassland and oak and bay woodlands. The proposed bridges would be located in the valley bottom in relatively level areas characterized visually by annual grassland and valley oak woodlands adjacent to San Anselmo Creek is a prominent aesthetic feature in these viewsheds. The Canyon Trail is located within valley oak woodlands and the High Water Trail is located on the canyon slope within mixed broadleaf and coast live oak woodlands. Vegetation along the valley bottom is primarily grassland and oak and bay woodland. Vegetation along the valley bottom is primarily grassland and oak and bay woodland. The upper slopes are primarily open grassland, oak woodland with

scattered conifers. The San Anselmo Creek channel is approximately 30-50 feet wide, and well-incised into the surrounding nearly level canyon floor. The existing rock fords cross the San Anselmo Creek in four locations. The upper slopes are primarily open grassland, oak woodland with scattered conifers. The High Water Trail is a narrow footpath on a steep wooded slope. Proposed Bridge 1 would be visible from the Cascade Canyon Open Space Preserve entrance area. Proposed Bridge 2 would be visible from the Cascade Canyon Fire Road and the trail to Cascade Falls. Neither of the proposed bridges would be visible from private residences or public roads.

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?
No Impact

A scenic vista can be defined as a viewpoint that provides expansive views of a highly valued landscape for the benefit of the general public. The Town of Fairfax General Plan does not contain any designated scenic vistas in the project area. The Cascade Canyon Open Space Preserve includes 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 tree removal; however, implementation of the proposed project would require removal of an 8-inch DBH madrone and a small area of brush removal, confined to an area of less than 0.02 acre. Several trees would be pruned 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 minor tree removal and pruning 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.

The proposed bridges and trail improvements would alter the visual quality of the creek area viewsheds, however the bridges would be designed to conform to the rustic setting and therefore not result in a substantial effect on scenic vistas. 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 no 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.[2][3] There are no state highways within or within viewing distance of the project area. 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 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 small-scale visual impacts during and after construction. The most prominent visual change would be from installation of the two new bridges, which would be visible from the Cascade Canyon Fire Road and Canyon Trail and would introduce bridges into publicly accessible vantage points now characterized by the open San Anselmo Creek channel. New wood split-rail fencing would also be visible from the trail and fire road. The bridges and fences features have been designed with a rustic aesthetic to blend in with the surroundings, which is generally considered visually compatible with trails in semi-natural areas. 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. Small areas of rock slope protection, approximately 80 cubic yards total, would be placed in the creek channel near the proposed bridge abutments. This rock material would weather to an appearance similar to the existing rock slope protection in the parts of the channel and therefore is not expected to change the visual quality of San Anselmo Creek. 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.

Changes to the visual environment during construction would include construction equipment staged at the site, disturbed land, and temporary erosion control measures such as straw waddles. The MCOSD would store construction equipment in a designated staging area and away from San Anselmo Creek shown on Figure 4. After construction, the new and modified trail segments, and decommissioned areas would be visible, but as new vegetation grows, it would soften the visibility of these changes. Operation of the project would involve use of the trails for recreation, similar to existing conditions, and trail maintenance would occur as needed, and therefore would result in a less than significant impact.

Designating a small portion of the Canyon Trail as hiker/biker would have a less-than-significant impact on the visual environment as it would not entail substantial physical modifications to the trail. Minor modifications such as chicanes would not be visually prominent.

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.

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[2] 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

[3] 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

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 Cascade Canyon 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 2: 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.

Cascade Canyon Open Space Preserve does not contain any prime, unique, or important farmland. The California Department of Conservation maps this area as "Other"[4].

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.

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 for open space uses. There are no designated agricultural lands or 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.

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

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 Cascade Canyon Open Space Preserve, which is designated as Open Space and zoned as Restricted Open Space by the County of Marin and Town of Fairfax. The Elliot Nature Preserve in the Town of Fairfax jurisdiction has a residential zoning designation, however, where zoning is inconsistent with general plan designation, the general plan designation takes precedent which is Open Space. The open space 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. 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 Cascade Canyon 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 an 8-inch DBH madrone and some small brush, confined to an area of less than 0.02 acre. Several trees will be pruned to prevent damage during installation of the bridges. 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

Cascade Canyon 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 3: 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 1500 feet, most of the terrain is between 800 and 1000 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.

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 (ARB), 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[5].

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 ten 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 traveled 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

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.

[5] BAAQMD. In Your Community – Marin County. http://www.baaqmd.gov/about-the-air-district/in-your-community/marin-county

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 May 2017 (2017 BAAQMD 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. The following air quality analysis for the proposed project is consistent with the methods included in 2017 BAAQMD 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.

Operation and maintenance activities would be the same after implementation of the proposed project as they are now, and therefore only construction-related activities are analyzed regarding potential air quality impacts.

Construction would occur Monday through Friday, from 7:00 a.m. to 6:00 p.m. for approximately two months. Equipment would include a large crane, excavator, loader, compactor, cement truck, cement mixers, roller compactor, rubber track carrier, generators, dump truck, ATVs, generators, jackhammers, power. saws, and other hand tools. Other equipment such as a chainsaw and hand tools would also be used. Construction of the project would require approximately three workers onsite. Construction of the project would require approximately 44 total haul trips for hauling construction materials and the import of soil, rock, aggregate, and the bridges. 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 Cascade Drive.

The 2017 BAAQMD CEQA Guidelines recommend quantification of construction-related exhaust emissions and comparison of those emissions to significance thresholds. The Sacramento Metropolitan Air Quality Management District's (SMAQMD) Roadway Construction Emissions Model was used to quantify construction-related pollutant emissions. BAAQMD recommends using the Roadway Construction Emissions Model for proposed linear projects such as new roadways, trails, and bridges. Air quality calculation details and emission estimates outputs are available for review through MCOSD's administrative office.

Table AQ-1: Air Quality Thresholds of Significance Analysis provides the estimated short-term construction emissions that would be associated with the proposed project and compares those emissions to the

BAAQMD's thresholds of significance for construction exhaust emissions. Because the construction phases for the proposed project are sequential, the average daily construction period emissions are defined as the total construction period emissions divided by the number of construction days. Table AQ-1 shows that construction-related emissions would be well below the BAAQMD thresholds of significance and therefore, the proposed project would have a less than significant impact on air quality as it pertains to compliance with an applicable air quality plan. Furthermore, the proposed project does not require preparation of an air quality analysis or implementation of mitigation measures.

TABLE AQ-1: AIR QUALITY THRESHOLDS OF SIGNIFICANCE ANALYSIS

POLLUTANT	ROG	NO_x	PM10	PM2.5	CO
Estimated Daily Construction Emissions from Proposed Project: (pounds per day)	2	19	1	1	12
BAAQMD Thresholds of Significance: (pounds per day)	54	54	82	54	--
Threshold Exceeded?	No	No	No	No	--

Source: SMAQMD Roadway Construction Emissions Model Version 8.1.0
Note: Emission estimates are rounded to nearest pound. PM10/PM2.5 emissions are exhaust only.

Construction activities would also temporarily generate fugitive dust, including PM10, from earthmoving and equipment use. The 2017 BAAQMD 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 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, to 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 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. 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 receptors on Cascade Drive to the east. The nearest residential receptors on Cascade Drive are the two westernmost residences, which are approximately 250 feet east of where the Cascade Canyon Fire Road splits off to the High Water Trail and where Bridge 1 would be constructed.

The Office of Environmental Health Hazard Assessment (OEHHA) does not recommend assessing cancer risk for projects lasting two months or less[6]. The proposed project would require a maximum of two months of construction, so a cancer-risk assessment is not required. Most of the proposed project construction-related activities would occur at a distance greater than 1,000 feet from the nearest residential receptors, including installation of Bridge 2 and associated trail improvements and about one-third of the High Water Trail decommissioning and restoration. The proposed project incorporates RTMP Air Quality BMPs 1 through 4 and RTMP Policy SW.29, which implements BAAQMD's 2010 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 in 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-

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

going odors can result in a negative impact 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[7] 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.

[7] https://www.baaqmd.gov/~/media/dotgov/files/rules/reg-7-odorous-substances/documents/rg0700.pdf?la=en

BIOLOGICAL RESOURCES

TABLE 4: 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 located within the Cascade Canyon Open Space Preserve, which is approximately 504 acres within the Corte Madera watershed. Cascade Canyon Open Space Preserve is located on the eastern flank of Mount Tamalpais adjacent to the Town of Fairfax and approximately 3.5 miles west of San Rafael It is surrounded by single-family residential development in the Town of Fairfax to the south and east, the Meadow Club golf course to the southwest, Camp Tamarancho and the White Hill Open Space Preserve to the north, the Mount Tamalpais Watershed to the west. This collection of adjoining open space land provides a continuous band of natural vegetation, and interconnected water courses.

Biological Resource Study

To assist with understanding how implementation of the proposed project could affect biological resources, MCOSD contracted with Pacific Biology, who prepared The Cascade Canyon Bridges Project Biological Habitat Evaluation Report (Pacific Biology Report)[8] in 2018. The Pacific Biology Report assessed biological resources within the project area, evaluated potential impacts to these resources from the implementation of the study project, and recommended mitigation measures to reduce the effect of potential impacts to a less than significant level. Protocol-level surveys for special-status plants were conducted by Vollmar Natural Lands Consulting in 2017 and 2019. Information included in the Pacific Biology Report has been utilized extensively in preparation of the Biological Resources section of the CEQA Checklist. The report is available for review at the Marin County Parks and Open Space District Administrative Office. The study area evaluated in the Pacific Biology Report included approximately 6-acres, which encompassed the project area and a surrounding area buffer.

While the Pacific Biology Report describes the biological resources occurring or potentially occurring with the study area, the entire study area would not be disturbed by project-related improvements and activities. At the Bridge 1 site, vegetation removal would include one 8-inch diameter at breast height (DBH) madrone sapling and some small brush, confined to an area of less than 0.02 acre. One 6-inch DBH big leaf maple may be pruned to avoid damage when the bridge is swung into place. Tree roots may potentially be impacted during the excavation of the bridge footings for some of the larger trees by the south bridge abutment, including one 24-inch DBH oak and one 24-inch California bay laurel. Minimal excavation would be employed to avoid any unnecessary impacts to tree roots. No trees are would require removal at the Bridge 2 site although several trees may be pruned to avoid damage when the bridge sections are delivered to the project area and installed. These impacts are analyzed in the Checklist section following the Setting Descriptions.

Figure 23 is from the Pacific Biology Report and shows the study area and specific project

Figure 24 is from the Pacific Biology Report and shows the mapped plant

Plant Communities

The Pacific Biology report mapped 25 plant communities including urban development and water. For analysis purposes, the Pacific Biology Report then combined the plant communities into the following five plant communities based on the dominant overstory species, the names conforming to commonly accepted nomenclature of the Manual of California Vegetation[9] classification:

Valley Oak Woodland - approximately 39 percent
Annual Grassland - approximately 29 percent
Mixed Broadleaf Woodland - approximately 19 percent
California Bay Forest - approximately 9 percent
Coast Live Oak Woodland - approximately 4 percent

Sensitive plant communities that are of limited distribution statewide or within a county or region. The California Department of Fish and Wildlife's List of California Terrestrial Natural Communities and the

[8] Pacific Biology. Cascade Canyon Bridges Project Biological Evaluation Report. September 2018

[9] Sawyer, John O., Todd Keeler-Wolf, and Julie M. Evans. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society Press.

Manual of California Vegetation[10] indicate which plant communities are sensitive within the state of California classification. Within the study area, the Valley Oak Woodland and the California Bay Forest plant communities are considered sensitive plant communities. Valley Oak Woodland is ranked "S3G3" the Manual of California Vegetation, indicating it is rare or threatened within the state and globally. California Bay Forest is ranked "S3G4," indicating it is rare or threatened within the state and is a relatively common non-sensitive plant community within the global scale.

The study area includes riparian tree species along the edge of San Anselmo Creek, interspersed with the Valley Oak Woodland, Annual Grassland, and Mixed Broadleaf Woodland plant communities. For this reason, the Pacific Biology Report combined the Valley Oak Riparian and Valley Oak/Grass plant communities in the Valley Oak Woodland plant community. Wetland-associated plant species also occur within and along the margins of San Anselmo Creek, but do not form significant wetland habitat. Additionally, almost the entire Mt. Tamalpais watershed, including the study area, is within designated critical habitat for the northern spotted owl.

San Anselmo Creek

The Cascade Canyon Open Space Preserve is located within the Corte Madera Creek Watershed, which includes the upper reaches of San Anselmo, Carey Camp, and Cascade creeks. Cascade Creek runs through the project area. San Anselmo Creek is perennial, meaning that water flows throughout the year. Within the project area, San Anselmo Creek has surface water during the rainy season and groundwater flow during the dry season. It is a 5th-order stream based on the Strahler method of establishing stream hierarchy, 5th order relating to the degree of separation from the headwaters by branching of higher order stems. San Anselmo Creek may include jurisdictional Waters of the State and Waters of the United States. Steelhead/rainbow trout *(Oncorhynchus mykiss)* are known to occur in San Anselmo Creek though there was no evidence of spawning detected during surveys conducted by MCOSD staff biologists during 2014-2018.

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. Special-status plant surveys were conducted on the study area on April 6, April 23, and June 26, 2017, March 8, April 10, and June 27, 2019. A total of 187 plant taxa[11] were identified within the study area, none of which are designated as special-status or otherwise considered to be rare.

The field surveys concluded that most of the habitats within the project area are in relatively good condition, mostly undisturbed and supporting a diversity of healthy, mostly native plant species. These conditions support moderately suitable habitat for special-status species. There are no unique substrates such as serpentine, limestone, or heavy clay or alkaline soils, and there are no particularly rare habitats such as dunes, maritime chaparral, or specialized wetland types. Among the plants are several relatively uncommon species such as checker lily (*Fritillaria affinis*), California fetid adderstongue (*Scoliopus bigelovii*), modesty (*Whipplea modesta*), and wiry snapdragon (*Antirrhinum vexillocalyculatum* ssp. *vexillocalyculatum*). However, no special-status plant species were identified within the study area during the plant surveys. Based on the archival research and protocol-level plant surveys, no special status plant species are expected to occur within the developed Canyon Trail, however, there is potential for them to occur adjacent to the trail segment.

The shady wooded habitats are less disturbed and support the majority of native plants, including the uncommon species of checker lily *(Fritillaria affinis)*, California fetid adderstongue *(Scoliopus bigelovii)*, modesty *(Whipplea modesta)*, and wiry snapdragon *(Antirrhinum vexillocalyculatum ssp. vexillocalyculatum)*. While uncommon, these species are not considered special-status plant species. The

[10] Sawyer, John O., Todd Keeler-Wolf, and Julie M. Evans. 2009. Op Cit.

[11] 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.

wooded habitats provide the most suitable habitat for special-status plant species. The grasslands support mostly introduced, weedy plants. Most of the introduced species are escaped cultivated varieties such as French broom *(Genista monspessulana)*, Spanish broom *(Spartium junceum)*, and broadleaved forget-me-not *(Myosotis latifolia)*.

The California Natural Diversity Data Base (CNDDB) includes an occurrence of bent-flowered fiddleneck *(Amsinckia lunaris)* in the vicinity of the project area, though the exact location is unknown. This species has a CNPS Rare Plant Rank of 1B.2, meaning that the plant is rare, threatened, or endangered in California or elsewhere and the plant is moderately threatened in California, with 2 – 80 percent of occurrences being threatened or have a moderate degree of threat. Plants with a 1B rank are rare throughout their range and most have declined significantly over the last century. Impacts of these species or their habitat are required to be analyzed during preparation of CEQA documents. For the CNDDB occurrence of bent-flowered fiddleneck, the "best guess" location was mapped by CNDDB in the vicinity of the entrance to Cascade Canyon Open Space Preserve, but it was not identified during the field surveys and the reported occurrence may not be within the project area.

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 Pacific Biology Report evaluated data collected and maintained by the MCOSD, a review of the CNDDB, and other sources. The Pacific Biology Report identified two special-status wildlife species that are known to occur within the study area and seventeen special-status wildlife species that have the potential to occur within the study area, which are listed below and then described beginning on the next page.

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

Central California coast steelhead *(Oncorhynchus mykiss irideus)*
Foothill yellow-legged frog *(Rana boylii)*

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

Marin Hesperian *(Vespericola marinensis)*
California giant salamander *(Dicamptodon ensatus)*
California red-legged frog *(Rana draytonii)*
Western pond turtle *(Actinemys marmorata)*
Cooper's hawk *(Accipiter cooperi)*
"Marin" Chestnut backed Chickadee *(Parus rufescens neglectus)*
Northern spotted owl *(Trix occidentalis caurina)*
Oak titmouse *(Baeolophus inornatus)*
Olive-sided flycatcher *(Contopus cooperi)*
Yellow warbler *(Dendroica petechial brewsteri)*
Hoary bat *(Lasiurus cinereus)*
Pallid bat *(Antrozous pallidus)*
Western red bat *(Lasiurus blossevillii)*
Fringed myotis *(Myotis thysanodes)*
Long-eared myotis *(Myotis evotis)*
Long-legged myotis *(Myotis Volans)*
Yuma myotis *(Myotis yumanensis)*

Central California coast steelhead *(Oncorhynchus mykiss irideus)*
Listing Status: Federal Threatened (Evolutionary Significant Unit 1)

This species is a trout and species of salmonid native to cold-water tributaries of the Pacific Ocean in Asia and North America. The steelhead is also referred to as "steelhead trout" is an anadromous form of the coastal rainbow trout or coastal steelhead trout. Anadromous refers to the life cycle of this species that spends most of its adult life at sea, returning to fresh water after two to three years to spawn. Resident forms of this species live only in freshwater and do not migrate to the sea. Potamodromous forms of this species include fish that migrate within the freshwater stream, migrate only to estuarine habitat, and fish that migrate to near-shore ocean areas but not to the sea itself. Resident and potamodromous forms of this species are not listed in any special-status species categories.

Locally, Central California coast steelhead migrates through San Francisco Bay and spawns in coastal rivers and creek. California winter steelhead enter coastal streams during December-March, and summer steelhead seem to enter streams as flows taper off in spring and spawn the following winter. The female digs a redd[12] in the coarse gravel of the tail of a pool or in a riffle. After spawning, spent steelhead often move gradually downstream and occupy pools for periods of time during the downstream migration. Juveniles may occupy riffles, runs, and pools. Corte Madera and San Anselmo creeks historically supported steelhead and continue to support steelhead populations, either of anadromous or resident forms[13]. The U.S. Army Corps of Engineers channelized a two-mile portion of Corte Madera Creek including the lower part of San Anselmo Creek between 1967 and 1971. According to a fish passage evaluation completed in 2002-2003[14], the upper portion of this channel blocks migration to all spawning areas in the watershed. This evaluation also found two migration obstacles in San Anselmo Creek downstream of Carey Camp Creek, one that does not allow fish passage, and the other allows fish passage under an estimated 7 percent of flow conditions. However, steelhead have been reported in surveys of San Anselmo Creek upstream to above the Cascade Creek confluence, indicating that the downstream barriers in San Anselmo Creek may be passable under certain conditions. A 2009 electrofishing survey in the lower part of Carey Camp Creek, which is outside of the project area, also found steelhead.[15]

Steelhead are known to occur in San Anselmo Creek and Carey Camp Creek within Cascade Canyon Open Space Preserve. The project area is within critical habitat for this species, though there is debate as to whether the fish present are anadromous or resident due to downstream barriers in San Anselmo and Corte Madera Creeks. No redds have been observed in the study area during the spawner surveys conducted in 2014 – 2017.

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

[12] A salmon redd is a nest, which can contain up to 1,000 eggs. Source: https://www.fws.gov/fisheries/fishmigration/steelhead_trout.html

[13] Leidy, R.A., G.S. Becker, B.N Harvey. 2005. Historical distribution and current stats of steelhead/rainbow trout *(Oncorhynchus mykiss)* in streams of the San Francisco Estuary, California. Center for Ecosystem Management and Restoration, Oakland, CA.

[14] Leidy, et al, 2005 and Ross Taylor and Associates. 2003. Marin County stream crossing inventory and fish passage evaluation final report. County of Marin, Department of Public Works. McKinleyville, CA.

[15] California Department of Fish and Game (CDFG). 2010. Carey Camp Creek, Surveyed 2009, CDFG East Marin County, San Francisco Bay Watersheds, Stream Habitat Assessment Reports.

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.

The MCOSD commissions Garcia and Associates to conduct surveys for foothill yellow-legged frog *(Rana boylii)* in the immediate project area. A self-sustaining population Foothill yellow-legged frog has been documented in San Anselmo Creek within the Cascade Canyon Open Space Preserve,[16] and is present in the immediate project area.

Marin Hesperian *(Vespericola marinensis)*
Listing Status: Included on CDFW Special Animals List

This invertebrate is a snail found in moist brushy areas or grasslands, around springs or seeps, in riparian forest. Potentially suitable riparian habitat is present within the project area, and the species is known to exist within the greater project region. However, field surveys conducted in association with the proposed project did not observe this species within the project area.

California giant salamander *(Dicamptodon ensatus)*
Listing Status: California Species of Concern

The larvae of this amphibian are found in cold, clear streams, occasionally in lakes and ponds. Adult California giant salamander can be found in wet forests under rocks and logs near streams and lakes. Potentially suitable riparian habitat is present within the project area, including San Anselmo Creek and riparian vegetation, and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area. The CNDDB documents the closest occurrence of the species approximately two miles to the south.[17]

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.[18] The species is known to rest and feed in riparian vegetation and it is believed that the moisture and cover of the riparian zone provides foraging habitat and facilitates dispersal. The species has been documented dispersing through areas with sparse vegetative cover and dispersal patterns are considered to be dependent on habitat availability and environmental conditions.

San Anselmo Creek provides potentially suitable habitat for California red-legged frogs, but the species has not been documented in the creek or in the greater project area. There is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area. There has been only one documented occurrence of California red-legged frog in the Mt. Tamalpais area, an observation of a single frog in 2006 at the outflow from Kent Lake, just upstream from the confluence of Lagunitas Creek[19]. Based on the CNDDB, California red-legged frogs have not been documented within approximately 5 miles of

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16 Garcia and Associates (GANDA). 2018. Scope of work and cost estimate for foothill yellow-legged frogs.

17 California Department of Fish and Wildlife (CDFW). 2018. California Natural Diversity Database (CNDDB) California Department of Fish and Wildlife. Occurrence #73, from 1959

18 Scott, N. G. and Rathbun 1998. Comments on working draft of California Red-legged Frog Recovery Plan. 2010

19 California Department of Fish and Wildlife (CDFW). 2018. Op Cit. Occurrence #892.

the study area or from a location where the species could disperse onto the project area. Regional occurrences are from western Marin County, with the closest documented occurrence being from a location 0.75-mile due west of Peters Dam, approximately 5 miles west of the project area.

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 habitat is present in San Anselmo Creek and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area. The CNDDB does not include any occurrences from San Anselmo Creek.

Cooper's hawk *(Accipiter cooperi)*
Listing Status: California Department of Fish and Wildlife Watch List

The preferred habitat of Cooper's hawk includes mature forests, open woodland, and riparian forest. This bird species nests in coast live oak and other forest habitats. Suitable nesting habitat for this bird species is present within the project area and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area.

"Marin" Chestnut backed Chickadee *(Parus rufescens neglectus)*
Listing Status: Tomales Bay Watershed Species of Local Interest

The preferred habitat of Marin chestnut backed chickadee is Oak woodlands and riparian corridors. Suitable nesting habitat for this bird species is present within the project area and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area.

Northern spotted owl *(Trix occidentalis caurina)*
Listing Status: Federal threatened/state threatened. Federal Bird of Conservation Concern, and California Species of Special Concern

The northern spotted owl is found most commonly in old-growth forest or mixed stands of old-growth and mature conifers, usually 150 to 200 years old. This bird species prefers older forest because a multi-layered, closed canopy provides a variety of roosting opportunities which helps the owls to regulate its body temperature within certain boundaries, even when the surrounding temperature is very different. However, the habitat associations of northern spotted owl differ in Marin County, which is located at the southern limit of the species' range. In Marin County, northern spotted owl may be found in younger forest stands that contain structural characteristics of older forests. Acceptable habitat is provided by mature pine and fir forests, and, in some years, bay forest. Bishop pine *(Pinus muricata)*, Douglas fir *(Pseudotsuga menziesii)* and the mixed broadleaf evergreen forests of Inverness and Bolinas ridges and Mt. Tamalpais support Marin's higher northern spotted owl densities[20]. Closed canopy live-oak woodlands may also be used as roost sites and occasionally selected for nest sites. Most of the local owl territories are in canyon bottoms or mid-slope locations and often include small perennial watercourses. Northern spotted owls are non-migratory and commonly occupy the same

[20] Shuford, W.D. 1993. Marin County Breeding Bird Atlas. Bushtit Books, Bolinas, CA and Stralbert, D., K.E. Fehring, L.A. Pomara, N.Nur, D.B. Adams, D. Hatch, G.R. Geupel, S. Allen. 2009. Modeling nest-site occurrence for the Northern Spotted Owl at its southern range limit in central California. Landscape and Urban Planning. 90:76-85.

home range year-round[21]. Typically, northern spotted owls form long-term pair bonds and share the same territory[22]. They are philopatric, meaning faithful to nest sites and activity centers. Spotted owls have been characterized as central-place foragers, where individuals forage over a wide area and subsequently return to a nest or roost location that is often centrally located within the home range. Activity centers are a location or point within the core use area that represents this central location. Nest sites are typically used to identify activity centers, or in cases where nests have not been identified, breeding season roost sites or areas of concentrated night-time detections may be used to identify activity centers. Therefore, not all activity centers are nesting locations. Because territories are usually occupied over successive years by nesting pairs, sites occupied in previous years are commonly occupied in subsequent years by the same owls.

Northern spotted owl resides in Marin County in second growth conifer, mixed conifer-hardwood, and evergreen hardwood forests. Almost the entire Mt. Tamalpais watershed, including the project area, is within designated critical habitat for the northern spotted owl. In the project area, even though the preferred conifer nesting habitat not present, potential nesting habitat is still present. The CNDDB and Point Blue Conservation Science report several non-nesting occurrences from within 0.25 mile of the study area, and the closest documented nesting occurrence being approximately 0.5 mile from the study area. MCOSD conducts annual surveys for northern spotted owl. The most recent survey concluded there are no nests for northern spotted owl in Cascade Canyon Open Space Preserve.[23]

In Marin County, the dusky-footed woodrat (*Neotoma fuscipes*) is not a special-status species. However, this species has been raised as an issue of concern by local residents because it is a primary prey species for northern spotted owl. Suitable woodland habitat for dusky-footed woodrat is present within Cascade Canyon Open Space Preserve. No woodrat nests where observed during the 2017 and 2019 field surveys conducted in the project area.

Oak titmouse *(Baeolophus inornatus)*
Listing Status: Federal Bird of Conservation Concern

The oak titmouse nests in tree cavities in oak woodlands. Suitable nesting habitat for this bird species is present within the project area and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area.

Olive-sided flycatcher *(Contopus cooperi)*
Listing Status: Federal Bird of Conservation Concern

The olive-sided flycatcher nests in trees, with preference for conifers, but also eucalyptus. The preferred nesting trees for this bird species are generally absent within the project area, but the species can also nest in mixed forests which exist within the project area and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area.

Yellow warbler *(Dendroica petechial brewsteri)*
Listing Status: Federal Bird of Conservation Concern; California Species of Concern

The yellow warbler nests in deciduous saplings or shrubs in riparian habitats. Some suitable nesting habitat for this bird species is present within the project area and therefore there is potential for the

[21] Gutierrez, R.J., A.B. Franklin, and W.S. Lahaye. 1995. Spotted Owl, The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/179

[22] Forsman, E.D., E.C Meslow, and H. W. Wight. 1984. Distribution and biology of the Spotted Owl in Oregon. Wild Monographs 87.

[23] Cormier, L. Renee. 2019. Northern Spotted Owl Monitoring on Marin County Parks and Marin Municipal Water District Lands, 2019 Report. Point Blue. Petaluma, CA.

species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area.

Hoary bat *(Lasiurus cinereus)*
Listing Status: Tomales Bay Watershed Species of Local Interest; Western Bat Working Group, High priority

The preferred habitat of hoary bat is forested habitat. Trees within the project area provide potential roosting habitat and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area.

Pallid bat *(Antrozous pallidus)*
Listing Status: California Species of Concern; Western Bat Working Group, High priority

The pallid bat prefers open dry lands with rocky areas for roosting but can utilize a variety of habitats. Any trees with suitable cavities provide potential roosting habitat within the project area and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area.

Western red bat *(Lasiurus blossevillii)*
Listing Status: California Species of Concern; Western Bat Working Group, High priority

The preferred habitat of western red bat includes edges of open to moderately dense deciduous foothill woodlands along streams. This bat species roosts in moderately dense foliage. Trees within the project area provide potential roosting habitat and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area.

Fringed myotis *(Myotis thysanodes)*
Listing Status: Western Bat Working Group, High priority

The fringed myotis roosts in mines, caves, trees and buildings. Trees with suitable cavities provide potential roosting habitat within the project area and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area.

Long eared myotis *(Myotis evotis)*
Listing Status: Western Bat Working Group, Medium priority

The long-eared myotis utilizes a variety of woodland and forest habitats but prefers conifers. This species roosts in crevices, buildings, snags, and under bark. Trees with suitable cavities provide potential roosting habitat within the project area and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area.

Long-legged myotis *(Myotis Volans)*
Listing Status: Western Bat Working Group, high priority

The preferred habitat of long-legged myotis includes montane conifer forests, pinyon-juniper woodland, and Joshua tree woodland. This bat roosts in hollow trees, rock crevices and buildings. Trees with suitable cavities provide potential roosting habitat within the project area and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area.

Yuma myotis *(Myotis yumanensis)*
Listing Status: Western Bat Working Group, Medium/Low Priority

The preferred habitat of Yuma myotis includes woodland and open forest with freshwater sources over which to feed. Trees with suitable cavities provide potential roosting habitat within the project area and therefore there is potential for the species to exist within the project area. However, field surveys conducted in association with the proposed project did not observe this species within the project area.

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
- 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-4: Avoidance and Protection of Northern Spotted Owl
- 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 Plan 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

Implementation of the proposed project would remove one 8-inch diameter at breast height (DBH) madrone sapling and some small brush confined to approximately 0.02 acre of valley oak woodland habitat. Additional trees may be pruned to avoid damage when the bridge sections are delivered and placed. This minimal vegetation removal would not result in habitat modifications that could cause potential impacts to special-status species that are known to occur or have the potential to occur within the project area. The botanical surveys conducted as part of the Pacific Biology Report concluded that no special-status plant species are expected to occur in the study area and implementation of the proposed project is not expected to negatively impact special-status plant species.

Minor grading and temporary fill placement may be required at the existing rock fords to accommodate construction equipment access. Minor grading and temporary fill placement may be required at the existing rock fords to reduce the approach angle for construction equipment access. If needed, temporary fill would be placed within San Anselmo Creek at the base of the channel bank for a length of 15 to 20 feet on each side of the channel and a width of 10 to 14 feet and a maximum depth of three feet. A maximum of 25 cubic yards of temporary fill may be required within a maximum 750 square foot area at existing rock fords 1 and 2. Temporary fill would be sourced onsite from excavation of the lip of the San Anselmo Creek channel bank or from an approved borrow site outside of the San Anselmo Creek channel. Temporary fill would be placed on top of approved erosion control fabric to avoid mixing with the native channel bed material. At the conclusion of project implementation, an excavator would remove the temporary fill, which would be spread on-site at an approved location and erosion control measures, such as straw wattles, would be applied. The erosion control fabric would be disposed of at a permitted landfill.

At the Bridge 1 location, the existing rock slope protection on the south side of San Anselmo Creek would be repaired and augmented as needed to provide the required bridge abutment protection, requiring approximately 40 cubic yards of new rock. Placement of the new rock would occur above the ordinary highwater mark. At the Bridge 2 location, the existing rock riprap on the south side of San Anselmo Creek would be repaired and augmented to provide the required bridge abutment protection, which would require placement of approximately 40 cubic yards of new rock below the ordinary highwater mark. Live willow stakes would be incorporated in between layers of rock to revegetate the slopes. For both bridges, the footings would be placed offset from the edge of the San Anselmo Creek channel bank and the decks would be located above the 100-year flood elevation. Through design, the bridges would not impact the San Anselmo Creek channel or streamflow and would not result in the loss of aquatic habitat.

Construction would begin after August 1st or after pre-construction surveys determined that sensitive species are not present in the project area. Construction related to water crossings and earthwork requiring use of heavy equipment would be limited to the dry season, generally May 15 – October 15 or as permitted through regulatory permits. Work within San Anselmo Creek would occur in the late summer when the creek is dry. All areas temporarily disturbed during project implementation would be restored to their pre-construction condition or better. Use of equipment with decibel levels 20 dBA above ambient noise levels would cease during nesting season for Northern spotted owl, February 01- July 31, and only hand work would occur. For these reasons, implementation of the proposed project would not result in a substantial adverse effect to special-status species that are known to exist or have the potential to exist within the project area, including Central California coast steelhead, Foothill yellow-legged frog, Marin Hesperian, California giant salamander, California red-legged frog, western pond turtle, Cooper's hawk, "Marin" Chestnut backed Chickadee, Northern spotted owl, oak titmouse, olive-sided flycatcher, yellow warbler, hoary bat, pallid bat, western red bat, fringed myotis, long-eared myotis, long-legged myotis, and Yuma myotis. Implementation of the proposed project would result in a less than significant impact to special status wildlife species.

Implementation of the proposed project would improve habitat for special-status species, including Central California coast steelhead and Foothill yellow-legged frog, as the new bridges would eliminate use of the existing rock ford crossings within San Anselmo Creek for trail access. Similarly, improvements to the Canyon Trail, decommissioning of the Canyon Trail spur segment connecting to the Cascade Canyon Fire Road and the High Water Trail would minimize the amount of existing erosion, lessening the amount of fine sediment into San Anselmo Creek that could negatively impact steelhead and foothill yellow-legged frogs. The proposed change in use on a segment of the Canyon Trail to multi-use would allow bicycles in addition to hiking and equestrian use. The change in use on the segment of the Canyon Trail is not expected to have a substantial adverse effect on any candidate, sensitive, or special status species because the trail segment is an existing trail used by visitors, no habitat modifications would occur to effect the change in use, and bicycle use is a current use with Cascade Canyon Open Space Preserve. Implementation of the proposed project is not expected to result in a substantial increase in the visitor use of the trail system because Cascade Canyon Open Space Preserve has limited parking on Cascade Drive, which is a limiting factor on visitation. The proposed project does not include provision of additional parking and therefore, lack of parking would continue to be limited. Consistent with the IAP, MCOSD primarily relies on public right-of-way to provide the parking to serve open space visitors arriving by motorized vehicle. In cases for which adequate on-street accessible parking cannot be provided within the public right-of-way, MCOSD evaluates the appropriateness of parking improvements within open space preserve properties.

The Pacific Biology Report did not recommend additional mitigation measures associated with special-status plants or wildlife species. MCOSD would implement applicable RTMP BMPs listed under the subheading Applicable RTMP Policies and BMPs o minimize potential impacts on special-status plant and wildlife species however, the implementation of the proposed project could result in potential impacts. The following mitigation measures augment the applicable RTMP policies and BMPs.

Special-Status Plants

The following mitigation measure addresses the section of the Canyon Trail proposed for change in use that was not included in the botanical surveys completed as part of the Pacific Biology Report.

Mitigation Measure BIO-1: Preconstruction Special-Status Plant Survey

Qualified MCOSD staff or consultant shall conduct a botanical survey of the 350-foot section of the Canyon Trail proposed for a change in use prior to initiating the proposed change in use. If special-status plants are found, MCOSD shall implement protection measures to avoid impacts to any special-status plants, which could include placement of rocks or logs to protect the plant while allowing trail use.

Foothill Yellow-Legged Frog

Implementation of the proposed project is not expected to result in potential impacts to Foothill yellow-legged frog, primarily because activities would occur during the dry season when the frogs are not expected to be present and the aquatic habitat of San Anselmo Creek would not be affected. The following avoidance measures were recommended by the California Department of Fish and Wildlife (CDFW) at the February 2, 2019 Marin Project Coordination meeting and would be implemented to supplement the RTMP MBPs required by the RTMP:

Mitigation Measure BIO-2: Additional Foothill Yellow-Legged Frog Avoidance Measures

The qualified biologist(s) conducting surveys/inspections for foothill yellow-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 foothill yellow-legged frog using a CDFW approved methodology. The results of the surveys shall be provided to CDFW prior to construction. If foothill yellow-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 foothill yellow-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 foothill yellow-legged frog 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 foothill yellow-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 foothill yellow 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.

Nesting Birds

The plant communities within the project area provide potential nesting habitat for special-status bird species, though none were observed during the surveys completed as part of the Pacific Biology Report for the proposed project. Northern spotted owl may forage within adjacent forests. The proposed project has been designed to minimize vegetation removal to the greatest degree possible. One 8-inch DBH madrone sapling and approximately shrubs within a 0.02 acre of Valley Oak Woodland would be removed to install Bridge 1. Additional trees would be pruned to avoid damage when the bridge sections are delivered to the project area and then installed. Implementation of the proposed project would result in ground disturbance and construction-related noise which could result in impacts on nesting birds if present in and near the work area. Potential impacts on nesting birds could result from destruction of eggs or occupied nests, mortality of young, and abandonment of nests with eggs or young birds prior to fledging. Such potential impacts on protected nesting birds could be significant.

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-3 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-3, 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-3: 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 will not be necessary for special-status and nesting birds. The broadest nesting bird window based on Table BIO-1 would be January 01 – 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. 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 6: 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 6, 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 6: 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

Dusky-Footed Woodrat

Although not a listed species, local concern has been raised for the common dusky-footed woodrat because it is a primary prey species for the Northern spotted owl. Suitable woodland habitat for dusky-footed woodrat is present within Cascade Canyon Open Space Preserve although no woodrat nests were observed during surveys conducted for the Pacific Biology Report. However, it is possible that vegetation removal associated with implementation of the proposed project could result in the loss of a woodrat nest. The loss of or disturbance to dusky-footed woodrat or its nest would be a potentially significant impact because the loss of woodrats could indirect affect Northern spotted owl. Implementation of Mitigation Measure BIO-4 would reduce this impact to a less-than-significant level. MCOSD would implement the following measures to reduce impacts on dusky-footed woodrat:

Mitigation Measure BIO-4: Preconstruction Woodrat Survey and Nest Relocation

- Within 30 days prior to vegetation removal, a qualified biologist would inspect the potential area of disturbance and adjacent areas for woodrat houses. If none are found, then no additional measures are necessary.
- If a woodrat house is identified within a work area, an exclusion zone would be erected around the existing woodrat houses using flagging or a temporary fence that does not inhibit the natural movements of wildlife, such as steel T-posts and a single strand of yellow rope or similar materials. The work area would be relocated as necessary to avoid removing woodrat houses, even if avoidance is by only a few feet. The orientation of the work area would allow for escape routes to nearby suitable habitat, meaning that the work area would not completely surround the protected woodrat house. If woodrat houses cannot be avoided, CDFW would be contacted for approval to relocate individuals and dismantle the nest.

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

Sensitive plant communities are that are of limited distribution statewide or within a county or region. The California Department of Fish and Wildlife's List of California Terrestrial Natural Communities and the Manual of California Vegetation[24] indicate which plant communities are sensitive within the state of California classification. Within the study area, the Valley Oak Woodland and the California Bay Forest plant communities are considered sensitive plant communities. Valley Oak Woodland is ranked "S3G3" the Manual of California Vegetation, indicating it is rare or threatened within the state and globally. California Bay Forest is ranked "S3G4," indicating it is rare or threatened within the state and is a relatively common non-sensitive plant community within the global scale. Additionally, almost the entire Mt. Tamalpais watershed, including the study area, is within designated critical habitat for the northern spotted owl.

The Cascade Canyon Open Space Preserve is located within the Corte Madera Creek Watershed, which includes the upper reaches of San Anselmo, Carey Camp, and Cascade creeks. Cascade Creek runs through the project area. San Anselmo Creek is perennial, meaning that water flows throughout the year. Within the project area, San Anselmo Creek has surface water during the rainy season and groundwater flow during the dry season. It is a 5th-order stream based on the Strahler method of establishing stream hierarchy, 5th order relating to the degree of separation from the headwaters by branching of higher order stems. San Anselmo Creek may include jurisdictional Waters of the State and Waters of the United States. Steelhead/rainbow trout *(Oncorhynchus mykiss)* are known to occur in San Anselmo Creek though there was no evidence of spawning detected during surveys conducted by MCOSD staff biologists during 2014-2018.

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 plant community. The project area includes individual riparian tree species along the edge of San Anselmo Creek, interspersed with the Valley Oak Woodland, Annual Grassland, and Mixed Broadleaf Woodland plant communities and the Pacific Biology Report included these trees in the Valley Oak Woodland plant community. Wetland-associated plant species also occur within and along the margins of San Anselmo Creek, but do not form significant wetland habitat.

The proposed project has been designed to avoid impacts to vegetation, and where these impacts cannot be completely avoided, the proposed project has been designed to minimize the impact. Installation of

[24] Cormier, L. Renee. 2019. Op Cit.

Bridge 1 would remove one 8-inch diameter at breast height (DBH) madrone sapling and some small brush confined to approximately 0.02 acre of valley oak woodland habitat. No trees would be removed at the Bridge 2 site although several trees may be pruned to avoid damage when the bridge sections are delivered and installed. This minimal vegetation removal is not expected result in substantial adverse effects 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.

MCOSD would implement applicable RTMP BMPs to minimize potential impacts on riparian habitat or other sensitive natural communities. While implementation of the proposed project would not result in potentially significant impacts associated with creek and riparian habitat, MCOSD would implement following mitigation measure to augment the applicable RTMP policies and BMPs.

Creek and Riparian Habitat

The following mitigation measure was recommended in the Pacific Biology Report and would be implemented as part of the proposed project:

Mitigation Measure BIO-5: Creek and Riparian Habitat Restoration Plan

Prior to the commencement of construction, all required permits, agreements, and certifications shall be obtained from the ACOE, RWQCB, and CDFW. The MCOSD shall comply with all conditions of those permits. At a minimum, all creek and riparian habitats shall be restored to ensure a "no net loss" of wildlife value and acreage of creek and riparian habitat. If required by regulatory permit conditions, a Creek and Riparian Habitat Restoration Plan shall be prepared and submitted to ACOE, RWQCB, and CDFW for approval, which could include the following components:

- The preconstruction habitat conditions within jurisdictional areas to be impacted shall be documented by a qualified biologist.
- All temporarily disturbed areas shall be restored to pre-construction conditions or better.
- For any disturbed wetland/riparian vegetation, the plan would specify, at a minimum, the following:
  - i) Location of the mitigation site(s).
  - j) Procedures for procuring plants, such as transplanting or collecting cuttings from plants to be impacted, including storage locations and methods to preserve the plants.
  - k) Quantity and species of plants to be planted or transplanted.
  - l) Planting procedures, including the use of soil preparation and irrigation.
  - m) Schedule and action plan to maintain and monitor the mitigation site for a minimum 3-year period, including monitoring the health of trees near the Bridge 1 footing excavation area.
  - n) Reporting procedures, including the contents of annual progress reports.
  - o) List of criteria such as growth, plant cover, and survivorship, by which to measure success of the plantings.
  - p) Contingency measures to implement if the plantings are not successful such as weed removal, and/or supplemental plantings.
- For any disturbed unvegetated streambed habitat, the plan shall detail how temporarily disturbed habitats will be restored through minor grading, replacing or reconfiguring creek substrate, and/or other methods.

Tree Protection and Replacement

The RTMP does not include BMPs to address tree pruning and/or removal. While tree pruning and removal required to implement the proposed project would be minimal and would not result in a potentially significant environmental impact, the MCOSD would implement the following tree protection and replacement measures:

Measure BIO-6: Tree Protection and Replacement

Minimize tree removal and pruning. Light pruning may occur at any time of year. Heavy pruning may cause problems due to vigorous sprouting and subsequent witches broom or powdery mildew diseases. Heavy pruning on deciduous trees shall be done in the winter.

- Minimize impacts within the Root Protection Zone[25].
- Temporary protective fencing shall be installed around RPZs or, at a minimum, the dripline perimeter of trees near work areas.
- Changes in drainage within protected tree perimeters shall be avoided to the extent feasible.
- Soil compaction within protected tree perimeters shall be avoided to the extent feasible.
- Heavy equipment, vehicles, and/or construction materials shall not be parked or stored beneath trees or operated within the delineated protected perimeter.
- Develop a tree replacement plan for any tree removed based on the ratios shown on Table BIO-2:

TABLE BIO-2: TREE REPLACEMENT RATIOS

Tree Type	Diameter	Replacement Ratio
Oaks	5-10 inches DBH	4:1
Oaks	10-15 inches DBH	5:1
Oaks	15 inches DBH and above	15:1
Native Trees	3-6 inches DBH	3:1
Native Trees	6 inches DBH and above	6:1
Non-Native Trees	Any DBH	1:1

Tree Health

Installation of the southern footings for Bridge 1 could impact tree roots of including one 24-inch DBH oak and one 24-inch California bay laurel. Minimal excavation would be employed to avoid any unnecessary impacts to tree roots. While excavation work is not expected to result in potentially signifiant environmental impacts, MCOSD would implement the following measures to monitor trees of which roots are cut, damaged, or removed during implemention the proposed project:

Mitigation Measure BIO-7: Monitor Tree Health

Should tree roots require cutting or removal in order to implement the proposed project or should tree roots inadvertently be damaged during project implementation, the following measures shall be implemented to ensure the health of the tree and safety of visitors:

- Cut roots consistent with International Society of Arboriculture guidelines

[25] 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 also extends approximately three feet below the soil surface.

- 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. The mulch helps condition the soil, moderates soil temperatures, maintains moisture, and reduces competition from weeds and grass. The mulch should extend as far out from the tree as practical for the site. Backfilling and mulch may still be the best mitigation strategy as it creates 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.

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 U.S. Army Corps of Engineers (USACOE) under Section 404 of the Federal Clean Water Act (CWA). The California Department of Fish and Wildlife (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 Regional Water Quality Control Board (RWQCB) under both the federal CWA and the State of California's Porter-Cologne Water Quality Control Act (California Water Code, Division 7).

San Anselmo Creek is subject to the jurisdiction of the USACOE, CDFW, and RWQCB. The proposed project has been designed to minimize impacts to San Anselmo Creek. The proposed bridges would span the creek and would not affect streamflow. The footings would be above the top of creek bank to avoid impact to the bed and bank of San Anselmo Creek. Implementation of the proposed project would be constructed during the dry season, when San Anselmo Creek is generally dry, though some ponding could still occur within the project area. At the Bridge 2 location approximately 40 cubic yards of new rock below the ordinary high-water mark to repair and augment the existing rock riprap on the south side of San Anselmo Creek. Live willow stakes would be incorporated in between layers of rock to revegetate the slopes.

Large equipment including an excavator, trucks, and compactor would utilize the existing rock fords within San Anselmo Creek to access the bridge sites. Large equipment may also need to access the stream channel from the existing ford crossing to repair and augment the existing rock slope protection at the Bridge 2 location. The existing rock slope protection would also be augmented at Bridge 1, but it is expected that all associated work would occur above the ordinary high-water mark.[26] Live willow stakes would be incorporated in between layers of rock to revegetate the slopes. Minor grading and temporary fill placement may be required at the existing rock fords to accommodate construction equipment access Minor grading and temporary fill placement may be required at the existing rock fords to reduce the approach angle for construction equipment access. If needed, temporary fill would be placed within San Anselmo Creek at the base of the channel bank for a length of 15 to 20 feet on each side of the channel and a width of 10 to 14 feet and a maximum depth of three feet. A maximum of 25 cubic yards of temporary fill may be required within a maximum 750 square foot area at existing rock fords 1 and 2. Temporary fill would be sourced

[26] Best, Timothy C., CEG. June 2018. Op Cit.

onsite from excavation of the lip of the San Anselmo Creek channel bank or from an approved borrow site outside of the San Anselmo Creek channel. Temporary fill would be placed on top of approved erosion control fabric to avoid mixing with the native channel bed material. At the conclusion of project implementation, an excavator would remove the temporary fill, which would be spread on-site at an approved location and erosion control measures, such as straw wattles, would be applied. The erosion control fabric would be disposed of at the local landfill.

With implementation of Mitigation Measure BIO-5: Creek and Riparian Habitat Restoration Plan the potential impacts associated with impacts on jurisdictional wetlands or waters resulting from implementation of the proposed project would be less than significant.

Implementation of the proposed project would substantially reduce the potential for accelerated erosion and sedimentation into the San Anselmo Creek Watershed that could adversely impact water quality and listed aquatic species and their habitats. 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 bridges would span the creek and would not affect streamflow or wildlife movement with San Anselmo Creek because the footings would be above the top of creek bank to avoid impact to the bed and bank of San Anselmo Creek. 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 the Canyon Trail spur segment connecting to the Cascade Canyon Fire Road and the High Water Trail and the change in use of the Canyon Trail 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 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 because the proposed project does not include additional 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. The proposed project would decommission the High Water Trail and the Canyon Trail spur segment connecting to the Cascade Canyon Fire Road by removing the existing bridge, puncheon, and ford and then restoring the trail contour back to the original slope whenever possible. Access would be restricted using woody vegetation, and exposed soil would be revegetated on areas of exposed soil with native species where supported by soil conditions. The Canyon Trail spur would be decommissioned by removing old trail signs, de-compacting the trail surface, blocking access and revegetating areas as needed. After decommissioning, these trail areas would restore habitat to their natural state, resulting in a beneficial effect associated with wildlife use.

Implementation of the proposed project would substantially reduce the potential for accelerated erosion and sedimentation into the San Anselmo Creek Watershed that could adversely impact water quality and listed aquatic species and their habitats. This would result in a beneficial effect to 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. For these reasons, mitigation measures would not be 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 Cascade Canyon Open Space Preserve is within unincorporated Marin County and governed by the Marin Countywide Plan. The majority of project area is located within the Elliot Nature Preserve, which is within the Town of Fairfax limits, and is governed by the Town of Fairfax 2010-2030 General Plan, adopted by the Fairfax Town Council on April 4, 2012. These respective plans include 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.

In 1973, the Town of Fairfax approved Ordinance No. 387 to preserve the wide variety of local native trees and to protect the benefits they provide the citizens and the environment. The ordinance includes the species of trees considered heritage trees and the relative size of each species requiring a permit for pruning or removal. The ordinance applies to madrone *(Arbutus menziesii)* of 8-inches DBH and oak species of 8-inches DBH, as well as other native tree species. The ordinance also requires that a Tree Protection Plan be prepared by a certified arborist to protect trees during construction and maximize chances for their subsequent survival. Implementation of the proposed project would remove one 8-inch diameter at breast height (DBH) madrone sapling and would prune additional trees to prevent damage when the bridge sections are delivered and installed and therefore, implementation of the proposed project would comply with Town of Fairfax Ordinance No. 387.

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 require a permit. The ordinance applies to madrone *(Arbutus menziesii)* of 6-inches DBH and to oak species of 6-inches DBH, as well as other native tree species.

The proposed project is intended to reduce environmental impacts, improve the user experience, improve accessibility for all trail users, and improve the sustainability of the trail consistent with the RTMP policies, applicable BMPs, and trail design standards. Implementation of the proposed project would reduce the potential for accelerated erosion and sedimentation into the San Anselmo Creek Watershed that could adversely impact water quality by eliminating visitor use of the existing rock fords within San Anselmo Creek and decommissioning trails that contrite to erosion and the mobilization of fine sediment that could negatively impact downstream steelhead redds and the upstream passage of young fish into summer rearing habitat. This would result in a beneficial effect on biological resources.

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 7: 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

Holman & Associates prepared an *Archaeological Survey Report* (ASR) for the proposed project in 2019. It included a cultural resources literature search completed at the Northwest Information Center of the California Historical Resources Information System (CHRIS), initial Native American Consultation with the Native American Heritage Commission, an archaeological survey of the project area, and mapped the Area of Potential Effects (APE) required for the United States Army Corps of Engineers regulatory permitting process. The ASR also will assist with the Section 106 compliance process of the National Historic Preservation Act, as amended. The ASR satisfies the following RTMP BMPs Cultural Resources-1: Historical and Archaeological Resource Mapping and Cultural Resources-2: Consultation with Northwest Information Center. Much of the setting information and impact analysis included in this section is based on information contained in the ASR.

The APE measures 1,300 feet long on a northwest/southeast alignment with its greatest width measuring 275 feet for discontinuous proposed linear improvements. The vertical component would be six feet below the surface for the bridge abutments, while the remaining project elements would be completed within two feet below the surface.

CHRIS records search identified no cultural resources within or adjacent to the Project APE. The entire APE had been previously studied, but only a small portion, approximately two percent, had been previously surveyed. Holman & Associates conducted a field survey on March 19, 2019. No cultural artifacts were identified nor were there any indications of fossil-bearing soils in the creek's banks. No historic resources/or properties are listed on federal, state, or local inventories within or abutting the project. The Native American Heritage Commission responded that no resources were identified and provided a contact list of two representatives from the Federated Indians of Graton Rancheria.

Holman & Associates did not recommend additional study of the APE, and recommended that if buried, or previously unrecognized archaeological deposits or materials of any kind are inadvertently exposed during any construction activity, work within 50 feet of the find shall cease until a qualified archaeologist can assess the find and provide recommendations for further treatment, if warranted. Construction and potential impacts to the area(s) within a radius determined by the archaeologist shall not recommence until the assessment is complete. This recommendation has been incorporated into the proposed project through RTMP BMP Cultural Resources – 6: Construction Recovery Protocol and RTMP BMP Cultural Resources-7: Human Remains.

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 and controlled 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. In 1835, Rancho Nicasio was one of three landgrants granted to local Marin County Native Americans who had been a part of the mission system. Nicasio landgrant consisted of 20,0000 square leagues and was granted to Teodosio Quilajuequi, but never confirmed. Fairfax is named for Charles S. Fairfax and his wife who settled in the area in 1856. The couple were likely gifted some land and continued to live there throughout their lives.

Applicable Regulations

National Historic Preservation Act Context

The proposed project would likely require a Section 404 Permit from the USACE, and therefore, would be subject to compliance with Section 106 of the National Historic Preservation Act (NHPA)[27] 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[28] 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 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[29] for determining NRHP eligibility are as follows:

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[27] 54 USC 306108: Effect of Undertaking on Historic Property. https://www.law.cornell.edu/uscode/text/54/306108

[28] 36 Code of Federal Regulations (CFR) Part 800: Protection of Historic Properties. https://www.achp.gov/sites/default/files/regulations/2017-02/regs-rev04.pdf

[29] 36 CFR 60.4: National Register of Historic Places. https://www.ecfr.gov/cgi-bin/text-idx?SID=b36f494ab8c19284178b4c593eda2a8f&tpl=/ecfrbrowse/Title36/36cfr60_main_02.tpl

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.

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 National Register 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 National Register 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:

- 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. There are no existing structures within the project area, historic or otherwise.

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. MCOSD invited the Federated Indians of Graton Rancheria (FIGR) to consult on the proposed project pursuant to AB52 through a letter dated February 2, 2017. In an email dated February 22, 2017, FIGR thanked MCOSD for notifying them about the project and indicated they would respond the project within 10 business days. MCOSD did not receive further correspondence from FIGR indicating they would like to consult regarding the proposed Project, and therefore, AB52 consultation was concluded. MCOSD will invite FIGR to provide comments on the draft CEQA document during the public review period. AB 52 compliance is discussed further under the Tribal Cultural Resources section of this Initial Study Checklist.

Applicable RTMP Policies and BMPs

MCOSD would incorporate applicable RTMP Policies and BMPs, which were designed to minimize or avoid potential environmental impacts to 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 to 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."

Holman & Associates conducted a records search at the Northwest Information Center of the California Historical Resources Information System. No 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 field survey did not identify any cultural resources within or adjacent to the project area.

Excavation required for the 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 Road and Trail Management Plan 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 resources pursuant to CEQA Guidelines Section15064.5.

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 could 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 the Federated Indians of Graton Rancheria 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 Native American Heritage Commission (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.

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 the Federated Indians of Graton Rancheria. 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 8: 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 and 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 a large crane, excavator, loader, compactor, cement truck, cement mixers, roller compactor, rubber track carrier, generators, dump truck, ATVs, generators, jackhammers, power. saws, and other hand tools. As described in the project description, heavy equipment would operate for approximately 20 working days over a three-month 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 along Cascade Canyon Road. The affected trails are existing facilities that

primarily support neighborhood recreation. The proposed new bridges and trial 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 install water-control features, construct re-routes, 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.[30] 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.

[30] California Air Resources Board. California 2017 Climate Change Scoping Plan. November 2017. https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf

GEOLOGY AND SOILS

TABLE 9: 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.[31] 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.[32] 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.

Engineering Geologic and Geotechnical Review.

MCOSD consulted with Timothy C. Best, CEQ, to evaluate the engineering geologic and geotechnical feasibility of the proposed project. In June 2018, Timothy Best, CEG prepared an *Engineering Geologic and Geotechnical Review* (Engineering Report) of the proposed project in association with Haro, Kasunich and Associates, Inc., Waterways Consulting, and Mayone Structural Engineering.[33] Much of the descriptive and analytic information contained in the Geology and Soils section of the CEQA Checklist is from the Engineering Report.

The purpose of Engineering Report was to evaluate the geologic, geotechnical and hydrologic conditions at the project site, and develop recommendations and design parameters for the proposed trail bridges and trail upgrades. The Engineering Report included review of available geologic literature of the project area; topographic site surveys of the two bridge sites; geologic and geomorphic field mapping; data analysis; and recommendations for design and construction of the proposed project. Recommendations including bridge locations and elevations, bridge abutments, bridge site grading, rock slope protection along the banks of San Anselmo Creek; site drainage; erosion control and water pollution prevention; fire road and trail surfacing; inspections; and decommissioning of the High Water Trail. These recommendations have been incorporated into the design of the proposed project.

Mayone Structural Engineering, Inc. analyzed structural elements for the two bridges and recommended the proposed bridges be prefabricated single-span steel structures. This recommendation has been incorporated into the project design and is included on the project plans. Haro, Kasunich and Associates conducted a geotechnical investigation of the two proposed bridge sites to explore the surface and subsurface conditions at the site and develop geotechnical recommendations for the design and construction of the proposed bridge foundation system. The recommendation to utilize concrete spread

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[31] Marin County Open Space District. *Road and Trail Management Plan Recirculated Final Tiered Program Environmental Impact Report*, November 2014.

[32] County of Marin. Marin Countywide Plan, November 2007

[33] Best, Timothy C., CEG. Engineering Geology and Hydrology. "Engineering Geologic and Geotechnical Review Cascade Canyon Trail Bridge Project." June 2018.

footings offset from the edge of San Anselmo Creek instead of deep-pier foundations resulted from the geotechnical investigation and has been incorporated into the project design. The geotechnical investigation determined that deep-pier foundations would be difficult to drill through the rocky soils located at the bridge sites and would result in greater environmental impacts than would concrete spread footings. The Engineering Report also recommended the proposed bridges, including the abutments, be designed in accordance with the Town of Fairfax adopted seismic provisions as set forth in the latest California Building Code (CBC) seismic design standards. The primary goal of these standards is to protect health and safety, but not necessarily to avoid structural damage, since such design may be economically and environmentally prohibitive. The recommendations included in the Engineering Report have been incorporated into the project design and are reflected in the Project Description.

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 Central Belt Franciscan Mélange, an accumulation of folded and faulted continental margin deposits. Regionally, this rock is described as a tectonic mixture of locally pervasively sheared mudstone (argillite) and lithic sandstone within which are mixed numerous blocks and slabs of greenstone, chert, metamorphic rocks, serpentinite, and other rocks. Within the project area, bedrock is exposed in San Anselmo Creek where it has undercut the channel bank, and along portions of the High Water Trail. Exposed bedrock consists of hard fractured sandstone and sheared mudstone.

Project Area Soils

The project area is generally underlain by Quaternary[34] sands and gravels that are consistent with a Soil Type D classification. Group D soils consist of clay loam, silty clay loam, sandy clay loam, sandy clay, silty clay, and/or clay. This soil group has the highest runoff potential and very low infiltration rates when thoroughly wetted, a high swelling potential due to clay content, and a high-water table. This soil group has shallow soils over a nearly impervious claypan or clay layer at or near the ground.

The soils of the lower areas of the Cascade Canyon Open Space Preserve are predominately Tocaloma-McMullin complex.[35] Tocaloma soils are primarily located on convex side slopes, while McMullin soils are primarily located near the upper part of the slopes. The Tocaloma soils are moderately deep and well drained, with moderate permeability and very high runoff and erosion potential. The McMullin soils are shallow and well drained, with rapid runoff and very high erosion potential.

Alluvial sediments and debris fan deposits overlay the bedrock within the valley bottom within the project area. These deposits include poorly to moderately sorted sand, gravel, and cobbles mixed with small amounts of silt and clay, and correlate to Latest Pleistocene undifferentiated alluvium (Qpa) and Latest Pleistocene stream terrace deposits (Qpt). Exploratory test pits revealed alluvial sediments at the proposed bridge abutments to a depth of 6 to 9 feet below the existing ground surface. These consisted of unconsolidated well-graded sandy gravel with 3-inch to 6-inch rounded cobbles and a low percentage of fines. On the south side of the proposed Bridge 1 location, finer grained sediments consisting of medium-dense clayey-silty sand to clayey-silt with some pebbles was found, and may be attributed to a small alluvial debris fan that originates from the mouth of a tributary drainage located over 200 feet from the proposed Bridge 1 location, outside of the project area. The total depth of the alluvial sediments was not determined because bedrock was not encountered in the test pits but is estimated to be up to 50 feet at the proposed Bridge 1 location and 30 feet at the proposed bridge 2 location.

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[34] Quaternary refers to the current and most recent period of the Cenozoic Era in the geologic time scale. It spans from 2.588 ± 0.005 million years ago to the present and is divided into two epochs: the Pleistocene, 2.588 million years ago to 11.7 thousand years ago, and the Holocene, 11.7 thousand years ago to today. The Quaternary Period is typically defined by the cyclic growth and decay of continental ice sheets and the associated climate and environmental changes that occurred as a result.

[35] USDA Soil Survey of Marin County, CA, March 1, 1985

Project Area Faulting and Seismicity

The San Andreas Fault Zone dominates this geologically active area and is located approximately 5.5 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 12 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, the project area 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. Due to this uncertainty, the Engineering Report recommended that the proposed bridge abutments incorporate broad spread footings embedded a minimum of four feet below the ground surface, which has been incorporated into the project design.

Project Area Landsliding

There is no evidence of recent landslides within the project area and that the project area is outside of any debris flow paths and landslide prone terrain, and therefore are not at risk for landslide. The south abutment for the proposed Bridge 1 is located on the outer edge small alluvial debris fan that originated from the mouth of a tributary drainage located over 200 feet from the proposed Bridge 1 location, outside of the project area. The presence of alluvial and debris fans within the project area are attributable to debris flow and debris slide landslide processes in which material was transported from steep slopes into the steep tributaries that flow onto the San Anselmo Creek fluvial terrace, potentially as a result of prolonged intense rainfall events. Evidence of recent debris flow deposits was not observed in the exploratory test pits, which were excavated to a 9.5-foot depth at the south proposed Bridge 1 abutment location. The north abutment for the proposed Bridge 1 and all of the abutments for the proposed Bridge 2 are not located near alluvial debris fans. The High Water Trail, which is proposed for decommissioning, is located on steep unstable ground with past instability observed at several locations. This trail could be subject to future landslides. The proposed decommissioning and restoration of the High Water Trail would reduce future landslide potential.

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
- 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 5.5 miles from the project area and the Hayward-Rodgers Creek Fault Zone is located approximately 12 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 bridges would be prefabricated steel truss structures designed to resist damage from anticipated seismic shaking as the proposed bridge abutments would incorporate broad spread footings embedded a minimum of four feet below the ground surface, per the recommendation of the project engineer. Final design of the proposed bridges would be in accordance with the Town of Fairfax-adopted seismic provisions set forth in the latest version California Building Code (CBC). The primary goal of seismic design is to protect life, and not necessarily to avoid structural damage. The density of people who visit Cascade Canyon 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?

Less than Significant 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 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 gravelly and cobbly surface materials found at both ends of proposed Bridge 2 and at the north end of proposed Bridge 1 would form a liquefaction-resistant mat over any potentially liquefiable underlying sediments, thereby abating potential liquefaction hazards to the bridge abutments. Finer grained surficial sediments exist at the north end of where Bridge 1 is proposed; these sediments are likely underlain by coarser gravels, thereby reducing liquefaction potential. However, the liquefaction potential of potentially saturated soils below ground water is unknown. Due to this uncertainty, the proposed bridge abutments would incorporate broad spread footings embedded a minimum of four feet below the ground surface, per the recommendation of the project engineer. The proposed project would not be subject to other types of seismic-related ground failure, including differential settlement or lateral spreading. With the proposed spread-footing design, implementation of the proposed project would result in a less than significant 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. Repeated debris flow landslides that initiated in the upper portion of the larger steep gradient tributaries have, over time, contributed to the formation of small alluvial and debris fans found at the mouths of the drainages where they flow onto the fluvial terrace of San Anselmo Creek, such as where the drainages enter the valley floor of Cascade Canyon. While the steep slopes within the project area are susceptible to landslides and debris flows, particularly during intense rainfall events that quickly saturate the soil, the geomorphology of these areas is consistent with infrequent debris flow and debris slide landslide processes.

The Engineering Report concluded there is no evidence of recent landslides within the project area and that the project area is outside of any debris flow paths and landslide prone terrain, and therefore the risk of potential substantial adverse effects from landslide potential is low. The south abutment for proposed Bridge 1 would be located on the outer edge of a small alluvial debris fan however the Engineering Report concluded that there was no evidence of recent debris flow deposits in the exploratory test pits, which were excavated to a 9.5-foot depth at the location of the south abutment for the proposed Bridge 1. The alluvial debris fan likely originated from the mouth of a tributary drainage located over 200 feet from the proposed Bridge 1 location, outside of the project area. The Engineering Report concluded that there is a low potential for a large debris flow landslide emanating from the mouth of the tributary to significantly impact proposed Bridge 1. The north side of Bridge 1 and all of Bridge 2 are located outside of any debris flow path and away from slide prone terrain and are therefore not subject to landslide hazards. For these reasons, implementation of the proposed bridges would result in a less than significant impact associated with risk of loss, injury, or death involving landslides.

The High Water Trail, which is proposed for decommissioning, is located on steep unstable ground with past instability observed at several locations. This trail is subject to future landslides. The proposed decommissioning and restoration of the High Water Trail would reduce future landslide potential along this trail. For these reasons, implementation of the proposed High Water Trail decommissioning would result in a less than significant impact associated with risk of loss, injury, or death involving landslides.

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 and the low density of public use. The proposed bridge locations are similar in terms of hazards as the existing creek fords. Most of the slopes in the project area are subject to debris flows, and some are mapped as "mostly landslides." The proposed bridges would be located in flatter areas of the canyon floor, areas that are not mapped as subject to landsliding.[36] The proposed trail connections and re-routes would be designed to ensure that water flows over the improved trails without causing rills, gullies, or erosion that could lead to instability, debris flows, or landslides. 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 Road and Trail Management Plan (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 San Anselmo Creek Watershed that could adversely impact water quality and listed aquatic species and their habitats by re-routing visitor access from the existing rock ford crossings onto the proposed bridges and trail connections. 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 the High Water Trail would also reduce existing soil erosion, and the recommendations included in the Engineering Report would be implemented as well as the applicable Policies and Best Management Practices included in the RTMP, all of which would minimize potential for substantial soil erosion and the loss of topsoil.

Both sides of the San Anselmo Creek are subject to natural stream bank erosion and portions of the creek banks have previously been armored with rock slope protection, possibly in response to erosion. The proposed Bridge 1 would be located on a straight segment of San Anselmo Creek at the downstream end of a meander bend. At the bridge site, the north side of the channel is armored with rock rip rap and the south side is not. The proposed Bridge 2 would be located on a relatively straight segment of San Anselmo Creek approximately 60 feet downstream of the fourth rock ford crossing. At this location, the south creek bank is armored with rock slope protection and the north creek bank is not. The existing rock slope protection would protect the proposed bridge abutments by directing creek

[36] Association of Bay Area Governments (ABAG). Liquefaction Hazard Maps. http://gis.abag.ca.gov/website/Hazards/?hlyr=liqSusceptibility.

flow away from the creek bank and towards the center of the creek, which would minimize erosion potential.

At the proposed Bridge 1 north abutment location, field investigations completed as part of the Engineering Report could not locate the toe of the existing rock slope protection as it is partially buried by a sand and gravel point bar and therefore the depth to which the toe is keyed into the creek channel could not be confirmed. While the rock appears well placed and no evidence that any of the rocks have been displaced by storm flows was observed, if it is not keyed sufficiently deep, then it could be at risk for being undermined in a future large flow event, which could result in some creek bank erosion requiring future repair. The Engineering Report recommended augmentation of the existing revetment to address potential erosion risk to the proposed bridge abutment. This recommendation has been incorporated into the design and is described in the Project Description. It would include excavation of the toe of the revetment below grade to elevation 188, which is equal to the current elevation of San Anselmo Creek and placing approximately 40 cubic yards of new rock placed below the ordinary highwater mark. Live willow stakes would be incorporated in between layers of rock to revegetate the slopes and increase stability. This would ensure that the bridge abutment would not be undermined in a future large flow event.

At the proposed Bridge 2 south abutment location, field investigations completed as part of the Engineering Report observed that most of the rock slope protection appears well placed and most of the rock has not been displaced by storm flows. However, at the downstream end of the of the rock slope protection this area may be degraded with some of the rocks appearing to have been displaced. The Engineering Report recommended repair of the existing revetment to address potential erosion risk to the proposed bridge abutment. This recommendation has been incorporated into the design and is described in the Project Description. It would include resetting the existing unstable rocks and augmentation with new rock, keyed a minimum of three feet below the existing grade of the creek bed. Approximately 50 tons of new rock would be placed along a 30 linear foot stretch of the revetment. Live willow stakes would be incorporated in between layers of rock to revegetate the slopes and increase stability. This would ensure that the bridge abutment would not be undermined in a future large flow event

The Engineering Report did not recommend placement of rock slope protection on the south side of San Anselmo Creek in the vicinity of the proposed Bridge 1 abutment location and the north side of the proposed Bridge 2 location.

With implementation of the recommendations included in the Engineering Report, the potential for stream bank erosion and instability to undermine the proposed bridge abutments is low within the design life of the trail bridge. The MCOSD would monitor the proposed bridge abutments for erosion as part of routine trail maintenance protocol. Should creek bank erosion occur, the MCOSD would develop and implement corrective actions as part of normal routine maintenance.

The proposed project would implement the recommendations included in the Engineering Report and the applicable policies and Best Management Practices included in the District's Road and Trail Management Plan. 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. The Engineering Report observed there is no evidence of recent shallow or deep-seated landsliding in the immediate vicinity of the proposed bridge locations, and that the landslide hazard at the proposed bridge locations appears to be low.

Damage to the proposed bridges could occur in the event of extreme seismic shaking and or runoff events and subsequent repairs would then be necessary. Incorporating the recommendations included in the Engineering Report would reduce these potential risks to a level of less than significant for recreational trail use while at the same time minimizing environmental impacts. 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 Engineering Report noted that many of the earth flows that occur in the hillslopes within the project area are due to a thick accumulation of expansive soils, particularly in areas underlain by Franciscan mélange. The proposed trail improvements do not involve new structures that could result in risks to life or property associated with expansive soil. The proposed bridges are structures that could experience damage associated with expansive soils though would not result in substantial risks to life. The Engineering Report included a geotechnical investigation of the two proposed bridge sites to explore the surface and subsurface conditions and develop geotechnical recommendations for the design and construction of the proposed bridge foundation system. The recommendation to utilize concrete spread footings offset from the edge of San Anselmo Creek instead of deep-pier foundations resulted from the geotechnical investigation and has been incorporated into the project design. The

recommendations included in the Engineering Report have been incorporated into the project design and are reflected in the Project Description. 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 Archaeological 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 10: 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 gasses (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[37]

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 ($MTCO_2e$).

In 2012, estimated GHG emissions generated by community activities in Marin County's unincorporated areas were approximately 477,000 $MTCO_2e$ (Metric tons of carbon dioxide equivalent), or per capita emissions of approximately 7.1 $MTCO_2e$ for the 67,000 residents in the unincorporated areas. This is a 15

[37] California Environmental Protection Agency (CalEPA), March 2006. *Climate Action Team Report to Governor Schwarzenegger and the Legislature.*

percent decrease from estimated 1990 emissions, which were 561,851 metric tons of CO_2e. This amount is equivalent to the annual GHG emissions generated by approximately 100,000 passenger vehicles. Of these total emissions, on-road transportation and building energy use are the largest sources of emissions at 35 percent each. The third largest source is agriculture at 23 percent, followed by off-road equipment at 4 percent, solid waste treatment at 2 percent, wastewater treatment at 1 percent, and water conveyance at 0.2 percent.[38] For municipal activities from County government operations, estimated GHG emissions in 2012 were approximately 15,000 $MTCO_2e$, or emissions of 7.0 $MTCO_2e$ per County employee. This amount is equivalent to the annual GHG emissions generated by approximately 3,000 passenger vehicles. Of these total emissions, employee commute is the largest source of emissions at 43 percent. Building energy use is the second largest source of emissions at 36 percent. The third largest source is the vehicle fleet at 18 percent, followed by wastewater treatment at 1.4 percent, streetlights and traffic signals at 0.6 percent, refrigerants at 0.4 percent, stationary sources at 0.4 percent, solid waste generation at 0.3 percent, and water conveyance at 0.2 percent.[39]

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 2017.[40] The Scoping Plan identifies natural and working (i.e., 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 Cascade Canyon 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 2017 CEQA Guidelines provide standards for analyzing a project's potential impacts on GHG emissions and thresholds of significance for operational emissions.[41] The BAAQMD 2017 Climate Action Plan also addresses climate change and GHG emissions. For natural and working lands, the CAP focuses

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[38] County of Marin, *Climate Action Plan,* July 2015..https://www.marincounty.org/-/media/files/departments/cd/planning/sustainability/climate-and-adaptation/full-cap-2015/marincapupdate_final_20150731.pdf?la=en

[39] ibid

[40] California Air Resources Board. California 2017 Climate Change Scoping Plan. November 2017. https://ww2.arb.ca.gov/sites/default/files/classic//cc/scopingplan/scoping_plan_2017.pdf

[41] Bay Area Air Quality Management District (BAAQMD). CEQA Air Quality Guidelines, May 2017. http://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

primarily on increasing carbon sequestration on lands such as the Cascade Canyon Open Space Preserve.[42]

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 30 percent below 1990 levels by 2020.[43]

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 uses the screening criteria and process provided in the 2017 BAAQMD Guidelines[44] 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 2017 BAAQMD 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. The BAAQMD Guidelines do not have specific screening criteria for a project identical to the proposed project. However, Table 3-1 of those guidelines entitled "Criteria Air Pollutants and Precursors and Greenhouse Gas Screening Level Sizes" shows that, for a "city park," the operational criteria for pollutant screening size would be 2,613 acres, the operational GHG screening size would be 600 acres and 67 acres for construction-related emissions (PM_{10}).

The proposed project would entail disturbance of approximately 0.04-acre associated with trail improvements and bridge installations, and between 0.07 and 0.15 associated with trail decommissioning and restoration. Thus, in total, the project would disturb a maximum of 0.19 acre which is below the screening criteria identified for work within a city park. Implementation of the proposed project would not generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment.

As no threshold has been established for construction-related GHG emissions, construction emissions for a proposed project are compared to the BAAQMD's bright-line threshold for operations, which is 1,100 metric tons of CO_2e per year. Implementation of the proposed project would generate

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[42] Bay Area Air Quality Management District (BAAQMD). Final 2017 Clean Air Plan, Spare the Air, Cool the Climate, April 19, 2017. 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

[43] County of Marin, 2015. *Marin County Climate Action Plan*, July 2015. Op Cit.

[44] BAAQMD Final 2017 Clean Air Plan, Op Cit.

approximately 29 metric tons of CO_2e during the two months of construction, which is below the significance threshold of 1,100 metric tons of CO_2e per year.[45] The proposed project would not include demolition, simultaneous occurrence of more than two construction phases, simultaneous construction of more than one land use type, extensive site preparation, or material transport greater than 10,000 cubic yards requiring considerable haul truck activity. For these reasons, construction 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.

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 parking at the trailhead, so visitation would remain limited by available on-street parking on public roadways. Visitor use of the project area for public recreation would continue similar to existing conditions, as the 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 2017 BAAQMD 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 reducing GHG emissions in California and requires the reduction to 1990 levels by the year 2020.

The proposed project would not conflict with GHG reduction 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. 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

[45] RCH Group. Cascade Canyon Bridges Project Air Quality and GHG Emissions. December 11, 2018.

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 11: 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 Best Management Practices included in the MCOSD's Road and Trail Management Plan 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 Best Management Practices included in the MCOSD's Road

and Trail Management Plan 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 school to the proposed trail improvements is Deer Park School, which is approximately one mile from project area. Other schools in the area are near Sir Francis Drake Boulevard, which is approximately two miles 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 ¼ 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 Best Management Practices included in the MCOSD's Road and Trail Management Plan 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 site in Fairfax near Center Boulevard, which is located over two miles from the project site.[46] 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.

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 10 miles east and the private San Rafael Airport, located over 6 miles to the southeast. No aviation hazards would result from modifications to trails in Cascade Canyon 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.

[46] California Department of Toxic Substances Control (DTSC), 2019. Envirostor environmental database. http://www.envirostor.dtsc.ca.gov/public/.

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 emergency access. Implementation of the proposed project would improve pedestrian and bicycle egress in case of a fire or other emergency should one occur within Cascade Canyon 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.

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 Non-Very High Fire Hazard Zone.[47] However, the Town of Fairfax identifies steep hill neighborhoods, including Cascade Canyon, as having a greater risk from wildland fires because of the dense vegetation, trees dying or dead from Sudden Oak Death, and the narrow access roads.[48]

Equipment used during construction and maintenance activities associated with the proposed project could generate sparks which could result in wildland fire. 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.

[47] CA State Geoportal Fire Hazard Severity Zone Viewer. https://gis.data.ca.gov/datasets/789d5286736248f69c4515c04f58f414

[48] Town of Fairfax 2010-2030 General Plan, Safety Element page. S-24, adopted April 4, 2012

HYDROLOGY AND WATER QUALITY

TABLE 12: 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 Cascade Canyon Open Space Preserve is located within the Corte Madera Creek Watershed, which is approximately 2.39 square miles in area, and includes the upper reaches of San Anselmo, Carey Camp, and Cascade creeks. The project area is adjacent to Cascade Creek and the proposed bridges would cross this creek. At the project site, San Anselmo Creek occupies a broad alluvial filled valley bottom, draining a 2.4 square mile forested watershed and confined by steep canyon walls. San Anselmo Creek is incised approximately 9 feet into the valley bottom through old alluvial sediments and fluvial terraces are found on both sides of the stream. The average channel gradient is about one percent.

Runoff is seasonal with summer low flows going subsurface. Peak flows are contained entirely within the entrenched channel. The flashy nature of site hydrology and unstable nature of the watershed can lead to channel erosion and incision, as well as the development of flood events that can carry significant quantities of sediment, treefall, and related debris through the creek corridor. The Engineering Report documented large floods involving San Anselmo Creek in 1955, 1982 and 2005. Portions of the San Anselmo Creek channel bank have been armored with rock slope protection, presumably to stabilize the channel bank from active erosion and/or to create pools for improved fisheries habitat. Outside the valley bottom the side slopes of the creek are steep, with gradients ranging between 40 percent to greater than 100 percent slope. These slopes are deeply incised by narrow and steep gradient "V" shaped tributaries with pronounced secondary spur ridges. Debris fans have formed at the mouths of these drainages from naturally high sediment loads and infrequent debris flow landslides that extend down the tributary channel.

Studies

MCOSD consulted with Timothy C. Best, CEQ, to evaluate the engineering geologic and geotechnical feasibility of the proposed project. In June 2018, Timothy Best, CEG prepared an *Engineering Geologic and Geotechnical Review* (Engineering Report) of the proposed project in association with Haro, Kasunich and Associates, Inc., Waterways Consulting, and Mayone Structural Engineering.[49] The purpose of Engineering Report was to evaluate the geologic, geotechnical and hydrologic conditions at the project site, and develop recommendations and design parameters for the proposed trail bridges and trail upgrades. Waterways Consulting conducted a hydrologic and hydraulic analysis to quantify flow rates, associated water surface elevations, and other parameters associated with the 100-year return period storm event along San Anselmo Creek. This analysis included exploratory test pits to evaluate subsurface deposits. The hydrologic and hydraulic analysis concluded that the 100-year flood elevation at the proposed Bridge 1 location to be at elevation 194 and at 207.2 at the proposed Bridge 2 location. At both proposed bridge locations, flood waters are contained within the active channel banks of San Anselmo Creek. These findings are consistent with the Flood Emergency Management Agency's (FEMA) flood insurance maps and MCOSD field staff observations. The Bridge 2 site is located within the FEMA designated Zone A special flood hazard area, though the base flood elevation has not been determined for this site. The bottom of both proposed bridges would be a minimum of three feet above the 100-year flood elevation, which would be elevation 198 for proposed Bridge 1 and elevation 210 for proposed Bridge 2. The risk of flood damage from a 100-year flood was determined to be low. Much of the descriptive and analytic information contained in the Geology and Soils section of the CEQA Checklist is from the Engineering Report.

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

[49] Best, Timothy C., CEG. June 2018. Op Cit.

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

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 Road and Trail Management Plan (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 across San Anselmo Creek onto the proposed bridges and decommissioning the High Water Trail, erosion and sedimentation into nearby waterbodies would be reduced resulting in long-term improvement to water quality.

Construction activities associated with the proposed bridges and trail improvements could generate sediment that could temporarily affect water quality in San Anselmo 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 as well as the recommendations included in the Engineering Report would minimize potential water quality impacts from construction and operation of the proposed trails. Per the design recommendations included in the Engineering Report, the abutments for the proposed bridges would be located on relatively level ground not subject to high erosion. The proposed augmentation of the existing rock slope protection in the vicinity of the north abutment of Bridge 1 and the south abutment of Bridge 2 would occur when the creek channel is dry, and therefore these activities are not expected to generate substantial erosion. Earthwork would occur during the dry season, between May 15 – October 15, 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 recommended in the Engineering Report,[50] including placement of straw wattles at the base of graded turns, surfacing the approaches to the proposed bridges with aggregate base rock, and placing a seed and mulch on disturbed ground. 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.

[50] Best, Timothy C., CEG. June 2018. Op Cit.

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. Waterways Consulting, Inc. drilled test pits to identify groundwater as part of the Engineering Report. In April 2017, groundwater was encountered in all five test pits approximately 7 feet below the terrace surface, at approximately the same elevation as San Anselmo Creek. The Engineering Report concluded that the elevation of groundwater in the project area is likely variable rising and falling with the season. Implementation of the proposed project would not use groundwater during construction or operation and would not create any impervious surfaces other than the bridge decking. 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 San Anselmo Creek and does not include any impervious surfaces except for the decking and footings associated with the proposed bridges. 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, 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.

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 except for the decking and footings associated with the proposed bridges, and therefore would not increase the rate or amount of surface runoff. 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 except for the decking and footings associated with the proposed bridges, and therefore would not increase the rate or amount of surface runoff. The project area does not contain existing stormwater drainage systems, and none are planned. 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, including through the alteration of

the course of a stream or river or through the addition of impervious surfaces, in a manner which would create runoff which would exceed capacity of stormwater drainage systems or provide additional sources of polluted runoff.

iv) Impede or redirect flood flows?

No Impact

The proposed bridges, including the abutments, would be located a minimum of three feet above the calculated 100-year flood elevation or a minimum of one foot above the adjacent floodplain elevation, whichever is greater. Based on the elevation design, the proposed project would not impede or redirect flood flows. Additionally, flood risk to the proposed bridges, including the abutments, is low and would be further minimized by augmentation of the existing rock slope protection located on the north bank of San Anselmo Creek at the proposed Bridge 1 location and the south bank of San Anselmo Creek at the proposed Bridge 2 location.

The Engineering Report addressed the increased potential for log jams to contribute to increased flooding and/or debris flow hazards assuming the proposed bridges are in place. Log jams are a natural phenomenon in narrow streams in mountainous areas and have the potential to increase flooding and/or debris flow hazards. Future log jams could develop anywhere along San Anselmo Creek during large storm events and could potentially impact the proposed bridge site either directly or indirectly by diverting creek flow. Though the potential for a future log jam to develop at either proposed bridge location is difficult to quantify based on field observation, the Engineering Report concluded that the risk to the proposed bridges to be low. The proposed bridge design would place the bridges a minimum of three feet above the calculated 100-year flood elevation or a minimum of one foot able the adjacent floodplain elevation, whichever is greater, which would provide a sufficient freeboard allowance to minimize potential impacts from debris transported during high flow events. Implementation of the proposed project would not cause future log jams or render them more likely. 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 impede or redirect flood flows.

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 A special flood hazard area depicted on the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map. Base flood elevations have not been determined at the project area. The Engineering Report concluded that the 100-year flood at the proposed bridge locations is contained within the banks of San Anselmo Creek.

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 Cascade Canyon Open Space Preserve range from 400 feet to 1,400 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. Based on the slope stability analysis conducted as part of the Engineering Report, the project area is unlikely to be subject to mudflows. 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)[51] and the Marin Municipal Water District (MMWD) 2015 Urban Water Management Plan (UWMP).[52]

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 Road and Trail Management Plan in addition to any special conditions included in the Section 401 permit, 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 later is imported from Sonoma Water through a contractual agreement. 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.

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[51] California Regional Water Quality Control Board, San Francisco Bay Region. Water Quality Control Plan (Basin Plan). Oakland, CA. 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

[52] Marin Municipal Water District. Urban Water Management Plan, 2015 Update. Prepared by RMC, Water and Environment, San Francisco, CA. June 2016. http://marinwater.org/DocumentCenter/View/3828/MMWD-2015-UWMP-Final---Report-Only?bidId=

LAND USE AND PLANNING

TABLE 13: 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 Cascade Canyon Open Space Preserve, which includes the Elliott Nature Preserve. Cascade Canyon Open Space Preserve is located on the eastern flank of Mount Tamalpais adjacent to the Town of Fairfax and approximately 3.5 miles west of San Rafael. It is surrounded by single-family residential development in the Town of Fairfax to the south and east, Camp Tamarancho and the White Hill Open Space Preserve to the north, the Mount Tamalpais Watershed to the west, and the Meadow Club golf course to the southwest. Most of the proposed Project lies within the Elliott Nature Preserve portion of the Cascade Canyon Open Space Preserve. The Elliott Preserve was transferred to the MCOSD in 1987, however the Town of Fairfax retains approval authority over any improvements in the Elliott Nature Preserve.[53] The project area includes a portion of the Cascade Canyon Fire Road, the High Water Trail, and a portion of the Canyon Trail.

Access to the project area is from Cascade Drive via Bolinas Road in the Town of Fairfax. There is very limited roadside parking along Cascade Drive but no dedicated visitor parking within Cascade Canyon Open Space Preserve. Cascade Canyon Open Space Preserve can be accessed from the adjoining open space preserves and other public lands.

Cascade Canyon 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 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.

[53] Memorandum of Understanding Between the Town of Fairfax and the Marin County Open Space District Consenting to the Construction of Two Bridges in the Elliot Nature Preserve Within Cascade Canyon Open Space Preserve. May 23, 2017.

a) Would the Project physically divide an established community?

No Impact

Implementation of the proposed project would occur exclusively within the Cascade Canyon 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 Cascade Canyon Open Space Preserve, which is designated as Open Space and zoned as Restricted Open Space by the County of Marin and Town of Fairfax. The Elliot Nature Preserve in the Town of Fairfax jurisdiction has a residential zoning designation, however, where zoning is inconsistent with general plan designation, the general plan designation takes precedent which is Open Space. The open space 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.

The purpose of the proposed project is to is to implement the MCOSD's Road and Trail Management Plan (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 across San Anselmo Creek onto the proposed bridges and decommissioning the High Water Trail, 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 Open Space designations included in the County of Marin General Plan and the Town of Fairfax General Plan. 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.

MINERAL RESOURCES

TABLE 14: 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 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. There are no mineral resources in the Cascade Canyon 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.

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 install two trail bridges and make trail improvements. The proposed project would not include mineral extraction and would not impact a known mineral resource. 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

The project area is not identified as a locally important mineral recovery site and implementation of the proposed project would not include mineral extraction or impact a known mineral resource. 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 15: 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,[54] 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) requires the protection of workers from hearing loss when the noise exposure equals or exceeds an 8-hour time-weighted average of 85 dBA.[55]

[54] U.S. Department of Housing and Urban Development. *The Noise Guidebook*. May 1985.

[55] Occupational Safety & Health Administration, 2011. Regulations, Standards 29 CFR, Occupational Noise Exposure 1910.95.

TABLE NOISE -1: COMMON OUTDOOR AND INDOOR SOUND LEVELS

Common Outdoor Sound Sources	Sound Level in dBA	Common Indoor Sound Sources
Commercial Jet Flyover at 1,000 feet Concrete Mixer at 50 feet Gas Lawnmower at 3 feet	90 +	Rock Band
Diesel truck at 50 feet	80 - 90	Loud Television at 3 feet
Gas Lawnmower at 100 feet Noisy Urban Area	70 - 80	Garbage Disposal at 3 feet Vacuum Cleaner at 10 feet
Commercial Area	60 - 70	Normal Speech at 3 feet
Quiet Urban Daytime Traffic at 300 feet	40 - 60	Large Business Office Dishwasher in Adjoining Room
Quiet Rural and Suburban Nighttime	20 - 40	Library / Bedroom at Night
	10 - 20	Broadcast / Recording Studio
Threshold of Hearing	0	Threshold of Hearing

Source: RCH Group. Cascade Canyon Bridges Project Noise Analysis. December 2018.

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.[56] Cascade Canyon 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 Cascade Drive are the two westernmost residences, which are approximately 250 feet east of where the Cascade Canyon Fire Road splits off to the High Water Trail and where the proposed Bridge 1 would be located.

Studies

The noise analysis for the proposed project defines the noise environment of the project area in terms of sound intensity and its effects on adjacent sensitive land uses, such as the residences in the vicinity of the project area. RCH Group conducted a Noise Analysis[57] for the proposed project. Ambient noise was assessed at four locations within the project area through 5-minute long noise measurements. The ambient noise measurements were taken on December 7, 2018. The main source of noise in the project vicinity during the noise measurements was trail users walking and running on the trails. Other noise sources included dogs and residents of the nearby homes on Cascade Drive. The noise level was 42 dB[58] Leq

[56] Marin County Open Space District. *Road and Trail Management Plan Recirculated Final Tiered Program Environmental Impact Report*, November 2014.

[57] RCH Group. Cascade Canyon Bridges Project Noise Analysis. Rancho Cordova, CA. December 2018.

[58] Decibels are measured using different scales, and it has been found that A-weighting of sound levels best reflects the human ear's reduced sensitivity to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. All references to decibels (dB) in this Initial Study are A-weighted.

during at all measurement locations throughout the project site[59]. The noise measurements are summarized in Table Noise-2: Existing Sound Levels in the Project Area.

TABLE NOISE-2: EXISTING SOUND LEVELS IN THE PROJECT AREA

Location	Time Period	Sound Levels (dB)	Sound Sources
Site 1: Elliot Nature Preserve trailhead, adjacent to existing residences on Cascade Drive.	8:58 - 9:03 a.m.	42	Birds chirping, squirrel noises, can barely hear vehicle traffic noise in distance. Background noise 41.6 dB when no trail users are present. Runner and walker approximately 51-52 dB.
Site 2: Edge of San Anselmo Creek, north of Canyon Trail, south of High Water Trail.	9:08 - 9:13 a.m.	42	Background noise 41.6 dB when no trail users are present. Trail users walking and noise from dog jumping in and out of creek.
Site 3: High Water Trail, north of Cascade Fire Road and San Anselmo Creek.	9:18 - 9:23 a.m.	42	Background noise 41.6 dB when no trail users are present. Chainsaw noise coming from one of the homes on Cascade Drive. Noise from walker hollering at their dog.
Site 4: Edge of San Anselmo Creek where High Water Trail and Cascade Fire Road meet.	9:30 - 9:35 a.m.	42	Background noise 41.6 dB when no trail users are present. Noise from flowing creek. Pedestrian yelling noise in the distance. Noise from walkers on the trail.

Source: RCH Group, 2018

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

[59] The Metrosonics db308 Sound Level Meter has a lower detection limit of approximately 42 dB, therefore ambient noise levels in the project area may be less than 42 dB.

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 and the Town of Fairfax Noise Ordinances. 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 holidays. The Town of Fairfax Noise Ordinance restricts construction activities to Monday through Friday from 8:00 a.m. to 6:00 p.m., and 9:00 a.m. to 4:00 p.m. on weekends and holidays. Consistent with MCOSD's Road and Trail Management Plan Best Management Practice Noise-1, construction activities associated with implementation of the proposed project would comply with these ordinances.

Implementation of the proposed project would occur over a two-month period. Noise would be generated during project implementation would be from construction equipment to install the proposed bridges, improve trails, and decommission trails. Equipment would include a large crane, excavator, loader, compactor, cement truck, cement mixers, roller compactor, rubber track carrier, generators, dump truck, ATVs, generators, jackhammers, power. saws, and other hand tools. Construction of the project would require approximately three workers onsite. Construction of the project would require approximately 44 total haul trips for hauling construction materials and the import of soil, rock and aggregate.

Estimated noise levels associated with construction of the proposed Bridge 1 would be approximately 64 dB at the nearest residence, which is located approximately 250 feet away. This noise estimate is based on the maximum noise level of an excavator, 81 dB at 50 feet, attenuated by distance. Noise levels during the decommissioning of the High Water Trail would be less as the construction activities would move west along the trail, moving farther from the nearest residences, with about one-third of the decommissioning activities farther than 1,000 feet from the nearest residences The ends of the trail would be decommissioned with equipment such as a mini excavator and a Sweco, which is a small tractor that operates with less noise than an excavator. Decommissioning the middle of the trail would be utilized only hand tools. Estimated noise levels associated with construction of the proposed Bridge 2 and the trail improvements would also be less than that estimated for the proposed Bridge 1 at the nearest residence because the proposed Bridge 2 would be located than 1,000 feet from the nearest residences. Construction activities would be short-term, requiring approximately two months, and the applicable Best Management Practices included in the MCOSD's Road and Trail Management Plan would be implemented. MCOSD would comply with the allowable construction hours in the Marin County and Town of Fairfax Municipal Codes. 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 trail for public recreation would continue similar to existing conditions. The proposed project does not include 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[60]. 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 a large crane, excavator, loader, compactor, cement truck, cement mixers, roller compactor, rubber track carrier, generators, dump truck, ATVs, generators, jackhammers, power. saws, and other hand tools, but would not require heavy construction equipment or activities that would induce groudborne vibration or noise such as pile drivers or blasting. The nearest residential receptors on Cascade Drive are the two westernmost residences, which are approximately 250 feet east of where the Cascade Canyon Fire Road splits off to the High Water Trail and where the proposed Bridge 1 would be located. 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.

[60] U.S. Department of Transportation. Federal Transit Administration. Transit Noise and Vibration Assessment Manual. September 2018. 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

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 10 miles east and the private San Rafael Airport, located over 6 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.

POPULATION AND HOUSING

TABLE 17: 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 Cascade Canyon Open Space Preserve, which is mostly within the jurisdiction of the County of Marin. The Elliott Nature Preserve was transferred to the MCOSD in 1987 by the Town of Fairfax, however the Town of Fairfax retains approval authority over any improvements in this property. Cascade Canyon Open Space Preserve is governed by both the Marin Countywide Plan and zoning ordinance and the Town of Fairfax General Plan and zoning ordinance. The project area is adjacent to an existing residential neighborhood in the Town of Fairfax. Land uses in this neighborhood are controlled by the Town of Fairfax General Plan and its implementing zoning regulations.

Cascade Canyon Open Space Preserve is zoned Public Open Space in both general plans. The proposed improvements are consistent with this designation. The Town of Fairfax zoning ordinance has zoned the Elliot Nature Preserve property as RS-6 – residential, single family. Where zoning is inconsistent with general plan designation, the general plan designation takes precedent which is Open Space. The Open Space 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.

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 Cascade Canyon 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 Cascade Canyon 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 18: 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 Cascade Canyon Open Space Preserve, which is in the jurisdiction of both the unincorporated Marin County and the Town of Fairfax. The project area is served by the Ross Valley Fire Department, Marin County Sheriff's Office, and Town of Fairfax Police Department. Cascade Canyon Open Space Preserved is owned and maintained by the MCOSD and includes public access trails. There currently are no park facilities such as parking, restrooms and playgrounds and none are proposed as part of the project. Cascade Drive and a series of internal fire roads, including Cascade Canyon Fire Road, provide emergency access within Cascade Canyon Open Space Preserve.

Applicable RTMP Policies and BMPs

The RTMP does not include Policies 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 Cascade Canyon 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. 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 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 19: 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

Cascade Canyon Open Space Preserve is an outdoor recreational facility owned and operated by the MCPSD and utilized by walkers, hikers, cyclists, equestrians, and other outdoor enthusiasts. It is located within the unincorporated Marin County and Town of Fairfax. Trail access through four existing low-water stream ford creek crossings within San Anselmo Creek puts visitors at risk of injury during high creek flows in the rainy season along as well as mobilizes fine sediment that could negatively impact habitat for steelhead and foothill yellow-legged frogs. The purpose of the proposed project is to implement the MCOSD's Road and Trail Management Plan (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 achieve the following project objectives:

- Provide safe and sustainable year-round access to the Canyon Fire Road and the interior of Cascade Canyon Open Space Preserve;
- Eliminate the need to cross San Anselmo Creek using the rock fords located within the creek;
- Enhance habitat protection for listed species
- Improve trail safety;
- Improve visitor access compliant with MCOSD's Inclusive Access Plan;
- Reduce trail erosion and sedimentation to the Corte Madera Creek watershed; and
- Reduce the number of redundant trails and habitat fragmentation in an area rich in sensitive species.

To achieve the project purpose and objectives, the proposed project would install two trail bridges for visitors to use instead of the existing rock ford crossings, develop new trail connections to the bridges, realign the existing Canyon Trail and install bicycle speed control features; change use on a segment of the Canyon Trail from hiker/equestrian only to a multi-use trail to include bicycles; decommission the existing High Water Trail and the Canyon Trail spur segment connecting to the Cascade Canyon Fire Road; and install fencing, signage, and a bicycle rack. The proposed project is consistent with the land use and zoning designations in the Town of Fairfax General Plan, the Marin Countywide Plan, and the MCOSD's Road and Trail Management Plan.

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 Cascade Canyon Open Space Preserve. Implementation of the proposed project would improve visitor safety and improve water quality in San Anselmo Creek, resulting in a net improvement on sustainability and durability of the existing trail system and would not impact other regional or local parks. Cascade Canyon 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 to 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 because visitors would not need to cross San Anselmo Creek on the existing rock ford crossings 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 this reason, 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 the existing High Water Trail because it is unsustainable due to steep slopes and because it is contributing to erosion and sediment entering San Anselmo Creek. Although the linear feet of trail within the Cascade Canyon Open Space Preserve would be reduced, the removal of the High Water Trail 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 two trail bridges for visitors to use instead of the existing rock ford crossings, develop new trail connections to the bridges, realign the existing Canyon Trail and install bicycle speed control features; change use on a segment of the Canyon Trail from hiker/equestrian only to a multi-use trail to include bicycles; decommission the existing High Water Trail and the Canyon Trail spur segment connecting to the Cascade Canyon Fire Road; and install fencing, signage, and a bicycle rack, which would support existing uses at the Cascade Canyon Open Space Preserve.

The proposed project has been designed to minimize potential adverse physical effects on the environment through design by including the recommendations included in the Engineering Report. 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 following CEQA Checklist topic areas:

- Biological Resources
- Transportation

With the implementation of the recommendations included in the Engineering Report, the RTMP Policies and BMPs, and 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 20: TRANSPORTATION 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 Town of Fairfax and unincorporated Marin County and is subject to the Town of Fairfax 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.[61]

Access to the project site is from Cascade Drive via Bolinas Road in the Town of Fairfax. There is no parking at Cascade Canyon Open Space Preserve except for a very limited amount of roadside parking, and the proposed project does not include the provision 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.

[61] Transportation Authority of Marin (TAM). 2019 Congestion Management Program Update. October 2019. 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 Cascade Canyon Open Space Preserve, which currently supports outdoor recreation. Under existing conditions, there is no dedicated parking for Cascade Canyon Open Space Preserve and the proposed project would not develop parking facilities. Visitors accessing Cascade Canyon Open Space Preserve by vehicle would continue to utilize 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 Road and Trail Management Plan and consists of improvements to the existing trail system at Cascade Canyon 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 Cascade Canyon 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 is no dedicated parking for Cascade Canyon Open Space Preserve and the proposed project would not develop 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. For these reasons, implementation of the proposed project 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)?
Less than Significant with Mitigation

The project area is located within Cascade Canyon 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 Cascade Drive, which is a narrow public road within a residential neighborhood. Cascade Drive climbs in elevation and has many steep turns. On-street parking is permitted. There may be a few locations in which the large construction equipment that would be required to implement the proposed project would require no on-street parking on Cascade Drive to avoid increased hazards due to a geometric design feature or incompatible uses. For these reasons, implementation of the proposed project would result in a potentially significant temporary impact associated with substantially increasing hazards due to a geometric design feature or incompatible uses. Implementation of Mitigation Measure Transportation – 1 would reduce the significance of this impact to a less than significant level.

Mitigation Measure Transportation – 1
The Contractor shall prepare a traffic control plan prior to initiating construction activities. The traffic control plan shall include:

- An assessment of Cascade Drive to determine if there are areas where no on-street parking would be permitted when large construction equipment is assessing or departing the project area;
- A communication plan to provide residents within the affected areas adequate notice of the temporary on-street parking prohibition;
- A communication plan to provide emergency service providers adequate notice regarding construction equipment use of Cascade Drive;
- Approvals as needed from MCOSD, Marin County Department of Public Works, and/or the Town of Fairfax.

d) Would the Project result in inadequate emergency access?
Less than Significant with Mitigation

Emergency access to the project area is via Cascade Drive. Within the project area, emergency access is on Cascade Canyon Fire Road. Emergency services in the project area is provided by the Town of Fairfax Police Department and Ross Valley Fire Protection District. The nearest police station is located in the Town of Fairfax, approximately two miles east miles of the project area. The nearest fire station is located in the Town of Fairfax, approximately two miles east of the project area.

The existing trails are too narrow to provide access for emergency vehicles. The proposed bridges and trail improvements would not provide access for emergency vehicles; however, emergency vehicles would utilize the existing rock for crossings within San Anselmo Creek if needed. The split-rail fence that is proposed as part of the proposed project would include a section of detachable rail to allow for emergency and maintenance vehicles to access the existing rock ford crossings if needed. The improvements to the existing trail system at Cascade Canyon Open Space Preserve would result in no impact associated with inadequate emergency access.

During construction, emergency access on Cascade Drive would be temporarily limited when large construction equipment accesses departs the project area. For this reason, implementation of the proposed project could result in a potentially significant impact associated with inadequate emergency access. Implementation of Mitigation Measure Transportation – 1 would reduce the significance of this potentially significant impact to a less than significant level.

TRIBAL CULTURAL RESOURCES

TABLE 21: TRIBAL CULTURAL RESOURCES 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 a CEQA amendment approved September 24, 2014 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 values when assessing project impacts and mitigation, and requires formal notice to tribes who request it and meaningful consultation. The MCOSD has received two such notices, one from the Federated Indians of Graton Rancheria (FIGR) and one from the Ione Band of Miwok Indians.

Consultation is defined as means 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 CA Register of Historic Resources.

- Included in a local register of historical resources as defined in PRC Section 5020.1(k).[62]
- 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).[63] 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,[64] a unique archaeological resource described in PRC Section 21083.2(g),[65] or a non-unique archaeological resource as defined in PRC 21083.2(h)[66] if it conforms with the criteria of subdivision (a).[67]

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.

Holman & Associates initiated Native American consultation with the Native American Heritage Commission until they were informed MCOSD had already conducted consultation. The Native American Heritage

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[62] 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.

[63] 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.

[64] 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.

[65] 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.

[66] 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.

[67] 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.

Commission responded that no resources were identified and provided a contact list of two people with the FIGR.

MCOSD invited the FIGR to consult on the proposed project pursuant to AB52 through a letter dated February 2, 2017. In an email dated February 22, 2017, FIGR thanked MCOSD for notifying them about the project and indicated they would provide comments regarding the project within 10 business days. MCOSD did not receive further correspondence from FIGR indicating they would like to consult regarding the proposed project, and therefore, AB52 consultation was concluded. MCOSD will invite FIGR to provide comments on the draft CEQA document during the public review period.

Cultural and Historical Resources Studies

Holman & Associates prepared an *Archaeological Survey Report* (ASR) for the proposed project in 2019. It included a cultural resources literature search completed at the Northwest Information Center of the California Historical Resources Information System (CHRIS), initial Native American Consultation with the Native American Heritage Commission, an archaeological survey of the project area, and mapped the Area of Potential Effects (APE) required for the United States Army Corps of Engineers regulatory permitting process. The ASR will also assist with the Section 106 compliance process of the National Historic Preservation Act, as amended.

CHRIS records search identified no cultural resources, artifacts, indications of fossil soils in the banks of San Anselmo Creek, or historic resources/or properties that are listed on federal, state, or local inventories within or adjacent to the project APE. Holman & Associates did not recommend any additional work be completed to assess cultural and historical resources but recommended protocol regarding inadvertent discovery of buried or previously unknown cultural or historical resources or archaeological deposits during project implementation. The MCOSD's RTMP addresses inadvertent discovery in RTMP BMP Cultural Resources – 6: Construction Recovery Protocol and RTMP BMP Cultural Resources-7: Human Remains. In addition to implementation of the RTMP BMPs, the MCOSD would contact FIGR representatives should any resources be discovered during project implementation.

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

Public Resources Code 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 in the banks of San Anselmo Creek, or historic resources/or properties that are listed on federal, state, or local inventories within or adjacent to the project Area of Potential Effect. MCOSD invited the FIGR to consult on the proposed project pursuant to AB52 but did not receive correspondence from FIGR indicating they would like to consult regarding the proposed project. FIGR did not provide 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) 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)

The MCOSD would directly notify the Federated Indians of Graton Rancheria of any inadvertent discovery of cultural or historical resources, human remains, and/or tribal cultural resources.

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

Public Resources Code 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.

MCOSD invited the FIGR to consult on the proposed project pursuant to AB52 but did not receive correspondence from FIGR indicating they would like to consult regarding the proposed project. FIGR did not provide 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 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.

The MCOSD would directly notify the Federated Indians of Graton Rancheria of any inadvertent discovery of cultural or historical resources, human remains, and/or tribal cultural resources.

UTILITIES AND SERVICE SYSTEMS

TABLE 22: 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 Cascade Canyon 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, fire 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.

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 vegetation clearing, 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, has a design capacity of 26,000,000 cubic yards, and is estimated to cease operations in 2024.[68] The volume of construction-related solid waste 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,

[68] CalRecycle, Facility/Site Summary Details: Redwood Landfill (21-AA-0001). http://www.calrecycle.ca.gov/SWFacilities/Directory/21-AA-0001/Detail/.

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 23: 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 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 Non-Very High Fire Hazard Zone.[69]. However, the Town of Fairfax identifies steep hill neighborhoods, including those on Cascade Drive, as having a greater risk from wildland fires because of the dense vegetation, trees dying or dead from Sudden Oak Death, and the narrow access roads.[70] The project area also is mapped as within a Wildland Urban Interface Zone.[71]

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.

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

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[69] CA State Geoportal Fire Hazard Severity Zone Viewer. https://gis.data.ca.gov/datasets/789d5286736248f69c4515c04f58f414

[70] Town of Fairfax 2010-2030 General Plan, Safety Element, p. S-24, adopted April 4, 2012

[71] Ross Valley Fire Department. Wilfire Urban Interface Map. https://www.rossvalleyfire.org/images/WUI_IncorporatedRossValley.pdf

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

Cascade Canyon Open Space Preserve is not within an adopted emergency response plan area or an emergency evacuation plan area. Implementation of the proposed project would improve trail access and safety within the project area, which would improve egress of visitors from the project area in case of an emergency. Emergency vehicles would continue to access trails within the project area utilizing the existing rock fords within San Anselmo Creek via removable sections of the split-rail fence. For these reasons, implementation of the proposed project would result in no impact associated with impairment 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. No structures or amenities would be developed that could potentially exacerbate wildfire risks and implementation of the proposed project is not expected to result in a significant visitation increase.

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 Road and Trail Management Plan Best Management Practice 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 Cascade Canyon Open Space Preserve, the only infrastructure within the project area. There are no existing vehicular roads, water sources, power lines or other utilities within the project area and none are proposed as part of the project. 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 Cascade Canyon 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 the existing rock ford crossings within San Anselmo Creek, which would continue to be available for emergency vehicle use same as existing conditions. This is 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 24: 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 the High Water Trail that would result in less erosion and sedimentation entering San Anselmo Creek which would improve water quality. Potential 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 the recommendations included in the Engineering Report,[72] applicable Road and Trail Management Plan Best Management Practices described in this document, and would implement the mitigation measures included in this document to reduce potential impacts not addressed by the Engineering Report or Road and Trail Management Plan Best Management Practices 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 Cascade Canyon Open Space Preserve, which would improve environmental conditions for San Anselmo Creek, specifically water quality, and would improve the

[72] Best, Timothy C., CEG. June 2018. Op Cit.

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 San Anselmo Creek. Installation of the proposed bridges would eliminate sedimentation associated with trail access through San Anselmo Creek. Decommissioning of the highly erosive High Water Trail would further reduce sedimentation into San Anselmo Creek. Overall,, the implementation of the proposed project would reduce the existing impacts from the existing trail system in Cascade Canyon 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 Road and Trail Management Plan 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:

- Alto Bowl Open Space Preserve, Mill Valley - Bob Middagh and Gasline trails
- Baltimore Canyon Open Space Preserve, Larkspur - Dawn Falls Trail
- Blithedale Summit Open Space Preserve, Larkspur - Piedmont Trail
- Camino Alto Open Space Preserve, Mill Valley - Val Vista Trail
- Camino Alto Open Space Preserve, Mill Valley - Octopus Trail
- Cascade Canyon Open Space Preserve, Fairfax - Cascade Canyon Fire Road
- Gary Giacomini Open Space Preserve, San Geronimo Valley - Contour/Candelero complex trails
- Gary Giacomini Open Space Preserve, San Geronimo Valley - Hunt Camp Trail
- Gary Giacomini Open Space Preserve, San Geronimo Valley – Conifer Fire Road Trail
- Loma Alta Open Space Preserve, Fairfax - Old Railroad Grade Trail
- Roy's Redwoods Open Space Preserve, San Geronimo Valley - Roy's Redwoods Loop Trail
- Terra Linda – Sleepy Hollow Divide Open Space Preserves, San Anselmo - Irving Fire Road

During 2019 and 2020 at the time of publication of this document, the MCOSD implemented improvements and repairs to several roads and trails, including the following:

- Alto Bowl Open Space Preserve, Mill Valley - Alto Bowl Fire Road
- French Ranch Open Space Preserve, Forest Knolls - School Trail
- Loma Alta Open Space Preserve, Fairfax - Old Railroad Grade

- Mount Burdell Open Space Preserve, Novato - Eagle Rim Trail
- Mount Burdell Open Space Preserve, Novato - San Carlos Fire Road
- Mount Burdell Open Space Preserve, Novato - Middle Burdell Fire Road
- Pacheco Valle and Ignacio Valley Open Space Preserves, Novato - Ponti Fire Road to Trail
- Terra Linda Ridge/Sleepy Hollow, San Rafael - Springs Hill Trail
- Terra Linda/Sleepy Hollow Divide Open Space Preserves, San Anselmo - Tomahawk Fire Road

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 - Carey Camp Bridges
- Cascade Canyon Open Space Preserve, Fairfax - Lower Cascade Fire Road
- Cascade Canyon Open Space Preserve, Fairfax - Toyon Fire Road
- Cascade Canyon Open Space Preserve, Fairfax - Wagon Wheel Bridges
- Ignacio Open Space Preserve, Novato - Buck Gulch Falls Trail
- Roy's Redwoods Open Space Preserve, Woodacre - Roy's Redwoods Restoration
- Rush Creek Open Space Preserve, Novato - Blue Oak Trail
- Terra Linda Open Space Preserve, San Anselmo - Memorial 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 the recommendations included in the Engineering Report,[73] applicable Road and Trail Management Plan BMPs described in this document, and would implement the mitigation measures included in this document to reduce potential impacts not addressed by the Engineering Report or Road and Trail Management Plan 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.

[73] Best, Timothy C., CEG. June 2018. Op Cit.

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

Less than Significant Impact with Mitigation

The nearest private residence is on Cascade Drive, approximately 250 feet east of where the Cascade Canyon Fire Road splits off to the High Water Trail and where the proposed Bridge 1 would be located. 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. Implementation of the proposed project may require limited areas of parking restrictions on Cascade Drive to avoid increased hazards due to a geometric design feature or incompatible uses when large construction equipment would access the project area. Implementation of Mitigation Measure Transportation – 1 would reduce the significance of this potentially significant impact to a less than significant level. Implementation of the proposed project could affect visitors to for recreational purposes during project implementation as the work areas would be closed during that time. This would be a temporary impact, and ultimately, implementation of the proposed project would improve the visitor experience. For these reasons, implementation of the proposed project would result in less than significant environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly, with implementation of Mitigation Measure Transportation -1.

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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 (http://www.wrh.noaa.gov/mtr/sunset.php).
- 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 U.S. Army Corps of Engineers, 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