



# Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan – Restoration of Azalea Hill

**MMWD Mt. Tamalpais Watershed, Unincorporated Marin County**

**Initial Study/Mitigated Negative Declaration**

**SCH #2004082018**

**May 2019**

**Prepared by:**

Marin Municipal Water District  
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[www.marinwater.org](http://www.marinwater.org)



**MARIN MUNICIPAL  
WATER DISTRICT**

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## **PREFACE**

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### **OVERVIEW**

The Marin Municipal Water District distributed the Draft Initial Study and Mitigated Negative Declaration (IS/MND) for the Amendment of Mt. Tamalpais Road and Trail Management Plan for the Restoration of Azalea Hill for public and agency review on October 8, 2018 for a 30-day period ending on November 9, 2018. During the review period the District received a total of 124 comments via email (102), phone calls (7), U.S. mail (2), and public expression (13) at a public meeting held for the project.

### **CONTENTS OF FINAL IS/MND**

This Final IS/MND includes changes to the Draft IS/MND based on comments received from the public and responsible agencies. Changes were made to clarify information presented in the Draft IS/MND and to substitute mitigation measures to make them more effective in reducing potential project impacts. The changes represented in this Final IS/MND do not raise new issues or create additional impacts not already addressed and mitigated for in the Draft IS/MND to a less-than-significant level and do not constitute a substantial revision as defined in CEQA Guidelines 15073.5 (b). Changes made based on public and agency comments are represented in this Final IS/MND as a ~~strikeout~~ where text is deleted and by underlined text (i.e. underline) where text is added.

This Final IS/MND includes district responses to all comments received on the Draft IS/MND in Appendix E and a Mitigation, Monitoring, & Reporting Program in Appendix F per CEQA guidelines 15097.

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## NOTICE OF PUBLIC REVIEW AND INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION



**MARIN MUNICIPAL  
WATER DISTRICT**

### *Amendment of Mt. Tamalpais Road and Trail Management Plan for Restoration of Azalea Hill*

In accordance with the California Environmental Quality Act (CEQA), the Marin Municipal Water District has prepared an Initial Study/CEQA Checklist for the above referenced project. The Initial Study determined that the Proposed Project, as amended by the included mitigation measures, will not have a significant adverse effect on the environment. The Marin Municipal Water District intends to adopt the Mitigated Negative Declaration for the project.

**General Project Description:** The Marin Municipal Water District is proposing Amendment of the *Mt. Tamalpais Watershed Road and Trail Management Plan* for the Restoration of Azalea Hill. The project would amend the *Mt. Tamalpais Watershed Road and Trail Management Plan* (RTMP) for the Azalea Hill area to 1) remove approximately 4.4-miles of non-system roads and trails and restore those routes to natural conditions to improve habitat and water quality; 2) adopt and improve a 1.9-mile Class IV road comprised of the existing Liberty Gulch Road (1.2 miles) and conversion of existing non-system trails (0.7 miles) to the wider, small vehicle route); 3) improve the hiking and equestrian route over Azalea Hill by correcting erosion and drainage problems along approximately 1.1 miles of existing Class VI trail, rerouting the trail around sensitive plants and adopting 250 feet of an existing non-system trail; and 4) treat the Azalea Hill parking lot to correct its erosion problems and improve the visitor amenities. Upon its completion, the project would prevent up to an estimated 219 cubic yards of sediment from entering Azalea Hill's creeks and Alpine Lake annually (or 4,380 cubic yards over 20 years) and would restore approximately one acre of habitat.

**Lead Agency (Applicant):** Marin Municipal Water District, 220 Nellen Ave, Corte Madera, CA 94925

**Lead Agency Contact Person:** Aaron Fulton, Associate Civil Engineer, Marin Municipal Water District (415) 945-1143 - [afulton@marinwater.org](mailto:afulton@marinwater.org)

**Public Review:** Beginning on October 8, 2018, and throughout the 30-day agency and public review period, the proposed Draft Initial Study/Mitigated Negative Declaration was available at the Marin Municipal Water District Office, 220 Nellen Ave, Corte Madera, CA 94925 and in electronic format at [www.marinwater.org](http://www.marinwater.org). A copy of this Final IS/MND is also available at the MMWD district office and in electronic format on the district website.

**Public Comments:** The comment period for the proposed Draft Initial Study/Mitigated Negative Declaration ended on **November 9, 2018**. During the 30-day review period the District received a total of 124 comments via email (102), phone calls (7), U.S. mail (2), and public expression (13) at a public meeting held for the Project. All comments received and district responses are provided in Appendix E of this Final Initial Study/Mitigated Negative Declaration.


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**Public Hearing:** Notice is hereby given that the Marin Municipal Water District Board of Directors will consider adoption of a proposed IS/MND for the Amendment of the *Mt. Tamalpais Watershed Road and Trail Management Plan* for the Restoration of Azalea Hill (Project) at the regularly scheduled MMWD Board Meeting on May 14, 2019. In addition to considering a CEQA action for the Project, the MMWD Board of Directors will consider approving the Project and amending the *Mt. Tamalpais Watershed Road and Trail Management Plan* for the Restoration of Azalea Hill.

**Potential Project Impacts:** The Proposed Project's potential adverse impacts related to air quality, biological resources, cultural resources, hazards and hazardous materials, and recreation will be mitigated to a less than-significant level with implementation of the mitigation measures included in the MND.

**By Order of the Marin Municipal Water District**

  
\_\_\_\_\_  
Signature

  
\_\_\_\_\_  
Date

Crystal Yezman  
\_\_\_\_\_  
Printed Name

Facilities & Watershed Division Manager  
\_\_\_\_\_  
Title

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- Appendix E: Response to Comments
- Appendix F: Mitigation, Monitoring, & Reporting Program

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**LIST OF ACRONYMS AND DEFINITIONS**

APN	Assessor Parcel Map
BAAQMD	Bay Area Air Quality Management District
BMPs	Best Management Practices
CAAQS	California Ambient Air Quality Standards
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CNPS	California Native Plant Society
CRPR	California Rare Plant Rank
DBA	A single-number noise measurement based on the decibel, but weighted to approximate the response of the human ear with respect to frequencies
EIR	Environmental Impact Report
FEIR	Final Environmental Impact Report
FIGR	Federated Indians of Graton Rancheria
District	Marin Municipal Water District
MLD	Most Likely Descendant
MMWD	Marin Municipal Water District
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NWS	National Weather Service
RWQCB	Regional Water Quality Control Board
RTMP	Mt. Tamalpais Watershed Road and Trail Management Plan
SMARA	Surface Mining and Reclamation Act
San Francisco Bay Area	The area encompassed by the counties of San Francisco, San Mateo, Santa Clara, Alameda, Contra Costa, Marin, Sonoma, Napa, and Solano
THPO	Tribal Heritage Preservation Officer
Mount Tamalpais Watershed	District Lands draining to Phoenix, Lagunitas, Bon Tempe, Alpine, and Kent Lakes

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## Draft Initial Study & Mitigated Negative Declaration

### PROJECT SUMMARY

The Marin Municipal Water District proposes an amendment to the *Mt. Tamalpais Watershed Road and Trail Management Plan* (RTMP) for the Restoration of Azalea Hill (Proposed Project) to 1) remove approximately 4.4-miles of non-system roads and trails and restore those routes to natural conditions to improve habitat and water quality; 2) adopt and improve a 1.9-mile Class IV road comprised of the existing Liberty Gulch Road (1.2 miles) and conversion of existing non-system trails (0.7 miles) to the wider, small vehicle route); 3) improve the hiking and equestrian route over Azalea Hill by correcting erosion and drainage problems along approximately 1.1 miles of existing Class VI trail, rerouting the trail around sensitive plants and adopting 250 feet of an existing non-system trail; and 4) treat the Azalea Hill parking lot to correct its erosion problems and improve visitor amenities.

### BACKGROUND OF ENVIRONMENTAL REVIEW

The Proposed Project is subject to the requirements of the California Environmental Quality Act (CEQA). The Marin Municipal Water District previously filed a notice of determination for the Final Program Environmental Impact Report (FEIR) for the *Mount Tamalpais Watershed Road and Trail Management Plan* (RTMP) on May 24, 2005 with MMWD Resolution No. 7562 (MMWD, 2005b, c). The FEIR (SCH #2004082018) was prepared pursuant to Section 15168 of the CEQA Guidelines which state:

*(a) General. A program Environmental Impact Report (EIR) is an EIR which may be prepared on a series of actions that can be characterized as one large project and are related either:*

- (1) Geographically,*
- (2) As logical parts in the chain of contemplated actions,*
- (3) In connection with issuance of rules, regulations, plans, or other general criteria to govern the conduct of a continuing program, or*
- (4) As individual actions carried out under the same authorizing statutory or regulatory authority and having generally similar environmental effects which can be mitigated in similar ways.*

The RTMP FEIR evaluated and mitigated for environmental impacts associated with the *Mt. Tamalpais Watershed Road and Trail Management Plan* (RTMP), completed in 2005, which contains recommendations for repairing and maintaining hundreds of individual sources of erosion and the roads and trails (routes) maintained by the district. The RTMP adopted routes as either system (official) or non-system and defined a set of management actions that would be completed by the district. The RTMP FEIR identified the range of impacts that could be reasonably expected from implementation of the RTMP, including management of the road and trail network around Azalea Hill, and defined a suite of mitigation measures that would be incorporated depending on the type of project and environmental setting at the time and location the project would occur. However, the FEIR was not a site-specific

assessment of all projects and project sites. The CEQA Guidelines Section 15168 [c] requires that subsequent activities in the program, including the Proposed Project, must be examined in the light of the program EIR to determine whether an additional environmental document must be prepared in accordance with the following:

- (1) If a later activity would have effects that were not examined in the program EIR, a new Initial Study would need to be prepared leading to either an EIR or Negative Declaration.*
- (2) If the agency finds that pursuant to Section 15162, no new effects could occur or no new mitigation measures would be required, the agency can approve the activity as being within the scope of the project covered by the program EIR, and no new environmental document would be required.*
- (3) An agency shall incorporate feasible mitigation measures and alternatives developed in the program EIR into subsequent actions in the program.*
- (4) Where the subsequent activities involve site specific operations, the agency should use a written checklist or similar device to document the evaluation of the site and the activity to determine whether the environmental effects of the operation were covered in the program EIR.*

Based on the resources present within the project area, proposed actions, and potential for additional effects that were not fully examined at the program-level FEIR, the district determined that an Initial Study would be required to evaluate project specific impacts associated with the Proposed Project. Per CEQA guidelines 15168 [d], the focus of this Initial Study is to identify and discuss any new effects, which were not considered in the previously certified program-level EIR (RTMP FEIR) and accompanying Mitigation Monitoring & Reporting Program (MMRP) to provide a basis for deciding whether to prepare a subsequent Environmental Impact Report (EIR) or a Negative Declaration. Based on the Initial Study, the district further determined that a Mitigated Negative Declaration tiered from the RTMP FEIR (SCH# 2004082018) was an appropriate means to evaluate these impacts and develop mitigation measures to reduce any environmental impacts to a less-than-significant level. Impacts analyzed in the 2005 RTMP FEIR that do not require further analysis are included in this document by reference. In accordance with the adopted RTMP and FEIR, all program-level mitigations included in the RTMP FEIR will be implemented as part of the Proposed Project (condition 3, above). References to the program-level mitigations that apply are provided in the individual issue areas below.

The district released an Initial Study for the Proposed Project on September 8, 2017 and received beneficial constructive input from various user groups. The district received letters of support and comments on the Proposed Project's potential effects that resulted in substantial revisions to the IS/MND. Per CEQA guidelines Section 15073.5, the district is recirculating the Initial Study for public comment. This revised Initial Study integrates new biological resource surveys, discusses additional potentially significant effects related to long term use of the Proposed Project, and integrates the following additional mitigation measures, that when implemented in concert with those identified in the RTMP FEIR, reduce potential impacts to a less than significant level.



## SUMMARY OF MITIGATION MEASURES

### *Air Quality*

**Mitigation Measure AIR-1.** During construction activities, the district shall require its personnel and any construction contractor(s) assigned to the project to implement a dust abatement program that includes, but is not necessarily limited to, the following BAAQMD-recommended measures as needed, to control dust:

- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt tracked out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping shall be prohibited.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations).
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications.

### *Biological Resources*

**Mitigation Measure BIO-1.** Prior to the commencement of construction activities, the district will commission or conduct protocol-level surveys for special-status plant species. The survey area will include all areas in which construction would occur during that construction season, as well as all adjacent areas that could be disturbed. The surveys will be timed to correspond with the blooming period of the target species to facilitate identification. Given the number of annual special-status plant species in the area, and that the distribution of such species changes annually, the surveys will be considered valid until the following spring. The following shall then be implemented:

- All special-status plants and/or boundaries of the population(s) will be flagged.
- All Marin western flax plants (or other state or federally listed plants) will be avoided, and all work will be avoided within 500 feet of any Marin western flax or other state or federally listed plant population when the plant is above ground (late May-July).
  - In instances where a 500-foot buffer cannot be accomplished, the district should consult with the California Department of Fish and Wildlife on appropriate buffer distances and any potential additional protective measures such as additional species monitoring or installation of fences and signage to dissuade users from going off trail.
- No trail improvements/construction activities will occur within the trail segment in which several Marin western flax plants were observed in 2018. To accomplish this, a district botanist shall survey the area immediately before construction (between May and July when Marin western flax is flowering), identify and mark the portions of the trail supporting Marin western flax. The construction team shall be instructed that no trail improvements or disturbance is permitted in that section of the trail.

- ~~• For special-status species of low sensitivity ranking that are common in the project vicinity and/or resilient to disturbance (e.g., serpentine reed grass, Mt. Tamalpais manzanita, Mt. Tamalpais lessingia, Tiburon buckwheat, Oakland star tulip), disturbances shall be minimized to the degree practical but complete avoidance is not necessary, as directed by the district botanist.~~
- If a special-status plant species, other than Marin western flax (as all Marin western flax will be avoided, see above) are found in the project's disturbance boundary during preconstruction surveys, the plants will be avoided to the degree practicable. Removal of special-status plants will be required from within Liberty Gulch Road. Flagging and/or fencing shall be placed near any identified special-status plants that can be avoided during construction to prevent incidental disturbance.
- Supplement to **Mitigation Measure 3.2-B.2** in the RTMP FEIR. If avoidance is not practicable, ~~and if the plant(s) do not have a low sensitivity rating and are not common in the project vicinity and/or resilient to disturbance (as determined by a district botanist),~~ then a rare plant mitigation and monitoring plan shall be designed and implemented for all special-status plants affected. At a minimum, the plan shall include the following elements:
  - a. For annual species, stockpile the topsoil from areas containing special-status plants and re-dress the site with topsoil from the area as directed by the district botanist. See **Mitigation Measure HAZ-1** regarding limited wetting of topsoil horizons to maintain seed viability. Seed may also be collected from plants that will be removed or from other populations of the species on Azalea Hill and those seeds shall be redistributed in the project vicinity as directed by the district botanist.
  - b. For perennial species, seed collection may be augmented by transplanting entire plants or cuttings, as directed by the district botanist.
  - c. Suitable sites shall be identified and prepared for redistribution of seeds, topsoil, or transplants. The plan shall outline required site preparation activities.
  - d. Transplantation methods shall be completed with as little physical disturbance as possible to the individual, and at the time when the individual is photosynthetically inactive or dormant. The transplantation site shall be of the same quality habitat and having similar physical characteristics and soil type as the site the transplanted plant originated from.
  - e. ~~Monitoring surveys of the seeded or transplanted areas shall be conducted for a minimum of two years, and weeding shall be conducted as needed.~~ The rare plant mitigation and monitoring plan shall maintain pre-project rare plant populations by replacing all affected rare plants via seeding or transplanting (relocating). The success criteria for seeded and relocated plants shall be full replacement at a 1:1 ratio [number of plants established = number of plants impacted] after five years, accounting for annual variability as measured by reference populations near the project area or in similar environmental (soil, aspect, elevation, etc.) conditions. Both impacted and reference populations should be monitored prior to the commencement of construction activities to provide a baseline comparison that should be used for evaluating post-construction success. Monitoring surveys of the seeded or transplanted areas shall be conducted for a minimum of five years, and weeding shall be conducted as needed. Monitoring of the populations shall be timed to correspond with the blooming period of the target species to facilitate identification.

- f. ~~Mitigation will be deemed successful provided that each of the relocated species establishes at least one stable population, defined as species presence over a 2-year period, taking into account fluctuations in local reference populations. If this goal is not achieved in 3 years, then contingency measures shall be implemented. Such measures will include: evaluating the environmental or other characteristics affecting plant survival and implementing corrective measures, which may include additional seeding and planting; altering or implementing a weed control regime; or introducing or altering other management activities. Monitoring efforts shall continue until the relocated individuals have been healthy for two years.~~ Contingency measures should be included in the rare plant mitigation and monitoring plan if it appears the success criterion will not be met after five years. Such measures will include: evaluating the environmental or other characteristics affecting plant survival and implementing corrective measures, which may include additional seeding and planting; altering or implementing weed management activities; or, introducing or altering other management activities. Monitoring efforts shall continue for a minimum of five years and until the relocated individuals have met the success criteria. The rare plant mitigation and monitoring plan shall be developed in consultation with California Department of Fish and Wildlife, and with United States Fish and Wildlife Service for federally-listed plants, prior to the start of local construction activities. Annual monitoring reports shall include photo-documentation, planting specifications, a site layout map, descriptions of materials used, monitoring methods and results, justification for any deviations from the monitoring plan, and recommendations for management or maintenance to improve plant survival.
- g. Annual monitoring surveys for special-status plant populations shall be mapped, documented, and reported to the CNDDB.

**Mitigation Measure BIO-2.** The district or district's contractor shall protect special-status plant species from incidental harm due to construction equipment and spread of weeds by implementing the following:

- All construction personnel must attend a biological resources training to be provided by the district (see Mitigation Measure 3.2-B.3 in the RTMP FEIR). The training shall address the importance of botanical resources specific to Azalea Hill and techniques for avoiding impacts.
- The number of vehicles on site will be minimized to reduce the potential for disturbance and ensure adequate space to park and maneuver within designated areas.
- All vehicle routes, staging, parking, and turnaround areas will be marked, and vehicle operation in unmarked areas will be prohibited.
- Additional visual or physical barriers (fencing, signs, stakes, marking paint, or flagging) will be installed, as needed, to ensure vehicle compliance with approved vehicle routes, staging, parking, and turnaround areas.
- All vehicles and equipment must be cleaned of soil, seeds, and vegetative material prior to entering the project site; inspection and cleaning measures (washing, steaming, air blast, brushing/scrubbing, vacuuming) should be applied to material transport beds, buckets and blades, radiators, grills/filters, tires/axels and differentials, within slashing mulching and ripping

equipment, chassis and body, between dual wheels, ledges and frames, inside driver's cab, and mudguards.

- Erosion control materials shall be composed of coconut/coir fiber, or other 100% biodegradable certified weed-free materials, as approved by the district botanist.
- All open bed vehicles carrying a load of material (unconsolidated fill, erosion control material, etc.) shall be covered to prevent the dispersal of weed seeds.

**Mitigation Measure BIO-3.** While it is unlikely that California red-legged frog occurs in the study area, the following measures will be implemented to further ensure that the species is not harmed by the Proposed Project:

- Before any construction activities begin on the site, a qualified biologist shall conduct a biological training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if a California red-legged frog is observed in the construction area and the biologist must be immediately notified.
- A qualified biologist shall survey the work sites within 500 feet of Bon Tempe Creek or Alpine Lake or any other work sites containing or adjacent to standing water and saturated soils within 48 hours of the onset of construction activities for California red-legged frog. If California red-legged frogs are found, construction activities will be delayed until the USFWS is notified and guidance is provided on how to proceed.

**Mitigation Measure BIO-4.** While it is unlikely that foothill yellow-legged frog occurs in the study area, the following measures will be implemented to further ensure that the species is not harmed by the Proposed Project:

- The biological training session to be provided to construction personnel (see Mitigation Measure BIO-3) shall also address the potential presence of foothill yellow-legged frog. At a minimum, the training shall include a description of the foothill yellow-legged frog and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if a foothill yellow-legged frog is observed in the construction area and the biologist must be immediately notified.
- A qualified biologist shall survey the work sites within 25 feet of Bon Tempe Creek or any other work sites containing or adjacent to standing water and saturated soils within 48 hours of the onset of construction activities for foothill yellow-legged frog. If foothill yellow-legged frogs are found, construction activities will be delayed until the frog leaves the construction zone on its own or until a biologist in possession of all required permits moves the frog(s) to an area outside of the construction zone. Temporary exclusionary fencing (designed to prevent frogs from entering the work area) will then be installed under the guidance of a qualified biologist to prevent the relocated frog(s) from re-entering the work site.

**Mitigation Measure BIO-5.** The following measures shall be implemented to protect California giant salamander during construction activities:

- The biological training session to be provided to construction personnel (see **Mitigation Measure BIO-3**) shall also address the potential presence of California giant salamander. At a minimum, the training shall include a description of the California giant salamander and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if a California giant salamander is observed in the construction area and the biologist must be immediately notified.
- A qualified biologist shall survey the work sites within 50 feet of Bon Tempe Creek or any other work sites containing or adjacent to standing water and saturated soils within 48 hours of the onset of construction activities for California giant salamander. If the species is found, construction activities will be delayed until the salamander leaves the construction zone on its own or until a biologist in possession all required permits moves the salamander(s) to an area outside of the construction zone.

**Mitigation Measure BIO-6.** The following measures will be implemented to protect western pond turtle during construction activities:

- The biological training session to be provided to construction personnel (see **Mitigation Measure BIO-3**) shall also address the potential presence of western pond turtle. At a minimum, the training shall include a description of western pond turtle and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if a pond turtle is observed in the construction area and the biologist must be immediately notified.
- A qualified biologist shall survey work sites within construction areas where suitable western pond turtle nesting or aquatic habitat exists within 48 hours of the onset of construction activities. If western pond turtles are found, the turtle(s) will be relocated to a suitable location outside of the construction zone by a qualified biologist.
- Prior to the start of construction, construction fencing shall be placed between the lake or Bon Tempe Creek and the construction area or access routes where suitable western pond turtle habitat exists, at the direction of the qualified biologist. The fencing shall be placed at the edge of the construction area or access routes to maximize areas for turtle movement or nesting. Large-mesh construction fencing shall be used to allow hatchlings, but not adults of the species, to pass through the fencing. Additionally, prior to the start of construction each day, a designated biological monitor (who has received training from a qualified biologist) shall inspect the fence and construction area. Any pond turtles found on the upland side of the construction fencing shall be relocated to the lake-side of the construction fencing by a qualified biologist or the trained, designated biological monitor.

**Mitigation Measure BIO-7.** If construction activities occur during the nesting season of native bird species, typically February through August in the project region, a pre-construction survey for nesting birds will be conducted by a qualified biologist. The survey will occur within one week of the commencement of construction activities.

- If active nests are found in areas that could be directly affected, or that are within 300 feet of construction and would be subject to prolonged construction-related noise, then an appropriate no-disturbance buffer zone shall be created around active nests during the nesting season or until

a qualified biologist determines that all young have fledged. The size of the buffer zone and types of construction activities restricted within the buffer zone will be determined through coordination with the California Department of Wildlife, the district, and a qualified biologist taking into account factors such as the following:

- a. Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity;
- b. Distance and amount of vegetation or other screening between the construction site and the nest; and
- c. Sensitivity of individual nesting species and behaviors of the nesting birds.
- d. To minimize the potential for a construction-related delay due to the presence of an active bird nest, any required tree and vegetation removal may be conducted outside of the nesting season.

**Mitigation Measure BIO-8.** If vegetation removal occurs during the bat maternity roosting (April 15 to August 31) or hibernation period (October 15 to February 28), a focused tree habitat assessment shall be conducted by a qualified bat biologist of all trees that will be removed or impacted by construction activities. Trees containing suitable potential bat roost habitat features would then be clearly marked.

- The habitat assessment should be conducted enough in advance to allow preparation of a report with specific recommendations and to ensure tree removal can be scheduled during seasonal periods of bat activity, if required. If the absence of roosting bats cannot be confirmed, then the removal of trees providing suitable maternity or hibernation roosting habitat should only be conducted during seasonal periods of bat activity, including:
  - a. Between March 1 (or after evening temperatures rise above 45F and/or no more than 1/2" of rainfall within 24 hours occurs) and April 15; or
  - b. Between September 1 and about October 15 (or before evening temperatures fall below 45F and/or more than 1/2" of rainfall within 24 hours occurs).
- If it is determined that day roosting bats are unlikely to occur, the tree may be removed as described below.
  - a. Appropriate methods will be used to minimize the potential harm to bats during tree removal. Such methods may include using a two-step tree removal process. This method is conducted over two consecutive days, and works by creating noise and vibration by cutting non-habitat branches and limbs from habitat trees using chainsaws only (no excavators or other heavy machinery) on Day 1. The noise and vibration disturbance, together with the visible alteration of the tree, is effective in causing bats that emerge nightly to feed and to not return to the roost that night. The remainder of the tree is removed on Day 2. A bat biologist qualified in two-step tree removal is required on Day 1 to supervise and instruct the tree-cutters who will be on the site conducting the work, but only for a sufficient length of time to train all tree cutters who will conduct two-step removal of habitat trees. The bat biologist is generally not required on Day 2, unless a very large cavity is present and a large colony is suspected.

**Mitigation Measure BIO-9.** The following measure will be implemented to protect American Badger during construction activities:

- The biological training session to be provided to construction personnel (see **Mitigation Measure BIO-3**) shall also address the potential presence of American Badger. At a minimum, the training shall include a description of American Badger and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if American Badger dens are observed in the construction area and the biologist must be immediately notified.
- Prior to construction, the work areas will be surveyed for the presence of badger dens. If such sites are identified, work shall not start at that site until a qualified wildlife biologist has determined that the den is not active or, if active, until the young have left the site and are capable of surviving away from the site.

**Mitigation Measure BIO-10.** Given the above, active and adaptive management measures are needed to ensure the routes perform as designed and that they would not have a substantial adverse impact on biological resources. The district has enjoyed several years of successful use of adaptive management concepts to control undesirable road and trail use through its “Project Restore” program. Started in 2009, Project Restore is an implementation program originally developed in Chapter 5 of the RTMP for the management of non-system routes. It uses a multi-disciplinary management approach, including public outreach, stewardship, and education to explain undesirable effects of illegal trail use or construction, complete physical removal of undesirable routes, including full landform restoration in some cases, official closure of the areas pursuant to district regulation Section 9.01.06, and focused patrol and monitoring of the closed and restored areas, including issuing of citations. Consistent with Chapter 5 of the RTMP, the following measures shall be implemented to address potential indirect impacts to biological resources from use of the Proposed Project routes:

- The BMPs and Environmental Protection Measures in the RTMP (Chapter 3) shall be implemented.
- After the project is complete, monitoring and enforcement shall be carried out as part of and pursuant to the annual Project Restore program and methodology (Chapter 5 of the RTMP). The methodology shall include multimedia public outreach including on-site signs to explain the undesirable effects of illegal trail use or construction, complete physical removal of a route, including landform restoration as needed, and official closures pursuant to district regulation 9.01.06, including issuing citations.
- The district’s rangers will regularly patrol the trail system to provide monitoring of trail conditions and enforcement of regulations. As appropriate, additional training may be provided to the rangers so that they can recognize and report areas that are experiencing unauthorized or excessive use.
- At locations where the trail borders sensitive biological resources (e.g., rare plant populations, wetlands), design features (e.g., logs, rocks) will be used where appropriate to clearly demark the tread margins and discourage encroaching into adjacent vegetation.
- Adaptive management measures, including but not limited to implementation of BMPs, Design Standards, Environmental Protections per the RTMP, edge-of-trail barriers, tread surface hardening, seasonal trail closures, restoration of degraded habitats, weeding, and increased patrols shall be implemented as needed to ensure routes perform as designed. These adaptive management measures shall persist and remain in effect for as long as the routes are in use and shall be maintained at a level to protect biological resources, as necessary.

- Interpretative signage shall be installed at key locations (e.g., at trailheads, near sensitive resources) that convey that trail users must stay on designated trails and roads. The signage shall explain open space conservation goals, the natural resources protected, and the regulations in the area. The signage shall also identify which trails are not open to mountain bikes.
- A district botanist will conduct surveys, as needed, of the trail system to identify areas of overuse or illegal use and provide adaptive management recommendations (see above) to address areas that are experiencing habitat degradation or increases in weeds. Other district staff, or consultants retained by the district with an expertise in hydrology, geomorphology, trail maintenance/design, and landform restoration will assist the district botanist in identifying areas of over use and development of adaptive management actions.

**Mitigation Measure BIO-11.** Where trails will be rerouted or where activities will occur outside of existing trails, the protection of native vegetation will be prioritized by adjusting the final alignment, within the regions already surveyed for sensitive species (**Appendix D**). Any trees larger than 8-inch DBH that are removed as part of the Proposed Project shall be replaced. The minimum ratio for tree replacement shall be 3:1 (three trees replaced for each tree removed) but shall be adjusted by the district botanist in concert with the regulatory agencies to re-establish the structure and function of existing landscapes). Areas disturbed by construction will be monitored and adaptively managed to ensure revegetation for a period of five years.

**Mitigation Measure BIO-12.** All areas temporarily disturbed during project construction, including areas where tree replacement is conducted, will be restored and revegetated to their pre-disturbance condition. The pre-disturbance condition will be documented by a qualified botanist prior to project implementation to establish a baseline for recording any changes to vegetation including native and non-native plant cover, density, and distribution.

- For each construction phase, a restoration and monitoring plan, with performance standards, will be implemented to track and restore all temporarily disturbed areas and shall continue annually until revegetation meets the performance criteria.
- The plan shall set specific performance criteria that shall be attained before revegetation is considered complete. The success criteria, at a minimum, shall require that non-native species cover shall not exceed pre-disturbance non-native species cover and re-establishment of native cover to pre-disturbance levels.
- The plan shall also define corrective actions or adaptive management that would be taken if the revegetation actions are not substantially on course to meet the performance criteria and the triggers for taking corrective actions, including those necessary to address weed invasion, including annual grasses encroaching into native grasslands.

**Mitigation Measure BIO-13.** In addition to the requirements of **Mitigation Measure 3.2-F.1** in the RTMP FEIR, all decommissioned trails will be monitored by a qualified botanist annually for a period of five years. Corrective actions will be implemented if it is determined by the botanist, other district staff, or consultants retained by the district with an expertise in botany, weed management, trail maintenance/design, and landform restoration, that the trails are not revegetating with appropriate vegetation characteristics of surrounding areas on similar soils or if non-native weeds require management. To ensure these areas are restored to a natural/native condition, notably in areas that could support special-status plant species, the monitoring shall include weed removal along the decommissioned trails as determined by the botanist for the five-year period. If the Proposed Project is



implemented in phases, this mitigation measure shall be carried out independent of other project elements for each phase of work. Also see **Mitigation Measure BIO-2**, which includes measures to prevent the spread of weeds during construction activities.

### ***Cultural Resources***

**Mitigation Measure ARC-1.** In the event of an unanticipated discovery of archaeological deposits during project implementation, the district shall ensure that construction crews shall stop all work within 100 feet of the discovery until a qualified archaeologist can assess the previously unrecorded discovery and provide recommendations. Resources could include subsurface historic features such as artifact-filled privies, wells, and refuse pits, and artifact deposits, along with concentrations of adobe, stone, or concrete walls or foundations, and concentrations of ceramic, glass, or metal materials. Native American archaeological materials could include obsidian and chert flaked stone tools (such as projectile and dart points), midden (culturally derived darkened soil containing heat-affected rock, artifacts, animal bones, and/or shellfish remains), and/or groundstone implements (such as mortars and pestles).

**Mitigation Measure ARC-2.** In the event of an unanticipated discovery of human remains during project implementation, the district shall ensure that construction crews stop all work within 100 feet of the discovery. The district shall treat any human remains and associated or unassociated funerary objects discovered during soil-disturbing activities according to applicable State laws. Such treatment includes work stoppage and immediate notification of the Marin County Coroner, requisition of a qualified archaeologist, and in the event that the Coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission (NAHC), according to the requirements in PRC Section 5097.98. The NAHC would appoint a Most Likely Descendant (MLD). A qualified archaeologist, the district, and the MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of any human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5[d]). The agreement would take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, and final disposition of the human remains and associated or unassociated funerary objects. The PRC allows 48 hours to reach agreement on these matters.

### ***Hazards and Hazardous Materials***

**Mitigation Measure HAZ-1.** The accidental release of asbestos fibers shall be mitigated by implementing the following measures for construction activities in areas with serpentinite-derived soils:

- Construction vehicle speed at the work site shall be limited to fifteen (15) miles per hour or less.
- The contractor shall only wet organic topsoil designated by the district botanist for salvage to the extent required to control dust emissions. Care should be taken to not over-water topsoil.
- Prior to any ground disturbance, sufficient water must be applied to the area to be disturbed to prevent visible emissions.
- Areas to be graded or excavated must be kept adequately wetted to prevent visible emissions.
- Except for salvaged serpentine topsoil, temporary storage piles containing serpentinite-derived soils must be kept adequately wetted or covered when material is not being added to or removed from the pile. Salvaged serpentine topsoil shall be lightly wetted at the surface only to the extent required to control dust emissions. Care shall be taken to not over-water topsoil piles. Salvaged serpentine topsoil shall not be covered.

- Equipment must be washed down before moving from the work limits onto a paved public road or adjacent work areas.
- Visible track-out on the paved public road must be cleaned using wet sweeping or a HEPA filter equipped vacuum device within twenty-four (24) hours.

**Mitigation Measure HAZ-2.** The district and/or its contractor(s) shall use BMPs that will minimize the potential adverse effect of the Proposed Project to groundwater and soils from chemicals used during construction activities. The BMPs will include the following measures:

- Establish refueling and vehicle maintenance areas away from all drainage courses and design these areas to include secondary containment and to control runoff;
- Follow manufacturer's recommendations on use, storage, and disposal of chemical products used in construction;
- Avoid overtopping construction equipment fuel gas tanks;
- Provide secondary containment for any hazardous materials temporarily stored onsite;
- During routine maintenance of construction equipment, properly contain and remove grease and oils;
- Perform regular inspections of construction equipment and materials storage areas for leaks and maintain records documenting compliance with the storage, handling and disposal of hazardous materials;
- Properly dispose of discarded containers of fuels and other chemicals; and
- A spill prevention and countermeasure plan shall be developed that will identify proper storage, collection, and disposal measures for potential pollutants (such as fuel, grease, oils, etc.) used onsite. The plan will also require the proper storage, handling, use, and disposal of petroleum products.

## Recreation

**Mitigation Measure REC-1.** The main trailhead at the upper Azalea Hill parking lot shall include interpretive signage (kiosk, etc.) that explains and illustrates the sensitive plants and communities on Azalea Hill, encourages their avoidance and protection, and identifies the importance of staying on system trails. Interpretive signage shall also be placed at the lower trailhead on Bullfrog Road for both the Azalea Hill Trail and the Liberty Gulch route. In both cases, signs should clearly indicate allowed use and direct bikes away from the Azalea Hill Trail.

**Mitigation Measure REC-2.** The survey required by **Mitigation Measure BIO-10**, shall also include an identification adaptive management actions to treat any deterioration in trail and road segments and parking lots serving the project area. The adaptive management actions shall be included in annual trail maintenance and operation activities to be performed by the district.

**Mitigation Measure REC-3.** On Liberty Gulch Road, speed calming features (e.g. signs, changes in elevation such as earthen speed bumps, lane narrowing, diagonal diverters using local logs or rocks, etc.) to reduce the downhill speed of bicyclists shall be constructed that integrate standard trail design guidelines (hiking, equestrian, biking) and a focus on safety. To discourage cycling on the Azalea Hill Trail bicycle deterrence elements (e.g. signs, abrupt changes in elevation that are difficult to roll over, horse

friendly diverters or step-overs using local logs or rocks, etc.) shall be constructed. The effectiveness of these features shall be monitored to ensure they perform as designed in accordance with **Mitigation Measures BIO-10 and REC-2**.

**Mitigation Measure REC-4.** The District shall conduct focused patrols at Azalea Hill, similar to those it conducts for Project Restore, and document its patrol and enforcement activity in the Azalea Hill area and prepare a report on its findings after five years. The number of focused patrols shall be determined based on the illegal activity discovered or reported (the schedule of such patrols need to remain confidential). Findings of illegal activity, including failure to abide by permitted use on a route, failure to comply with speed limits, including when passing, and failure to keep out of closed areas, shall trigger corrective actions as described in **Mitigation Measure BIO-10**. These efforts shall continue until the desired outcome, compliance with District regulations preventing illegal activities, is achieved.

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## ENVIRONMENTAL CHECKLIST FORM

### 1. Project Title:

Amendment of the *Mt. Tamalpais Watershed Road and Trail Management Plan* for the Restoration of Azalea Hill (MMWD Project No. R17008)

### 2. Lead Agency Name and Address:

Marin Municipal Water District, 220 Nellen Ave, Corte Madera, CA, 94925

### 3. Contact Person and Phone Number:

Aaron Fulton, Associate Civil Engineer, Marin Municipal Water District (415)-945-1143

[azaleahill@marinwater.org](mailto:azaleahill@marinwater.org)

### 4. Project Location:

Azalea Hill, approximately 4 miles west-southwest of the Town of Fairfax, CA (latitude 37.9626, longitude -122.6206), APN 197-120-40 (**Figure 1**).

### 5. Project Sponsor's Name and Address:

Marin Municipal Water District, 220 Nellen Ave, Corte Madera, CA, 94925

### 6. General Plan Designation:

Marin Countywide Plan – Open Space (OS)

### 7. Zoning:

Marin County Zoning Ordinance – Open Area (OA)

### 8. Project Description:

The Marin Municipal Water District (MMWD or district) is proposing Amendment of the *Mt. Tamalpais Watershed Road and Trail Management Plan* (MMWD, 2005a) for the Restoration of Azalea Hill. The project would amend the *Mt. Tamalpais Watershed Road and Trail Management Plan* (RTMP) for the Azalea Hill area to 1) remove approximately 4.4-miles of non-system roads and trails and restore those routes to natural conditions to improve habitat and water quality; 2) adopt and improve a 1.9-mile Class IV road comprised of the existing Liberty Gulch Road (1.2 miles) and conversion of existing non-system trails (0.7 miles) to the wider, small vehicle route); 3) improve the hiking and equestrian route over Azalea Hill by correcting erosion and drainage problems along approximately 1.1 miles of existing Class VI trail, rerouting the trail around sensitive plants and adopting 250 feet of an existing non-system trail; and 4) treat the Azalea Hill parking lot to correct its erosion problems and improve visitor amenities. Upon its completion, the project would prevent up to an estimated 219 cubic yards of sediment from entering Azalea Hill's creeks and Alpine Lake annually (or 4,380 cubic yards over 20 years) and would restore approximately one acre of habitat.

## 8.1 Background

Azalea Hill is an approximately 370-acre area of the Mt. Tamalpais watershed bordered by Bon Tempe Creek and the Sky Oaks/Bullfrog area to the east, Alpine Lake to the south, Liberty Gulch Road, Bolinas-Fairfax Road and “Pine Mt.” area to the west and the Meadow Club golf course to the north. Elevation ranges from 646 feet along the shore of Alpine Lake to 1,217 feet at the summit of Azalea Hill (**Figure 1**). The area is criss-crossed by a network of approximately 7 miles of roads and trails that were constructed over time as hiking trails, carriage roads, ranch roads, or county vehicle roads. There are approximately two dozen creeks originating on Azalea Hill as well as several seeps and springs. The vegetation is predominately a mixture of grasslands, chaparral and hardwood forest. Of note are pockets of serpentine soils in several areas that are highly erosive and that support many special-status plant species.<sup>1</sup>

Of the 7 miles of roads and trails, approximately 6 miles are social or “non-system” routes. “Non-system” routes, as opposed to system, or official routes, are also known as “social”, “abandoned”, “illegal”, or “unofficial” routes that add to the burden of road and trail management. These non-system routes have a wide variety of undesirable effects on the environment including water quality impacts, migration or foraging barriers for wildlife, and physical removal of habitat<sup>2</sup> (**Figure 2**). Some of the routes existed before the district acquired the land (i.e. old ranching roads, trails, etc.) or were constructed by others over time and have persisted through repeated off-trail use.

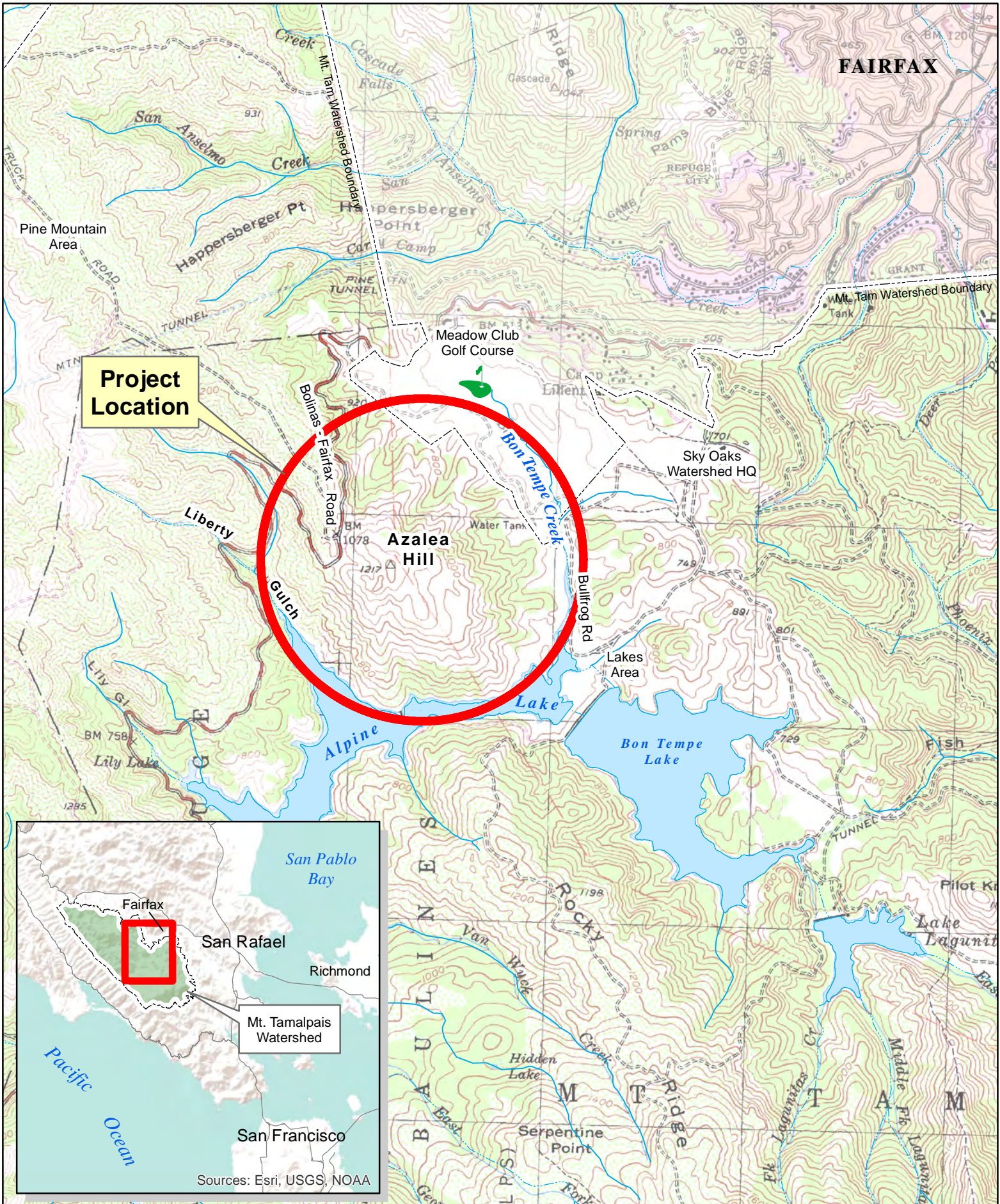
Key to the Proposed Project is what is now called Liberty Gulch Road. This road was originally constructed to replace the county’s Bolinas-Fairfax carriage road that was flooded by Alpine dam and reservoir in 1919. When Alpine Dam was raised in 1924 and 1941 additional road construction or reroutes were required which resulted in the contemporary alignment of Liberty Gulch. At one time, Liberty Gulch Road provided the connection for all users between Bullfrog Road, a gateway to the “Lakes” area, and Fairfax-Bolinas Road, a gateway to the “Pine Mt.” area. However, the dam and road construction have eliminated, for the most part, the connections at either end (the eastern portion is flooded by Alpine Lake and the western portion was buried under today’s current Bolinas-Fairfax Road alignment).

Other key elements of the project area are Azalea Hill Road and the Azalea Hill Trail that currently make up the RTMP recognized Class VI (hiking and equestrian) route over Azalea Hill (**Figure 2**). While their origin is not known speculation has the road (which is badly gullied) being built by ranchers and the trail being built by equestrians (Cerkel, 2017). The Azalea Hill Road and Trail provide the hiking and equestrian connection over the peak of Azalea Hill between Bullfrog Road and Bolinas-Fairfax Road. As such, there is no official bicycle or vehicle connection between Bullfrog and Bolinas-Fairfax Roads (**Figure 2**).

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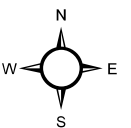
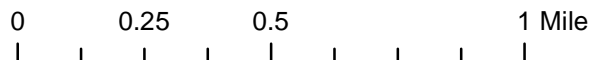
<sup>1</sup> A list of special status plant species observed on Azalea Hill is found in Table 4-1.

<sup>2</sup> Refer to Chapter 5 of the “Mt. Tamalpais Watershed, Road and Trail Management Plan,” prepared by MMWD, 2005.



Sources:MMWD Sky Oaks HQ GIS, MarinMap and USGS Quad Maps (7.5 min.) Portions of Bolinas and San Rafael

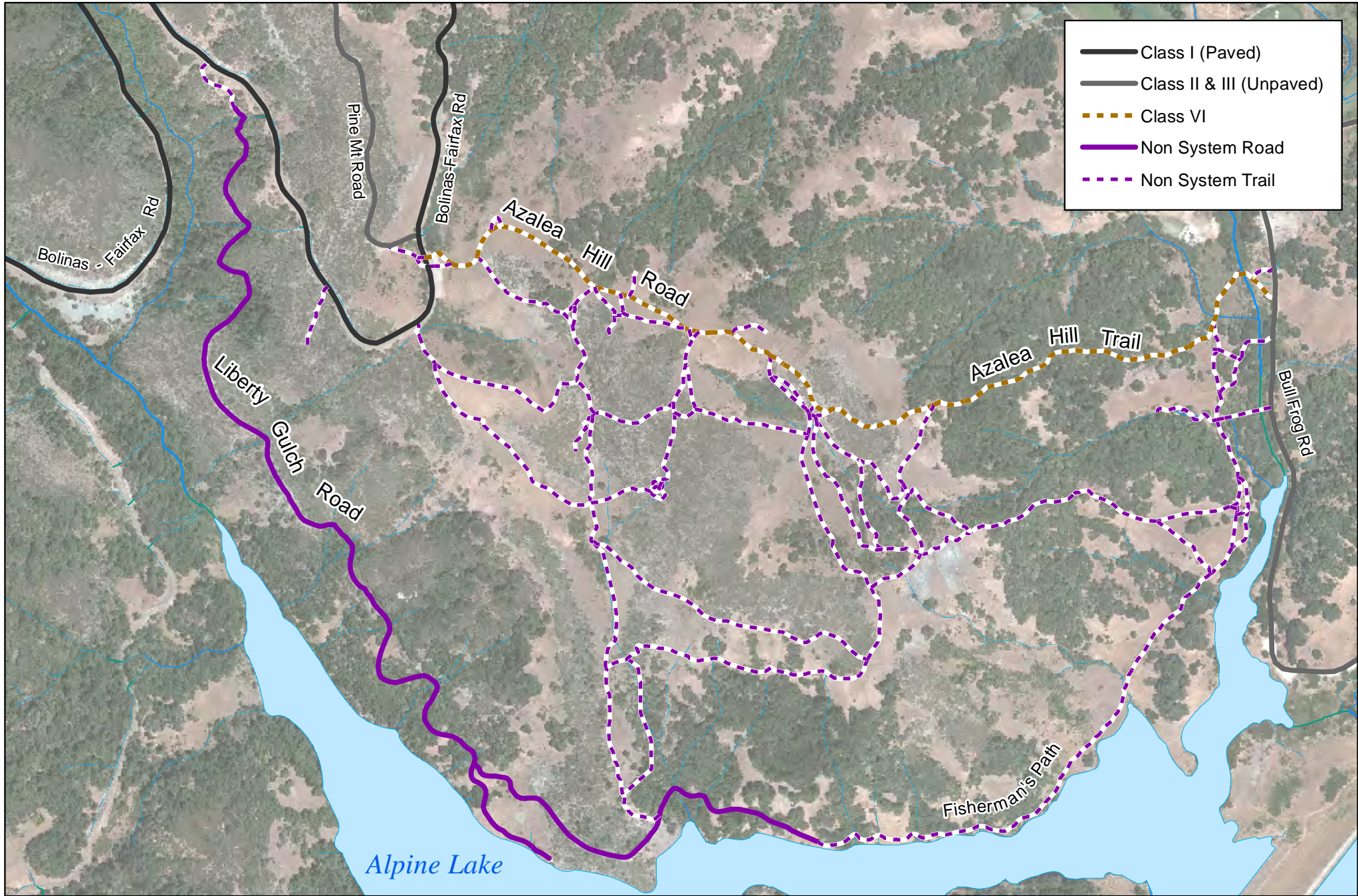
Prepared by MMWD Sky Oaks Wtrshd HQ GIS January 2017



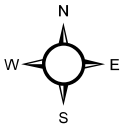
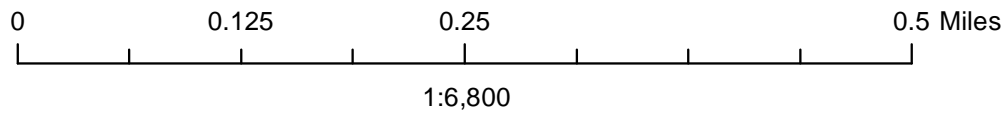
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Figure 2 - Existing Azalea Hill Roads & Trails



Sources: "Mt. Tamalpais Watershed Road and Trail Management Plan" (2005), MMWD Sky Oaks HQ GIS, MarinMap. Orthophoto: US NAIP 2014



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**a. Purpose and Need**

Azalea Hill contains areas of serpentine soils that support many special-status plants. People traveling off-trail and those using non-system trails easily damage these species. Serpentine soils are also very erosive, and sediment from these and other non-system stream crossings makes its way to Alpine Lake, one of the primary drinking water sources for central and southern Marin County. An erosion assessment of the Liberty Gulch Road and the Azalea Hill Trail was completed as part of the RTMP and estimated approximately 2,573 cubic yards of sediment would be delivered to Alpine Lake over the next 20 years if left untreated (PWA, 2003). The total estimated sediment from erosion increases to 4,377 cubic yards when all the non-system routes and the parking lot are included. Decommissioning non-system trails and crossings in sensitive serpentine and stream habitat would support special-status plant populations and reduce the delivery of fine sediment to Alpine Lake.

The network of roads and trails on Azalea Hill do not provide an adequate connection from the "Lakes" area to the "Pine Mt." area for all visitors or district patrol and response staff. Further, it is in poor condition and some sections are too steep to be sustainable. In addition, the network of non-system trails, some of which pass through sensitive serpentine and stream habitats, continue to have undesirable effects such as habitat fragmentation, disruption to wildlife movements, erosion, and the increased risk of trail users getting lost or injured. Removal of this network of non-system trails would minimize these impacts and help restore many areas of Azalea Hill. Adopting and improving the existing Liberty Gulch Road would improve the visitor experience by providing a sustainable route for bicycles, district patrol personnel, and emergency response that connects closer to the Azalea Hill parking lot, via Bolinas-Fairfax Road, than currently exists. The improvement of visitor amenities at the existing Azalea Hill parking lot would further benefit the visitor experience, and provide educational opportunities on the sensitive habitat in the area and the importance of staying on system trails.

**b. 2005 Mt. Tamalpais Watershed Road and Trail Management Plan**

The district adopted the *Mt. Tamalpais Watershed Road and Trail Management Plan* in 2005. The RTMP is both a description of the official system of roads and trails and a detailed work plan on how to manage the roads and trails for the next quarter century. It also serves as a guide to minimize road and trail related impacts in the Mt. Tamalpais watershed by protecting water quality in creeks and reservoirs, environmentally sensitive habitats, and special-status species.

The goals of the RTMP are:

- *To improve water quality and minimize sediment into the creeks and reservoirs;*
- *To reduce the impact of the road and trail network on wetlands, riparian areas, other environmentally sensitive habitats and special-status plant and animal species; and*
- *To reduce the impact of the road and trail network on the Watershed's natural ecological functions.*

Azalea Hill is identified in Chapter 2 of the RTMP as an area proposed for changes<sup>3</sup>. Azalea Hill Road is proposed to be converted to a trail, mainly to keep cyclists from continuing beyond the road and creating new trails that damage the environment and stress limited enforcement resources. In addition to being a dead end, other undesirable characteristics include the steepness of the trail, the presence of special-status plant species, and erosivity of serpentine soils. The RTMP proposed to reroute the Azalea Hill Trail to avoid steep and gullied areas, erosive serpentine soils, and sensitive habitats and convert the route to a Class VI (hiking and equestrian) trail.

## 8.2 Project Objective and Description

The goals of the Azalea Hill Restoration Project are to:

- *Restore habitat, including sensitive serpentine habitats, by decommissioning non-system and superfluous roads and trails;*
- *Provide environmentally sensitive routes (i.e. routes that avoid environmentally sensitive areas wherever possible, and minimize and mitigate their impacts when not possible) over Azalea Hill for all users (hikers, equestrians, cyclists, and district patrol and response staff) to improve connectivity between the “Lakes” area and the “Pine Mt.” area;*
- *Improve visitor experience by providing new trail marker signage, informational kiosks, trash and recycling facilities, parking lot improvements, a self-contained serviceable convenience station (i.e. a port-a-potty or self-composting toilet), bicycle racks, split-rail fencing, and benches; and*
- *Ensure the routes are sustainable and designed and managed in a manner that strictly minimizes erosion and water quality impacts (e.g. routes that meet the best management practices (BMPs), design standards, and environmental protection measures per Chapter 3 of the RTMP).*

To achieve these goals, the Project includes the following elements:

1. Amend the *Mt. Tamalpais Watershed Road and Trail Management Plan* for the Azalea Hill area. Chapter 2 already includes guidance for Azalea Hill – treat erosion sites (creek crossings and gullies), reroute it where it is too steep, and minimize impacts to serpentine habitats (and the special-status plants that live there). The RTMP also recognizes the existing route connectivity problem. The road dead-ends at the top of Azalea Hill, so some cyclists use non-system routes or create new ones, damaging the environment or stressing limited enforcement resources to make a connection from the “Lakes” area to the “Pine Mt.” area. The proposed amendment in Chapter 2 of the RTMP would adopt Liberty Gulch Road,

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<sup>3</sup> Section 2.1.2 – Changes to the Old Road and Trail System and Table 2.4 – Proposed Changes to the Road and Trail System on the Mt. Tamalpais Watershed.

including its associated reroutes and conversions, as a Class IV<sup>4</sup> small vehicle road, or multi-use route, to improve connectivity between the “Lakes” area and the “Pine Mt.” area. The amendment would also add Liberty Gulch Road to Table 2.4, “Non-System Routes to Become System – Adoptions,” and the maps in Figures 2.03 through 2.15 of the RTMP, as a Class IV small vehicle road. Lastly, the number of miles of roads and trails in the plan would be updated to reflect the current conditions on the Watershed. The full text of the new language and the revised maps can be found in **Appendix A**.

2. Decommission approximately 4.4-miles of non-system roads and trails and restore those routes to natural conditions to improve habitat and water quality (**Figure 3**). This work would be accomplished by uncompacting the trail tread with hand tools (picks, McLeods, or shovels) and raking adjacent topsoil, duff, and leaf litter on top of the decommissioned tread to facilitate revegetation. There are two sites where mechanized equipment would be used to decommission trails; one at a spur road at its intersection with Liberty Gulch Road near the bottom of the Azalea Hill and a second at the upper end of the Azalea Hill Road (**Figure 3**). There may be locations where it is not necessary to compact the trail tread because segments have already re-vegetated or are no longer accessible. This would be determined, in part, by the type of vegetation a trail goes through. For example, hand work might be needed on a trail segment when it goes through grassland, maybe intermittently when it is in forest lands, and not at all when in chaparral. Decommissioned areas would be revegetated to minimize erosion, saving up to an estimated 85 cubic yards<sup>5</sup> annually (approximately 1,702 cubic yards over 20 years) from entering Alpine Lake or one of Azalea Hill’s creeks, thereby improving water quality in addition to restoring habitat.
3. Adopt and improve an approximately 1.9-mile section of the unpaved, existing Liberty Gulch Road, including associated reroutes and conversions, as a Class IV small vehicle road, or multi-use route (**Figure 4**). Following the guidance in the RTMP for Class IV roads, the route would be designed for not more than small vehicles (approximately four feet wide), necessitating only those improvements that provide multi-use access – district personnel on all-terrain vehicles, bicycles, horses, and hikers. Throughout the length of the route, speed-calming features (e.g. changes in elevation such as earthen speed bumps, lane narrowing, diagonal diverters using local logs or rocks, etc.) would be maintained or installed to reduce the downhill speed of bicyclists. Passing opportunities, lines of sight, and horse-friendly tread surfaces would also be included throughout the design to improve user safety along the route. What follows are more specifics on this route, beginning at Bull Frog road and working westerly to Bolinas-Fairfax Road:
  - **Segment 1** – Between Bullfrog road and Alpine Lake, convert approximately 0.4 miles of existing non-system trail to an approximately four-foot-wide Class IV road. Three bridges

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<sup>4</sup> Per Section 2.2 of the RTMP, “Road Designations,” Class IV roads are small vehicle, unpaved roads with a primary use of patrol and route connectivity. Some sections may only be passable with small vehicles (i.e. ATV quads or small “bobcat” sized tractors). They only have limited truck and heavy vehicle traffic, and seasonal closures may apply. Per the District’s regulations Sections 9.04.02 and 9.05.02, bicycles and horses are allowed on roads, respectively.

<sup>5</sup> A typical 10-wheel dump truck holds approximately 10 cubic yards of dirt. Therefore, 85 cubic yards would be the equivalent of eight and one-half truck loads per year.

of approximately 65-feet, 24-feet, and 45-feet and one puncheon would be installed along this segment, all of which would be clear span structures so there would be no construction in creeks or ephemeral drainages.

- **Segment 2** – Adjacent to Alpine Lake, convert approximately 0.3 miles of existing, non-system, “fishing access” trail to an approximately four-foot-wide Class IV road. This section would be mostly rerouted several feet up the hill, further away from the lake’s shoreline, to help protect water quality and avoid sensitive plants and unsuitable soil conditions. The reroute would be constructed at a sustainable grade, avoid sensitive habitats wherever possible, and would use best management practices to minimize its impact and need for maintenance. Three bridges (16-feet, 20-feet, and 24-feet long) and two armored rock crossings would be installed to cross the five small creeks along this segment.
- **Segment 3** – Once the proposed route meets the old Liberty Gulch Road, the next 1.2 miles of adopted Class IV road would need minor grading within the existing Liberty Gulch Road, stream crossing improvements, and up to two hundred feet of an elevated platform, trestle, or retaining wall below Bolinas-Fairfax Road. The majority of the work along Liberty Gulch Road would include implementation of best management practices identified in the RTMP (storm-proofing creek crossings, installing critical and rolling dips, out-sloping, etc.) to improve drainage and repair existing erosion sites. As part of this work, twenty-three existing creek crossings would be upgraded along this segment to minimize their erosion potential and establish sustainable crossings at each site. Twenty of the upgrades would be armored rock crossings, one would be a bridge, one would be a causeway, and one existing culvert would be slip-lined to prolong its life or replaced. At the two sites that include seeps, a combination of armored rock crossings and a raised causeway would be constructed to keep users above sensitive wetland habitats. At each crossing improvement site, unstable fills would be removed to prevent additional sediment delivery to adjacent streams and existing failed culverts would be removed. Near the top of the old Liberty Gulch Road a pile-supported bridge, trestle, or retaining wall structure would be constructed across the scree slope left over from the construction of Bolinas-Fairfax Road for up to two hundred feet. Lastly, at the intersection of Bolinas-Fairfax Road and the Liberty Gulch Road, a new approach and landing would be graded to provide a better, more sustainable connection to Bolinas-Fairfax Road within the existing alignment of the route.

The approach used to treat existing drainage and erosion problems along Liberty Gulch Road is one of being “light on the land.” In other words, instead of trying to do full landform restoration and restore all the creek channels, the work is designed to be the minimum to make the route passable for all users sustainable, and to correct the existing erosion issues. Small equipment (i.e. mini-excavators, “bobcat” sized skid-steers or track loaders, motorized wheelbarrows, etc.) would be used to upgrade the creek crossings, transport locally harvested materials (i.e. rock and dirt) from one location to another, and to re-shape the road where necessary. In total, the work along Liberty Gulch Road is estimated to save an estimated 100 cubic yards annually (approximately 2,000 cubic yards over 20 years) of sediment from entering Alpine Lake, which is the majority of the sediment risk on Azalea Hill.

As described in the RTMP, corrective actions would be taken for impacts to natural resources that occur due to operation of Liberty Gulch Road. For example, if it is observed that seeps, wetlands, or other vegetation is being disturbed, enforcement actions would be taken and those areas would be restored and protected with adaptive management measures outlined below. However, the goal of the project is to utilize clear span bridges, causeways, and puncheons to elevate users above sensitive habitats wherever feasible.

Adaptive management measures will ensure the route performs as designed after it is constructed. In addition to the BMPs, Design Standards, and Environmental Protection Measures currently in the RTMP<sup>6</sup> and already being implemented on system trails throughout the Watershed, edge-of-trail barriers would be constructed as needed to keep users from straying off the designated route. For example, where there are known special-status species or sensitive habitats, constructed barriers could be innocuous, like strategically placed rocks, small boulders, or logs and slash piles that could provide ancillary habitat for terrestrial species. Alternatively, more obvious barriers like a split-rail fencing with regulatory signage that facilitates issuing citations may also be installed. In areas that might be prone to or become saturated during the winter, the surface tread would be rocked, or hardened, to protect the tread and prevent erosion. In a worst case scenario, such as a particularly wet weather period, the route could be subject to closures until it dries out to a point where it's no longer subject to substantial tread damage or a threat to water quality.

4. Improve the existing, approximately 1.1 mile Class VI<sup>7</sup> (hiking and equestrian) route over Azalea Hill to correct its erosion problems and make it more sustainable following the guidance in the RTMP (**Figure 5**). This involves three basic types of work, or improvements, as follows:
  - **Segment 4** – Improve approximately 0.3 miles of the existing Azalea Hill Road from the parking lot to the top of the hill (the west side) to correct its existing gullying and erosion. This work would involve narrowing the route, re-shaping (outsloping and installing rolling dips) where appropriate, armoring the tread, and select drainage improvements to restore local hydrology and drainage patterns to sensitive plants proximal to the route. Small equipment, such as mini-excavators, would be used to move locally harvested rock and dirt and re-shape the route. Botanical surveys completed in 2018 identified that Marin western flax can be found growing adjacent to and within the existing Azalea Hill Road along Segment 4. Reshaping and drainage improvements in this sensitive section of trail would only occur where Marin western flax is absent. Pre-construction botanical surveys would be completed between May and June to identify the work limits and then construction would commence.

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<sup>6</sup> See Chapter 3 of the RTMP

<sup>7</sup> Per Section 2.3 of the RTMP, "Trail Designations," Class VI trails are defined as equestrian trails. They can have substantial infrastructure improvements when compared to other trails to support their use. Seasonal closures may apply.

- **Segment 5** – Adopt and improve approximately 0.5 miles of existing, non-system trail as a sustainable Class VI trail (hikers and equestrians). Two puncheons would be constructed to cross a small creek near the top of Azalea Hill. Hand tools (picks, McLeods, or shovels) would be adequate to perform most of the work; however, some mechanized equipment like motorized wheel barrows may be needed to transport locally harvested materials (i.e. rock and dirt) and the tools and materials needed to construct the puncheons. Chainsaws would also be used to trim vegetation to provide adequate height and width clearance for equestrians. Approximately 0.08 miles of this route would include construction of a new trail (reroute) to avoid impacts to sensitive vegetation communities and to develop a more sustainable (lower grade) trail less susceptible to erosion. The new trail segments, about 370 feet near the top of the hill and 90 feet near the south-east extreme of the trail are shown on **Figure 5**.
- **Segment 6** – Improve approximately 0.3 miles of the existing Class VI Azalea Hill Trail through the hardwood forest to the bottom of the hill and adopting approximately 250 feet of a non-system trail as a Class VI trail by making tread improvements, outsloping the trail, constructing rolling dips where necessary, and defining the trail to make this system route more obvious. Hand tools (picks, McLeods, or shovels) would be adequate to perform this work. Chainsaws could also be used to trim, lop, and scatter vegetation to improve way finding and obstruct trails to be decommissioned. The last 250 feet of this section would follow an existing non-system trail, instead of the official trail, because it provides a more sustainable (lower grade) connection to the new bridge over Bon Tempe Creek that would connect to Bullfrog Road. However, the work needed on this non-system trail is similar tread work to that above and can be accomplished with the same hand tools.

The approach for work on this section of trail would also be “light on the land.” Work would stay within the existing routes as much as possible to avoid impacts to vegetation in the area and would be the minimum necessary to correct the erosion and to make the tread sustainable for the expected hiking and equestrian use. Work on this section of the proposed route work is estimated to save 28 cubic yards annually (approximately 562 cubic yards over 20 years) of sediment from entering Alpine Lake.

Along the length of the route, bicycle deterring features (e.g. abrupt changes in elevation that are difficult to roll over, horse friendly diverters or step overs using local logs or rocks, etc.) would be maintained or installed to discourage bicycle use. The same corrective actions and adaptive management measures proposed for Liberty Gulch Road would be applied along the Azalea Hill Trail.

5. Treat the Azalea Hill parking lot to correct its erosion problems and improve the visitor amenities serving Azalea Hill (**Figure 6**). The parking lot improvements would correct its drainage problems by refocusing and redirecting flows away from the parking lot and into existing drainages. The parking lot would be re-surfaced with rock or pervious concrete, thereby saving an estimated 5 cubic yards of fine sediment annually (approximately 102 cubic yards over 20 years) from entering one of Azalea Hill’s creeks. The number of parking spaces, 19, would not change. Additional visitor amenities would be installed to: (a) protect water quality (a self-contained, serviceable convenience station (i.e. a port-a-potty or self-composting toilet)) and trash and recycling bins and (b) protect the area’s natural habitat by



educating visitors (with informational kiosks), delineating parking areas, installing bicycle racks, and constructing barricades designed to keep visitors out of sensitive habitats and on the designated trails in the vicinity of the parking lot. Additional trail marker signs would be installed at road and trail intersections to direct visitors onto the designated trails. Finally, an existing scenic overlook area would be improved along the existing Azalea Hill Trail to help draw users to this site, thereby discouraging the use of non-system routes by visitors who are looking for a destination near the top of the hill (**Figure 6**). Improvements would include interpretive signage (re-enforcing the importance of staying on designated routes to protect sensitive habitats), a bench or two, and split-rail fencing.

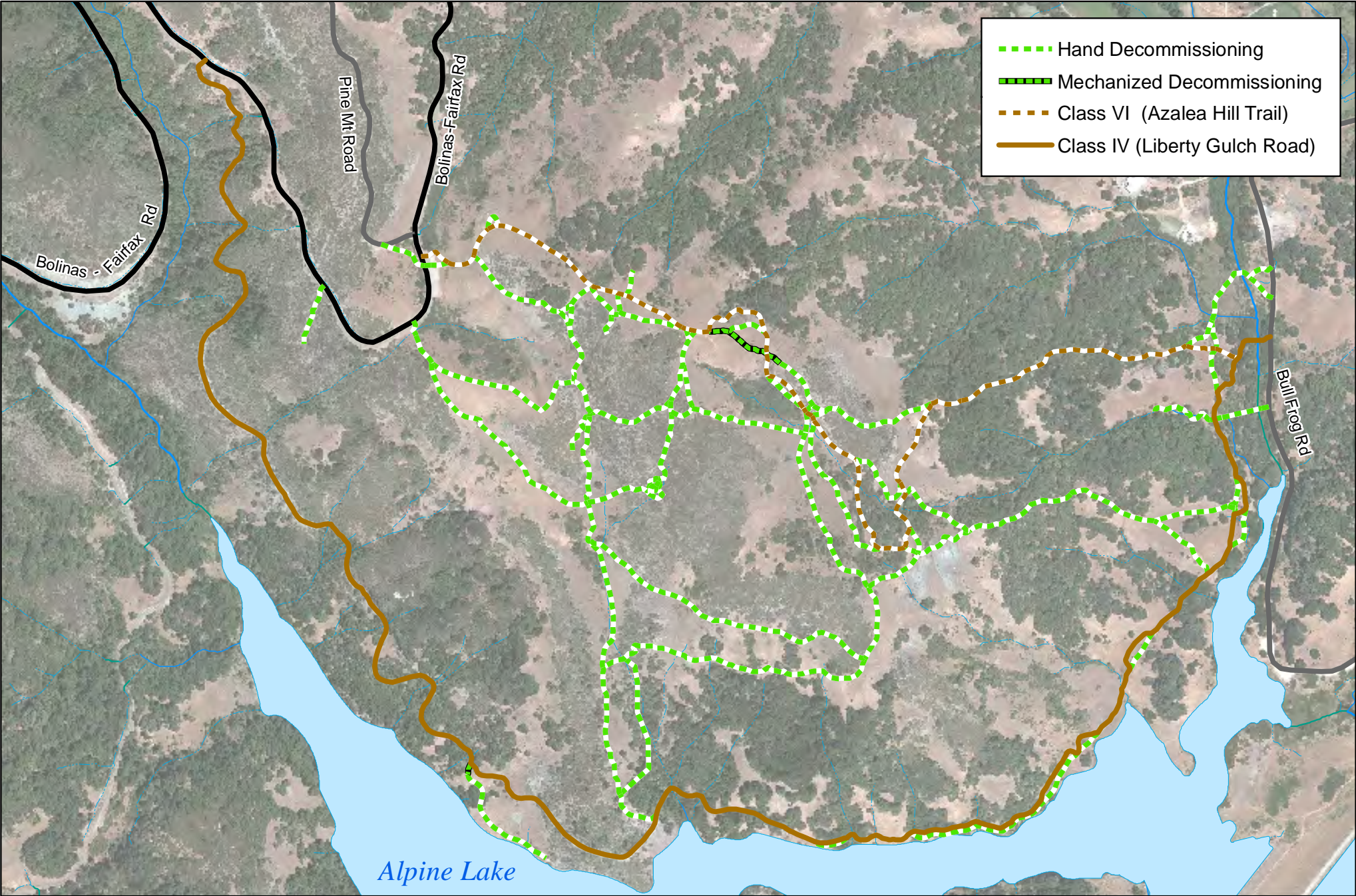
Upon its completion, the project would save up to an estimated 219 cubic yards of sediment from entering Azalea Hill's creeks or Alpine Lake annually (or 4,380 cubic yards over 20 years) and would restore approximately one acre of habitat.

The Proposed Project would remove approximately 4.4 miles from the 7 miles of roads and trails in the area, thereby consolidating use on the two existing routes proposed for upgrades. Further, it would not add any additional parking spaces, instead keeping the existing number of parking spaces at the Azalea Hill parking lot.

The Proposed Project routes have been developed to maximize the use of existing routes (including non-system routes) to minimize impacts to undisturbed areas. Exceptions were taken where existing routes go through wetlands, serpentine habitats, or other sensitive habitats. With over seven miles of potential routes and alignments to choose from, there are a number of potential alternatives that could meet the project objectives. However, the Proposed Project was chosen because its routes avoid sensitive habitats to the greatest degree practicable, includes routes at sustainable grades, and could be upgraded in a manner that strictly minimizes erosion and sedimentation. While the proposed Liberty Gulch Road connector would merely shorten, not eliminate, the need to travel on Bolinas-Fairfax Road, it would be a safety improvement as the lines of sight on this section of Bolinas-Fairfax Road are better for all users and vehicles. Other considered routes would not be sustainable (they would be too steep) or they would go through more undisturbed areas and have additional impacts to native vegetation.

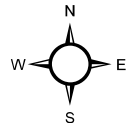
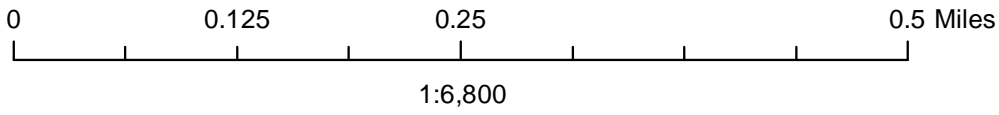
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Figure 3 - Proposed Project: Trail Decommissioning



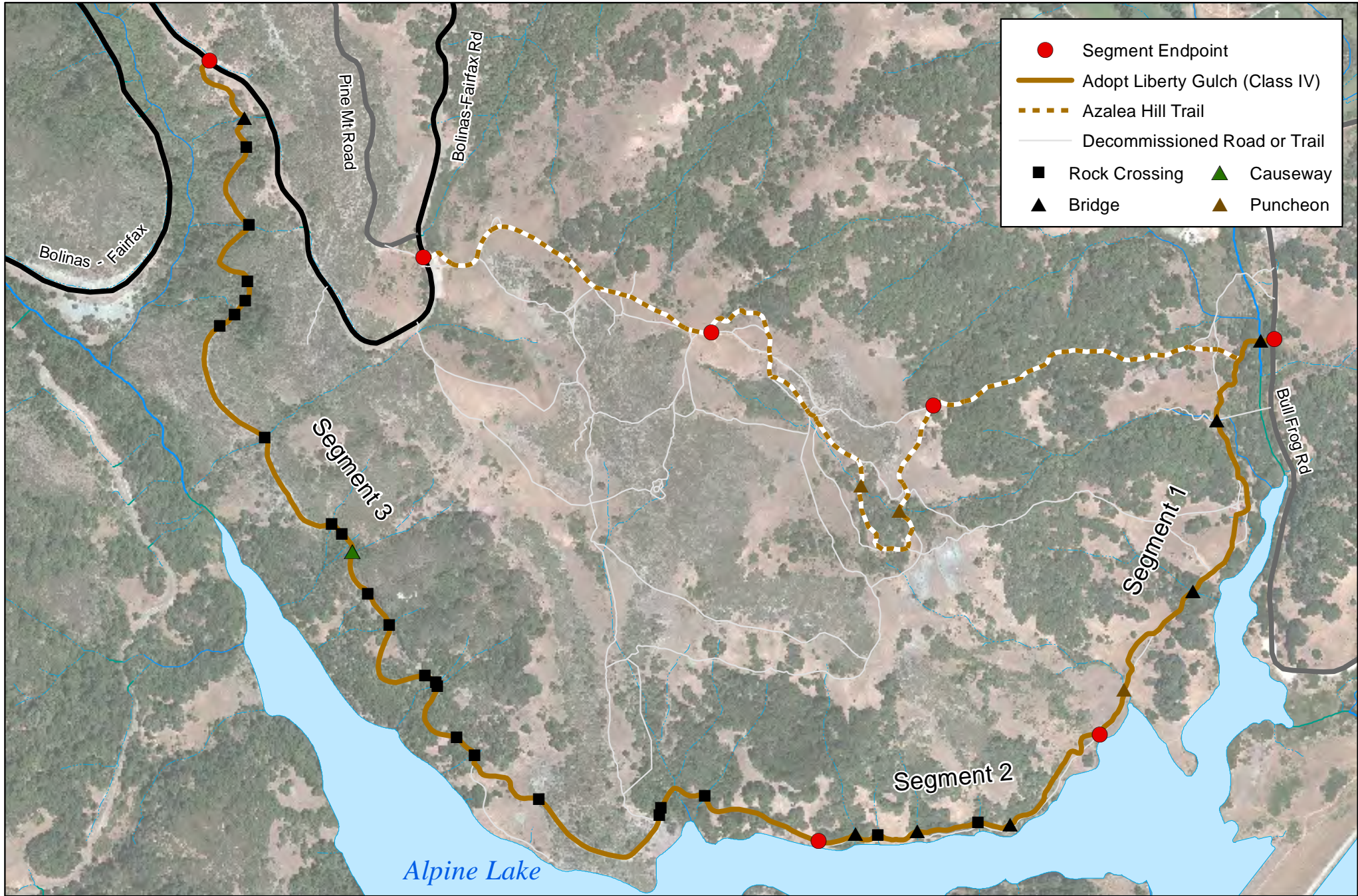
- Hand Decommissioning
- Mechanized Decommissioning
- Class VI (Azalea Hill Trail)
- Class IV (Liberty Gulch Road)

Sources: "Mt. Tamalpais Watershed Road and Trail Management Plan" (2005), MMWD Sky Oaks HQ GIS, MarinMap. Orthophoto: US NAIP 2014

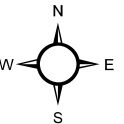
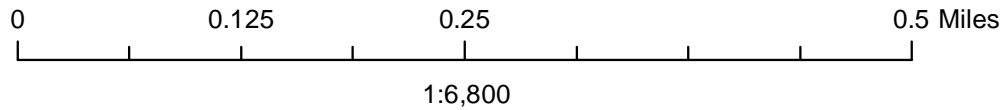


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Figure 4 - Proposed Project: Adopt Liberty Gulch Road

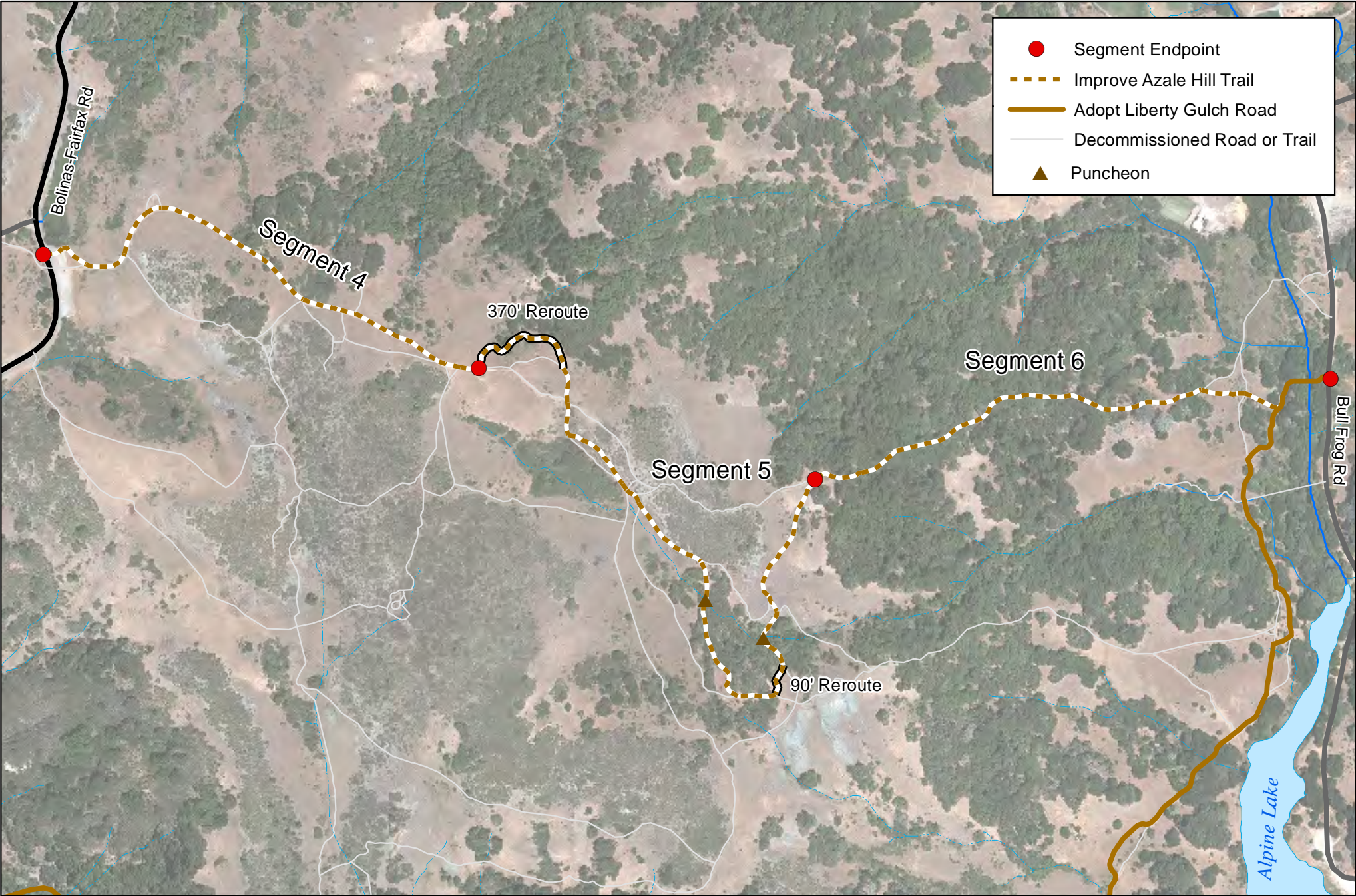


Sources: "Mt. Tamalpais Watershed Road and Trail Management Plan" (2005), MMWD Sky Oaks HQ GIS, MarinMap. Orthophoto: US NAIP 2014

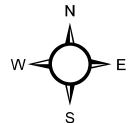
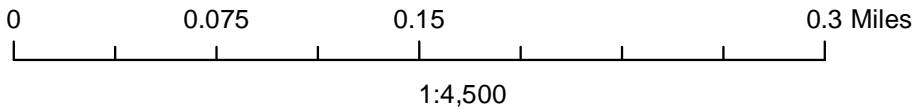


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Figure 5 - Proposed Project: Improve Azalea Hill Trail



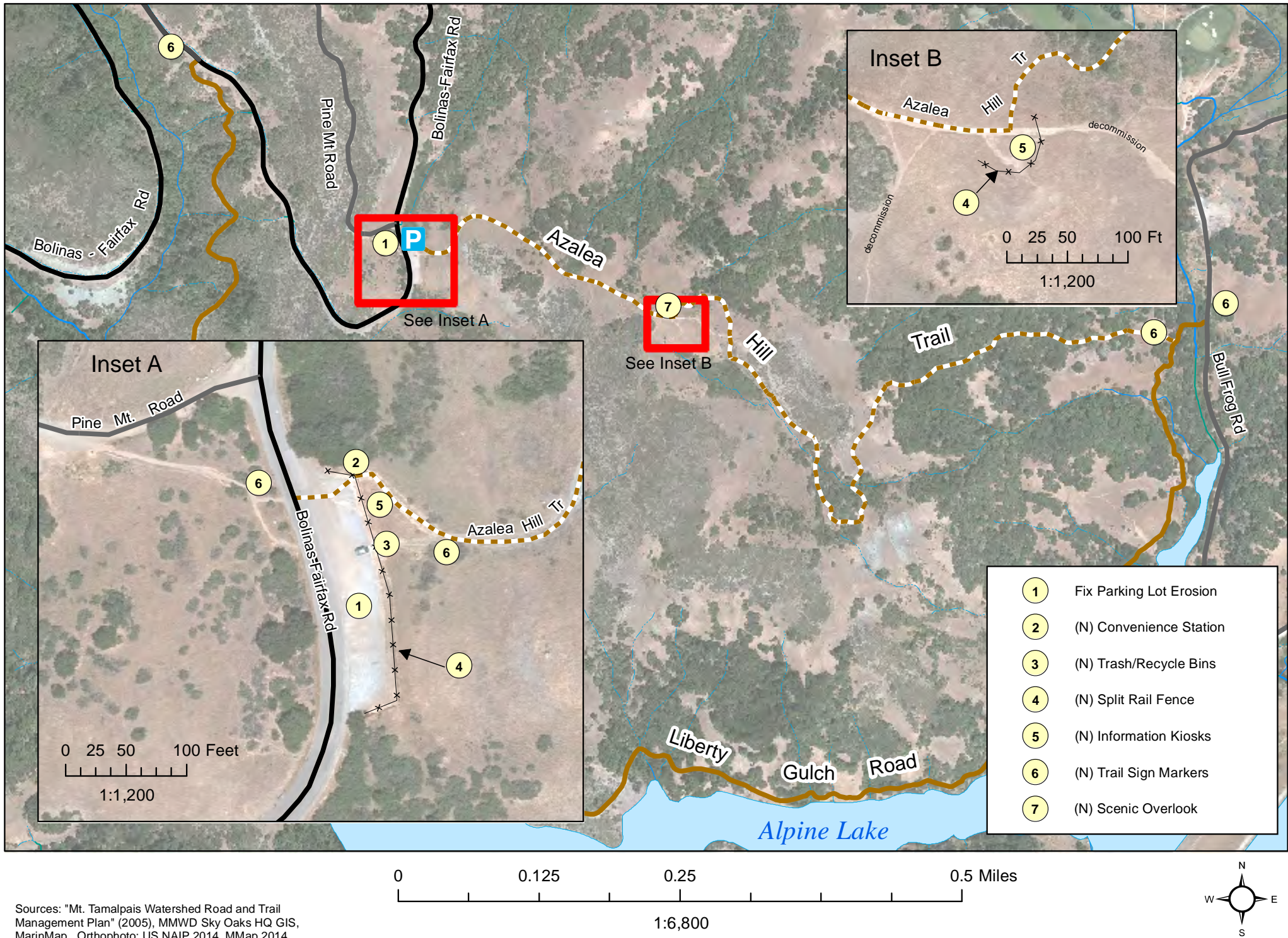
Sources: "Mt. Tamalpais Watershed Road and Trail Management Plan" (2005), MMWD Sky Oaks HQ GIS, MarinMap. Orthophoto: US NAIP 2014



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Figure 6 - Proposed Project: Improve Parking Lot & Visitor Amenities



Sources: "Mt. Tamalpais Watershed Road and Trail Management Plan" (2005), MMWD Sky Oaks HQ GIS, MarinMap. Orthophoto: US NAIP 2014, MMap 2014

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## 8.3 Project Actions

### 8.3.1 Earthwork

Implementation of the project would require earthwork to decommission routes, improve adopted system routes to make them sustainable so they minimize erosion and sedimentation, and excavation for bridge and structure footings. Other than clean rock used to improve road and trail treads no imported fill is proposed. All material generated by the project would be repurposed within the project limits. The majority of the earthwork would occur on the 1.9-mile section of the existing Liberty Gulch Road and its associated reroutes, conversions, and decommissions. The Road and Trail Inventory and Assessment (PWA, 2003) estimated 610 cubic yards of earthmoving would be required; primarily removal of erodible fill from creek crossings and to reshape the road as it approaches the crossings. Additional earthwork along this section would involve constructing the new reroutes adjacent to Alpine Lake and the landing at the intersection of Liberty Gulch Road and Bolinas-Fairfax Road. Footings or pilings would also need to be constructed for the seven proposed bridges. This work would be achieved with the use of small, mechanized equipment like skid steers, mobile drilling rigs, mini excavators, and motorized wheel barrows.

Small, mechanized equipment would also be used to improve the existing Azalea Hill Road and Trail and decommissioning its eastern-most portion. This work would be limited to road reshaping to improve drainage (outsloping, rolling dips, critical dips, and removal of unstable fill or side cast material) and narrowing of its width, thereby minimizing its erosion potential. Earthwork along the Azalea Hill Trail is estimated to be 350 cubic yards.

Larger equipment, such as skip loaders, dump trucks and rollers would likely be used to improve the existing Azalea Hill parking lot. Up to 300 cubic yards of material could be moved to reshape the surface of the parking lot to correct its drainage and related erosion problems.

The decommissioning of up to 4 miles of other small social trails by scarifying the surface would disturb the earth in these areas. This work would be accomplished primarily with hand tools (picks, McLeods, or shovels) to loosen or scarify compacted soil in the tread to facilitate revegetation. In areas where revegetation is occurring naturally, such earthwork would not be necessary. Overall, because this work is generally just loosening the soil and not necessarily moving it, the amount is considered negligible in terms of estimating cubic yards of material moved.

In total, the project could include up to 1,260 cubic yards of earthwork. However, as mentioned earlier, the approach to the earthwork needed to control drainage, erosion and sediment would be "light on the land." There would be no major cuts into hillside slopes. All the material would be repurposed near where it is disturbed to either re-shape the route to control drainage or to facilitate revegetation. There would be no requirement to import or off-haul earthen material. Additionally, since it's not likely that all the social trails would need to be scarified the actual volume of grading would be less than the 1,260 cubic yards estimated. More detail on the proposed earthwork can be found in the Geology and Soils Section.

### 8.3.2 Tree Removal

Implementation of this project would require the removal of up to twenty-six trees and selective trimming to facilitate construction equipment access. Eleven of these trees are Douglas-fir (*Pseudotsuga menziesii*), three California bay (*Umbellularia californica*), three coast live oaks (*Quercus agrifolia*), two madrones (*Arbutus menziesii*), four willows (*Salix sp*), and three Oregon Ash (*Fraxinus latifolia*). The average diameter of all these is about 6-inches, with one exception of a two-stem fir tree that is about 22-inches and 16-inches, respectively, in diameter. More details on the proposed tree removal can be found in the Biological Resources Section.

### 8.3.3 Construction Access

Construction access would be from Bullfrog Road and the Azalea Hill parking lot on Bolinas-Fairfax Road (**Figure 1**).

### 8.3.4 Construction Staging

All construction and material staging would occur at the Bullfrog Road quarry site (located approximately 300 feet north of the intersection of Azalea Hill Trail and Bullfrog Road) and the Azalea Hill parking lot on Bolinas-Fairfax Road. Only temporary storage of materials would be allowed in the Azalea Hill parking lot. The quarry site along Bull Frog road is the preferred location for any required long-term storage of materials and equipment as the area is already operated as a storage and laydown area for district operations and maintenance activities.

### 8.3.5 Construction Duration and Phasing

The Proposed Project's implementation schedule is dependent on the district's ability to secure adequate funding. The plan is to secure environmental approvals and regulatory permits for the project and then utilize internal and external funding (grants) to complete the project. The concept is that once the project is approved, or "shovel-ready," it would be more attractive to governmental grant agencies and philanthropic funders. The estimated construction timeframe in total is approximately four to six months; however, the construction would likely be accomplished in phases over several years as funding is secured. Due to access limitations at Bolinas-Fairfax Road, construction along Liberty Gulch Road would need to proceed from East to West, starting at the Bon Tempe Creek crossing. The potential construction phases could be, in no particular order: (1) removal or decommissioning of all the non-system trails; (2) improvements to Azalea Hill Road and trail; (3) construction of the parking lot and visitor amenity improvements, and (4) upgrade of the existing Liberty Gulch Road.

## 9. Historic and Projected Use:

A comprehensive user census was conducted in 2012 for all MMWD lands within the Mt. Tamalpais watershed (MMWD, 2013). User census data was collected during twelve sampling periods that spanned a full calendar year and accounted for variations in season, time of day, and day of the week. Data were collected at fifteen major trailheads which were deemed representative of both high-use and low-use access points. Over the course of the project approximately 13,100 individuals were observed.

Across the entire Mt. Tamalpais watershed approximately 66% of visitors live in Marin County, 13% in San Francisco, 11% from elsewhere in the Bay Area, and 10% from other counties. Over 75% of users reported visiting Mt. Tamalpais at least once a month, with 43% reporting weekly use and 16% reporting daily use.

The majority of users observed were hikers or runners (70%) with cyclists and equestrians accounting for 30% and 0.4%, respectively.

Highest use occurred in the spring and also varied by day of the week, with approximately 75% of all visitors coming on Saturdays and Sundays. Overall, the weekend mid-day count period had the highest visitor activity, with 881 visitors. Access points with the greatest overall activity included East Peak, Phoenix Lake/Natalie Coffin Greene, and the Sky Oaks Watershed Headquarters' entrance. The Pine Mt. area, excluding cyclists traveling exclusively on the Bolinas-Fairfax Road, and the Azalea Hill area experienced relatively low visitor use.

The district performed an additional assessment of user intensity within the project area between May 22 and June 4, 2018 using 24-hour motion triggered game cameras in order to obtain a peak-season long-day measure for project area specific roads and trails. Deployed cameras recorded users on the angler trail/Liberty Gulch route, Azalea Hill Trail, Meadow Club Road, and Pine Mt. Road facing Bolinas-Fairfax Road. These surveys confirmed relatively low visitor use, peak visitor use on weekends, and a relatively equivalent proportion of hikers and cyclists. No equestrians were observed. Average daily visits for all visitors for the Azalea Hill Trail and for the Liberty Gulch route were 2.4 and 3.1 respectively, spread evenly across the week, despite the Liberty Gulch trail not being a system route. Average daily visits for the Meadow Club Road and Pine Mt. Road were 55.2 and 49.5 respectively, however weekend use was much higher than mid-week for these two sites. Visits were counted in either direction. It appears that the Meadow Club Road had much higher number of out and back visitors versus one way trips and accounting for that may reduce its average daily visit count relative to the other sites.

It is difficult to predict how project implementation will change visitor use patterns. Unofficial staff observations across the region and one formal nearby pre and post-project visitor census have noted that new trail opportunities in the region often see an initial rise in use that declines to pre-project levels. It is expected that there will be a redistribution of users for the overall area and an increase in use on Liberty Gulch and Azalea Hill routes. However, except for early increased visitor interest, the overall use will remain roughly the same across the three routes (i.e. relatively low use consistent with them being in a remote area).

#### **10. Surrounding Land Uses and Setting:**

The project site is situated within the larger Mt. Tamalpais and Lagunitas Creek watershed, the former of which is owned and managed by the district. The Mt. Tamalpais watershed is an open space area utilized for the collection of rainwater for eventual treatment, distribution, and public use, as well as for recreational use and enjoyment.

#### **11. Other Public Agencies whose Approval is Required:**

Implementation of the project will require permits from the California Department of Fish and Wildlife (Section 1602 Lake or Streambed Alteration Agreement), the San Francisco Bay Regional Water Quality Control Board (Section 401 Water Quality Certification), the Army Corps of Engineers (Section 404), and the Marin County Department of Public Works (Road Right-of-Way Encroachment Permit).

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## Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving several impacts that are "Less than Significant with Mitigation Incorporated" as indicated by the checklist on the following pages.

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

The following analysis is intended to explain responses outlined in the Environmental Checklist as derived from Appendix G of the California Environmental Quality Act (CEQA) Guidelines.

Potential environmental impacts are classified as follows:

**Potentially Significant Impact:** A new environmental impact, not addressed by the RTMP FEIR, that could be significant and for which no feasible mitigation is known. If any potentially significant impacts are identified in this Checklist, an EIR must be prepared.

**Less Than Significant Impact with Mitigation Incorporated:** A new environmental impact, not addressed by the RTMP FEIR, that requires the incorporation of mitigation measures to reduce the impact to a less-than-significant level.

**Less Than Significant Impact:** An environmental impact may occur, however, the impact would not be considered significant based on CEQA environmental standards.

**No Impact:** No environmental impacts would occur.

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ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>1. AESTHETICS. Would the project:</b>					
a) Have a substantial adverse effect on a scenic vista?			√		8,9
b) Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?				√	10
c) Substantially degrade the existing visual character or quality of the site and its surroundings?			√		8
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?				√	8

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

**Less Than Significant Impact.** The approximately 370-acre district-owned Azalea Hill area is part of the 18,600-acre Mt. Tamalpais watershed (**Figure 1**). Views of Azalea Hill are available from a variety of vantages including the top of Bon Tempe Dam, Bolinas-Fairfax Road, trails on and near the area, and even from East Ridgecrest Road as it ascends to the top of Mt. Tamalpais. The Proposed Project would result in some existing roads/trails being realigned, some social trails being decommissioned, and the installation of puncheons and bridges over drainages and creeks. There are no proposed large-scale movements of earth or terraforming of any type. Where trails are decommissioned revegetation would occur; eventually obscuring the visual scars of those trails.

The last two hundred feet of Liberty Gulch Road near its intersection with Bolinas-Fairfax Road will require a pile supported trestle, platform, or retaining wall structure to support the trail. A retaining wall structure, if implemented, would be located below Bolinas-Fairfax Road and would not be visible from the road or obstruct any scenic vistas. A raised pile supported structure could impact views from Bolinas-Fairfax Road if the structure was located within view of Bolinas-Fairfax Road. However, given the proposed grade of the trail and its connection with Bolinas-Fairfax Road, any pile supported structure would be located below the sightlines from Bolinas-Fairfax Road. Views of the area from other locations in the watershed would be obscured by vegetation. All in all, the Proposed Project would result in a net improvement of

<sup>8</sup> Anderson, Dain (MMWD). Project Site Field Inspection. July 7 2017

<sup>9</sup> Marin County. *Countywide Plan*. November 6, 2007.

<sup>10</sup> California Department of Transportation "Officially Designated Scenic Highways." [http://www.dot.ca.gov/hq/LandArch/16\\_livability/scenic\\_highways/](http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/). August 23, 2017.

the area's aesthetic contribution to the larger scenic vista that includes Azalea Hill. No mitigation is required.

- 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.** There are no existing or eligible State Scenic Highways in the project vicinity that would afford a view of the site. Therefore, the Proposed Project would not damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway. No mitigation is required.

- c) *Would the project substantially degrade the existing visual character or quality of the site and its surroundings?*

**Less Than Significant Impact.** The Azalea Hill area is a natural area bisected by various trails and roads. The Proposed Project would decommission a number of the trails, improve and realign others, and install a number of puncheons and bridges, including one over Bon Tempe Creek; the only named creek in the project area.

Build-out of the Proposed Project is anticipated to take several years, owing largely to the availability of funding.

Construction. Temporary visual construction impacts would involve work performed with the assistance of small heavy equipment, as well as handwork performed by construction crews. While the work, when occurring, would be visible from both on- and off-site, the viewers' would generally be mobile and the visual intrusion of construction activity on the 18,600-acre watershed would be fleeting. No mitigation is required.

Post-Construction. The Proposed Project would remove approximately 4.4-miles of non-system roads and trails and realign portions of others. Viewed from a distance, as well as from other routes on Azalea Hill, the visual characteristics of the area would evolve over time as the decommissioned trails are transformed to naturally vegetated areas. Realigned segments of roads and trails would be new visual elements in the area, however, any visual influence associated with them would be more than offset by the decommissioning of non-system trails, producing over one acre of restored natural habitat; a net improvement of the existing visual character or quality of the site and its surroundings. As described above, the last two hundred feet of Liberty Gulch Road near its intersection with Bolinas-Fairfax Road will require a pile supported trestle, platform, or retaining wall structure to support the trail. A retaining wall structure, if implemented, would be located below Bolinas-Fairfax Road and would not be visible from the road or obstruct any scenic vistas. A raised pile supported structure could impact views from Bolinas-Fairfax Road if the structure was located within view of Bolinas-Fairfax Road. However, given the proposed grade of the trail and its connection with Bolinas-Fairfax Road, any pile supported structure would be located below the sightlines from Bolinas-Fairfax Road. No mitigation is required.

- 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.** The Proposed Project does not include the installation of lighting or the construction of facilities that would be the source of daytime or nighttime glare. No mitigation is required.

ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<p><b>2. AGRICULTURE AND FOREST RESOURCES.</b> 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 Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state’s inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:</p>					
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?				√	11
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?				√	12,13,14
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?				√	14
d) Result in the loss of forest land or conversion of forest land to non-forest use?				√	14
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?				√	14

<sup>11</sup> California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program. *Marin County Important Farmland*. 2010

<sup>12</sup> Marin County Assessor-Recorder-County Clerk

<sup>13</sup> Marin County. *Countywide Plan*. November 6, 2007

<sup>14</sup> Marin County. *Municipal Code, Title 22, Development Code*

- 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 non-agricultural use?*

**No Impact.** Azalea Hill and the surrounding lands are designated as Other Land<sup>15</sup> by the Marin County Important Farmland map compiled and published by the California Department of Conservation, Farmland Mapping and Monitoring Program. None of the lands adjacent to the Proposed Project are currently in agricultural production. The Proposed Project would not convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use. No mitigation is required.

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

**No Impact.** The Marin Countywide Plan does not designate the site or immediately adjacent lands for agricultural activities, nor is the site zoned for agricultural activities. Neither the site nor adjacent lands are encumbered by Williamson Act contracts. Therefore, the Proposed Project would not conflict with existing zoning for agricultural use, or a Williamson Act contract. No mitigation is required,

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

**No Impact.** Neither the project site nor the immediately adjacent lands are zoned for forest land as defined by Public Resources Code Section 12220(g), for timberland as defined by Public Resources Code Section 4526, or for timberland production as defined by Government Code Section 51104(g). No mitigation is required.

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

**No Impact.** Azalea Hill is comprised of undeveloped lands bisected by a variety of unpaved roads and trails. While the project area does include a variety of trees and associated vegetation, it is not considered a forest within the context of how CEQA defines forest land. Further, implementation of the Proposed Project would only realign two existing roads and trails and decommission several other roads and trails, and would not represent a wholesale conversion of the entirety of Azalea Hill to a use other than what exists today. No mitigation is required.

- 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?*

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<sup>15</sup> Other Land is land not included in any other mapping category. Common examples include low density rural developments, brush, timber, wetland, and riparian areas not suitable for livestock grazing, confined livestock, poultry, or aquaculture facilities, strip mines, borrow pits, and water bodies smaller than 40 acres. Vacant and nonagricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as other land.

**No Impact.** Neither Azalea Hill nor the immediately adjacent lands are currently or have recently been in agricultural production, and there is no land in agricultural production or suitable for agricultural production in the project vicinity. Therefore, the Proposed Project would not 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 mitigation is required.

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ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>3. AIR QUALITY. Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:</b>					
a) Conflict with or obstruct implementation of the applicable air quality plan?				√	16,17
b) Violate any air quality standard or contribute to an existing or projected air quality violation?		√			16,17
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?			√		16,17
d) Expose sensitive receptors to substantial pollutant concentrations?			√		16,17
e) Create objectionable odors affecting a substantial number of people?			√		18

a) *Would the project conflict with or obstruct implementation of the applicable air quality plan?*

**No Impact.** Regulation of air pollution is achieved through both national and State ambient air quality standards and emission limits for individual sources of air pollutants. As required by the federal Clean Air Act, the U.S. Environmental Protection Agency has identified criteria pollutants and has established the National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. NAAQS have been established for the following pollutants: ozone (O<sub>3</sub>); carbon monoxide (CO); nitrogen dioxide (NO<sub>2</sub>); sulfur dioxide (SO<sub>2</sub>); particulate matter less than 10 microns in diameter (PM<sub>10</sub>); particulate matter 2.5 microns or less in diameter (PM<sub>2.5</sub>); and lead (Pb). These pollutants are called “criteria” air pollutants because standards have been established for each of them to meet specific public health and welfare criteria. The State of California has also established its own more stringent set of air quality standards commonly referred to as the California Ambient Air Quality Standards (CAAQS) for the criteria pollutants described above. In addition, CAAQS have been established for sulfates (X-SO<sub>4</sub>), hydrogen sulfide (H<sub>2</sub>S), and vinyl chloride (C<sub>2</sub>H<sub>3</sub>Cl).

<sup>16</sup> Bay Area Air Quality Management District (BAAQMD). *BAAQMD California Environmental Quality Act Air Quality Guidelines*. May 2012.

<sup>17</sup> Bay Area Air Quality Management District (BAAQMD). *Final Bay Area Clean Air Plan 2010*. September 15, 2010

<sup>18</sup> Anderson, Dain (MMWD). Project Site Field Inspection. July 7, 2017.

The project site is located within the San Francisco Bay air basin, which is currently designated as a nonattainment area for state and national ozone standards and as a nonattainment area for the state (CAAQS) particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) standards. The Bay Area Air Quality Management District's (BAAQMD) Final Bay Area 2010 Clean Air Plan outlines control strategies to reduce emissions of ozone and ozone precursors to help the Bay Area achieve attainment for the State 1-hour ozone standard.

Since air pollutant emissions are a function of population and human activity, emission reduction strategies set forth in the Bay Area 2010 Clean Air Plan were developed based on regional population, employment, and housing projections. The Proposed Project would not facilitate an increase in population in the air basin nor would it generate housing or employment opportunities leading to increased population or vehicle miles travelled in the region. As such, the Proposed Project would be consistent with the assumptions contained within the Bay Area 2010 Clean Air Plan and would not result in an impact. No mitigation is required.

- b) *Would the project violate any air quality standard or contribute to an existing or projected air quality violation?*

**Less than Significant with Mitigation Incorporated.** Based on the following analysis, construction and operation of the Proposed Project would not result in a violation of an air quality standard or contribute significantly to an existing or projected air quality violation.

There would be no change in operations at the site and therefore the Proposed Project would not result in any increase to current operational emissions. There is some potential for a reduction in emission levels as some users may forgo current practices of driving and parking at Azalea Hill to access the "Pine Mt." area and instead utilize the new Liberty Gulch Road as an alternative. Although any reductions in emissions are likely insignificant, the Proposed Project will provide a new pathway or linkage facilitating non-emission generating recreational opportunities.

Construction of the Proposed Project would include a variety of activities that may disturb the upper layers of soil along both system and non-system routes. Most of that work would be accomplished with hand tools while some would be completed with relatively small heavy equipment. Small heavy equipment, haul trucks for import and export of materials, and vehicles used by workers to travel to and from the construction site<sup>19</sup> could have the potential to affect air quality. Additionally, exhaust emissions caused by the use of mobile equipment and earthmoving activities could result in emissions of fugitive dust including PM<sub>10</sub>, which would be significant.

BAAQMD's approach to CEQA analyses of construction emissions is to emphasize the implementation of control measures rather than require detailed quantification of emissions. BAAQMD recommends implementation of a set of feasible fugitive PM<sub>10</sub> control measures for construction projects of all sizes. According to BAAQMD, fugitive dust impacts from construction would be considered less than significant if all applicable recommended measures are applied.

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<sup>19</sup> For worker transport, that would also apply to crews assigned to perform work with hand tools.



The Proposed Project would be implemented as part of the RTMP, and therefore, the mitigation measures, including the BAAQMD control measures identified in the RTMP FEIR will be implemented. The relevant measure from the RTMP FEIR is **Mitigation Measure 3.4-A.1**. The following mitigation measure would reduce potential additional impacts to air quality, not fully addressed by the RTMP FEIR, to a less than significant level.

**Mitigation Measure AIR-1.** During construction activities, the district shall require its personnel and any construction contractor(s) assigned to the project to implement a dust abatement program that includes, but is not necessarily limited to, the following BAAQMD-recommended measures as needed, to control dust:

- All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
- All visible mud or dirt tracked out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping shall be prohibited.
- Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations).
- All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications.

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

**Less than Significant Impact.** According to the BAAQMD CEQA Guidelines, for a project to have a less than significant cumulative impact on air quality it must not have an individually significant operational air quality impact and it must be consistent with the local general plan as well as the regional air quality plan (BAAQMD, 2012). At project completion, the use of the Azalea Hill area would be unchanged from its current use (operation), thereby yielding a net no-change to emissions. As such, the Proposed Project would not conflict with an applicable local or regional air quality plan, and the cumulative impacts would be less than significant. No mitigation is required.

- d) *Would the project expose sensitive receptors to substantial pollutant concentrations?*

**Less than Significant Impact.** Sensitive receptors are typically defined as the segment of the population most susceptible to air quality effects including children, the elderly, and the sick, as well as land uses such as schools, hospitals, parks, and residential communities.

During project construction there would be localized air emissions of criteria constituents from construction vehicles and equipment powered by internal combustion engines as well as from earth moving activities (approximately 1,260-cubic yards of soil are expected to be disturbed to facilitate construction of the Proposed Project). Past district experience with trail construction and decommissioning indicates the emission of criteria constituents from vehicles and equipment used over such a large project area is intermittent and diffuse in nature and would not be expected to rise to a level of significance. Further, Azalea Hill is not an enclosed space or area and the air patterns generally reflect a constant movement of air which would disperse any emissions within in a fairly rapid time-frame. Finally, beyond workers, recreationalists using

the broader area that includes Azalea Hill could select alternative routes or areas during active construction to avoid any dust or other emissions. No mitigation is required.

e) *Would the project create objectionable odors affecting a substantial number of people?*

**Less than Significant Impact.** Diesel equipment used during project construction may emit objectionable odors associated with combustion of diesel fuel. However, these emissions would be temporary and intermittent in nature. Therefore, odor impacts associated with diesel combustion during construction activities would be less than significant. No mitigation is required.

ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>4. BIOLOGICAL RESOURCES. Would the project:</b>					
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, U.S. Fish and Wildlife Service, or NOAA - Fisheries?		√			20
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 the California Department of Fish and Game or U.S. Fish and Wildlife Service?		√			20
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal) through direct removal, filling, hydrological interruption, or other means?			√		20
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?			√		20
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?		√			20
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?				√	20

### Background Information

The district commissioned the preparation of the Azalea Hill Restoration Project Biological Evaluation Report (Pacific Biology, 2017). The report provides a detailed discussion of the biological resources within and near the study area, evaluates potential impacts to these resources from the implementation of the Proposed Project, and provides recommended mitigation measures. The report is included in **Appendix B**. Following the preparation of the biological evaluation report (which incorporated surveys conducted by the district in May and June of 2016), the district conducted supplemental protocol-level rare plant surveys in accordance with CDFW protocols on

<sup>20</sup> Pacific Biology, 2017. Azalea Hill Restoration Project Biological Evaluation Report. Prepared by Pacific Biology. August, 2017

May 21, 22, 25, 31, and June 1, 2018; these surveys included the project disturbance area and areas that were not previously surveyed during the 2016 botanical surveys. The 2018 botanical survey report is included as **Appendix D**. The most recent version of the California Natural Diversity Database (CNDDDB, 2018) was also reviewed. The analysis presented in this section incorporates the results of the Azalea Hill Restoration Project Biological Evaluation Report (Pacific Biology, 2017) and has been updated as appropriate to incorporate the results of the 2018 botanical surveys and the recent CNDDDB review.

The majority of the study area is dominated by the following plant communities/habitat types, in order of extent: grassland, chaparral (two types), hardwood forest, oak woodland, and un-vegetated. These habitats comprise approximately 93% of the study area; the remaining 7% is shrubland, conifer forest, and riparian woodland and wetlands. The habitats mapped within the study area are described in detail in **Appendix B** and the location of the plant communities are shown in **Figure 2 of Appendix B**.

In general, the woodland and forest habitats are associated with Franciscan complex geology and derivative soils (Tocaloma-Saurin association) and most of the chaparral and grassland habitats occur on the Coast Range ophiolite/serpentine substrate (Henneke stony clay loam soils). As a result of the prevalence of serpentine soils, as well as the relative lack of disturbance throughout the study area, the percentage of native plants is high, even in open, sunny habitats (which in cismontane California are often dominated by introduced plant species).

The study area encompasses a number of sensitive plant communities and other sensitive habitats. There are three plant communities that are designated as rare and threatened by the California Department of Fish and Wildlife (CDFW): Serpentine Bunchgrass, Purple Needle Grass Grassland, and Mt. Tamalpais Manzanita Chaparral. The study area also encompasses riparian habitats, wetlands, and other waters subject to the jurisdiction and legal protection of environmental regulatory agencies. The riparian woodland and wetland habitats are shown and further discussed in **Appendix B**.

It should be noted that, while the study area encompasses natural habitats, many of which are biologically sensitive, the project site disturbance area consists primarily of existing stretches of dirt fire roads and trails which are generally un-vegetated.

Proposed work along the existing dirt fire roads or trails may, in some locations, not occur precisely within the existing alignment of the road or trail. For this reason, the biological study area and protocol-level rare plant surveys included a buffer around the road or trail along each proposed route (roads are buffered by 25 feet and trails are buffered by 10 feet). Where roads or trails are proposed to be moved or rerouted, these new areas were included in the study area and vegetation impacts in these areas were included in the study (**Appendix D**).

- 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 the California Department of Fish and Game, U.S. Fish and Wildlife Service, or NOAA - Fisheries?*

### **Construction-Related Impacts**

#### Special-status Plant Species

**Less than Significant with Mitigation Incorporated.** Primarily as a result of the widespread serpentine substrates, multiple special-status plants occur within the study area and surrounding project area. These serpentine habitats support a significant majority of native plant species and

are associated with a large percentage of special-status plants. Indeed, of the 29 special-status taxa documented by the California Native Plant Society (CNPS) within the four topographic quadrangles surrounding the study area, twelve—amounting to 41%. Most of these taxa are associated with serpentine habitats found within the study area. The onsite serpentine grassland and chaparral habitats are equally likely to support special-status plants known to occur in those habitat types.

All special-status plants documented or potentially occurring within and adjacent to the study area are listed in **Table 4-1**, below, and many are mapped in **Figures 2 of Appendix B** and **Figure 7** of this Initial Study. For the purposes of this IS/MND, special-status plant species include:

- Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (50 CFR 17.12 [listed plants] and various notices in the Federal Register [FR] [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (61 FR 40, February 28, 1996);
- Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (14 Cal. Code Regs. 670.5);
- Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
- Species that meet the definitions of rare and endangered under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as “rare or endangered” even if not on one of the official lists (CEQA Guidelines, Section 15380); and
- Plants considered by the CNPS to be “rare, threatened or endangered in California” under the California Rare Plant Ranking system (CNPR) which include Rank 1A, 1B, 2A, and 2B as well as Rank 3 and 4 plant species.

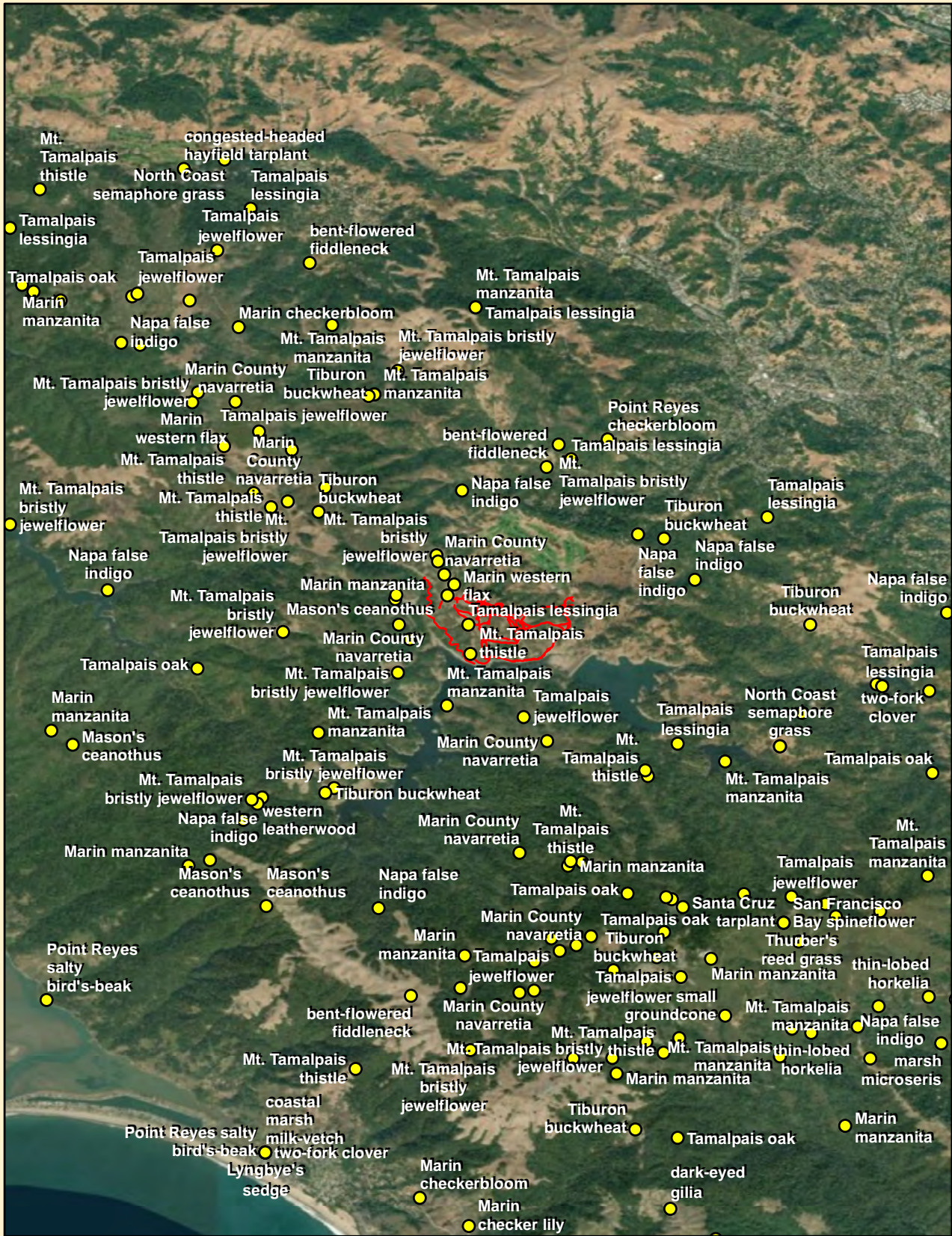
In total, 18 special-status plant species have been documented within or adjacent to the study area while an additional 28 special-status plant species have potential to occur based on the presence of suitable habitat and known occurrences in the region. Many of the special-status plant species documented in or adjacent to the study area were identified during botanical surveys conducted by the district botanist in May and June of 2016 and 2018. A list of the plant species observed during the 2016 and 2018 botanical surveys is provided in **Appendix B** and **Appendix D**, respectively.

As summarized in **Table 4-1**, 18 special-status plant species have been documented within or adjacent to the study area, while an additional 28 special-status plant species have potential to occur based on the presence of suitable habitat and known occurrences in the region. While many of the occurring and potentially occurring special-status plant species are associated with serpentine habitats (see **Appendix D**), nearly all of the onsite habitats, serpentine and non-serpentine alike, are relatively undisturbed and support relatively high percentages of native plant species, and thus have potential to support special-status plant taxa known from the vicinity.

The Proposed Project would remove approximately 4.4-miles of non-system roads and trails and restore those routes to natural conditions to improve habitat. Many of the non-system trails traverse serpentine habitats known to support special-status plant populations. The unauthorized use of these trails degrades habitat quality for special-status plants and can result in trampling or other disturbances to special-status plants. Therefore, in the long term, the proposed closing and

restoration of non-system trails would benefit special-status plants and improve the ability of native species to flourish.

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● Special-Status Plants (CNDDB)  
— Project Site  
 Note: CNDDB points show centroid of polygon data

**FIGURE 7**  
**DOCUMENTED SPECIAL-STATUS PLANT SPECIES**  
**Azalea Hill Restoration Project**

0 1 2 Miles  
 N  
 Scale: 1:70,000  
 Data: CNDDB Sept 2018  
 Data: ESRI Basemap  
 Pacific Biology September 2018



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TABLE 4-1. Special-status Plants Documented or Potentially Occurring in Study Area		
Common Name	Scientific Name	Listing Status
<b>4-1A: Documented Within or Adjacent to Study Area</b>		
Marin western flax	<i>Hesperolinon congestum</i>	Federally and State Threatened, CRPR List 1B.1
Mt. Tamalpais thistle	<i>Cirsium hydrophilum</i> var. <i>vaseyi</i>	CRPR <sup>1</sup> List 1B.2
Tiburon buckwheat	<i>Eriogonum luteolum</i> var. <i>caninum</i>	CRPR List 1B.2
Mt. Tamalpais lessingia	<i>Lessingia micradenia</i> ssp. <i>micradenia</i>	CRPR List 1B.2
Marin County navarretia	<i>Navarretia rosulata</i>	CRPR List 1B.2
Tamalpais bristly jewelflower <sup>2</sup>	<i>Streptanthus glandulosus</i> ssp. <i>pulchellus</i>	CRPR List 1B.2
Mt. Tamalpais manzanita	<i>Arctostaphylos montana</i> ssp. <i>montana</i>	CRPR List 1B.3
Oakland star-tulip	<i>Calochortus umbellatus</i>	CRPR List 4.2
Mt. Saint Helena morning glory <sup>2</sup>	<i>Calystegia collina</i> ssp. <i>Oxyphylla</i> <sup>3</sup>	CRPR List 4.2
Serpentine reed grass	<i>Calamagrostis ophitidis</i>	CRPR List 4.3
<u>Narrowleaf milkweed</u>	<u><i>Asclepias fascicularis</i></u>	<u>Locally Rare<sup>4</sup></u>
<u>Hairy bird's beak</u>	<u><i>Cordylanthus pilosus</i> ssp. <i>pilosus</i></u>	<u>Locally Rare<sup>4</sup></u>
<u>Virginia wildrye</u>	<u><i>Elymus glaucus</i> ssp. <i>virescens</i></u>	<u>Locally Rare<sup>4</sup></u>
<u>Dense-flower willow herb</u>	<u><i>Epilobium desnsifloru</i></u>	<u>Locally Rare<sup>4</sup></u>
<u>Stream orchid</u>	<u><i>Epipactis gigantea</i></u>	<u>Locally Rare<sup>4</sup></u>
<u>Creeping leather root</u>	<u><i>Hoita orbicularis</i></u>	<u>Locally Rare<sup>4</sup></u>
<u>Blue oak</u>	<u><i>Quercus douglasii</i></u>	<u>Locally Rare<sup>4</sup></u>
<u>Western pearlwort</u>	<u><i>Sagina decumbens</i> ssp. <i>occidentalis</i></u>	<u>Locally Rare<sup>4</sup></u>
<b>4-1B: Potentially Occurring Based on Suitable Habitat</b>		
Tiburon paintbrush	<i>Castilleja affinis</i> ssp. <i>neglecta</i>	Federally Endangered and State Threatened, CRPR List 1B.2
Marin checker lily	<i>Fritillaria lanceolata</i> var. <i>tristulis</i>	CRPR List 1B.1
North Coast semaphore grass	<i>Pleuropogon hooverianus</i>	State Threatened, CRPR List 1B.1
Napa false indigo	<i>Amorpha californica</i> var. <i>napensis</i>	CRPR List 1B.2
Bent-flowered fiddleneck	<i>Amsinckia lunaris</i>	CRPR List 1B.2
Marin manzanita	<i>Arctostaphylos virgata</i>	CRPR List 1B.2
Western leatherwood	<i>Dirca occidentalis</i>	CRPR List 1B.2
Fragrant fritillary	<i>Fritillaria liliacea</i>	CRPR List 1B.2
Diablo helianthella	<i>Helianthella castanea</i>	CRPR List 1B.2
Pale yellow hayfield tarplant	<i>Hemizonia congesta</i> ssp. <i>congesta</i>	CRPR List 1B.2
Marsh microseris	<i>Microseris paludosa</i>	CRPR List 1B.2
Mt. Diablo cottonweed	<i>Micropus amphibolus</i>	CRPR List 3.2
<u>Wight's indian paint brush</u>	<u><i>Castilleja affinis</i> ssp. <i>affinis</i></u>	<u>Locally Rare<sup>4</sup></u>
<u>Franciscan paintbrush</u>	<u><i>Castilleja subinclusa</i> ssp. <i>franciscana</i></u>	<u>Locally Rare<sup>4</sup></u>
<u>Smooth boisduvalia</u>	<u><i>Epilobium campestre</i></u>	<u>Locally Rare<sup>4</sup></u>
<u>Scouler's st john's wort</u>	<u><i>Hypericum scouleri</i></u>	<u>Locally Rare<sup>4</sup></u>
<u>Woodland layia</u>	<u><i>Layia gaillardoides</i></u>	<u>Locally Rare<sup>4</sup></u>
<u>Bristly leptosiphon</u>	<u><i>Leptosiphon acicularis</i></u>	<u>Locally Rare<sup>4</sup></u>
<u>Ninebark</u>	<u><i>Physocarpus capitatus</i></u>	<u>Locally Rare<sup>4</sup></u>

TABLE 4-1. Special-status Plants Documented or Potentially Occurring in Study Area		
Common Name	Scientific Name	Listing Status
<u>Long spurred plectritis</u>	<u><i>Plectritis ciliosa</i></u>	Locally Rare <sup>4</sup>
<u>Plectritis</u>	<u><i>Plectritis macrocera</i></u>	Locally Rare <sup>4</sup>
<u>California wild rose</u>	<u><i>Rosa californica</i></u>	Locally Rare <sup>4</sup>
<u>Coast range stonecrop</u>	<u><i>Sedum radiatum</i></u>	Locally Rare <sup>4</sup>
<u>West coast canada goldenrod</u>	<u><i>Solidago elongata</i></u>	Locally Rare <sup>4</sup>
<u>Bearded clover</u>	<u><i>Trifolium barbigerum</i></u>	Locally Rare <sup>4</sup>
<u>Pin point clover</u>	<u><i>Trifolium gracilentum</i></u>	Locally Rare <sup>4</sup>
<u>Macrae's clover</u>	<u><i>Trifolium macraei</i></u>	Locally Rare <sup>4</sup>
<u>Few flowered clover</u>	<u><i>Trifolium oliqanthum</i></u>	Locally Rare <sup>4</sup>

1 – California Rare Plant Rank (CRPR)

2 – Not mapped on Figure 2 of Appendix B

3 – The taxonomy of *Calystegia* (including Mt. Saint Helena morning glory) is under review. While Mt. Saint Helena morning glory was noted during the 2016 botanical surveys, no plants were observed during the 2018 surveys whose morphology led the surveying botanist to believe the plants present were *ssp. oxyphylla* rather than the common *ssp. collina*.

4 – Species considered locally rare based on CalFlora “Tam Locally Rare” Plant List, February, 2019

The district conducted botanical surveys of the project area in 2016 and 2018 and identified one state and federally listed plant, Marin western flax, which may be impacted by the Proposed Project. As shown in Figure 2 of **Appendix B** and Figure 4 of **Appendix D**, one occurrence is within and adjacent to non-system trails that would be decommissioned by hand. In the absence of avoidance measures, the decommissioning of the trails could result in the harm or loss of Marin western flax plants. In the long term, the decommissioning of these trails would benefit the plant population by removing repetitive disturbances associated with non-system use and reestablishing drainage patterns. During the 2018 botanical surveys, a few Marin western flax plants were also observed within the Azalea Hill Road (Segment 6) which is an existing Class VI (hiking and equestrian) system route. Several hundred Marin western flax plants were observed above the Azalea Hill road. The Proposed Project includes minor grading along the Azalea Hill Road to improve drainage patterns. Despite the relatively minor improvements along Azalea Hill Road, in the absence of avoidance measures, the few Marin western flax plants within the road could be harmed during construction which would be considered a significant impact.

In the absence of avoidance measures, the restoration of trails to be decommissioned could result in short-term impacts to the other special-status plants documented on or potentially occurring on the project site (see **Table 4-1**). Similarly, other Proposed Project actions (e.g., improving existing trails, trail reroutes, conversion of non-system trail to official trails, bridge construction) could result in the loss of these special-status plants. The survey report prepared for the 2018 rare plant surveys provided the following information about the onsite occurrences of special-status plants:

- **Mt. Tamalpais manzanita** grows primarily on serpentine, but several individuals were found trailside on non-serpentine soils. Where possible, disturbance to plants should be minimized, but the large population (tens of thousands of plants) in the area can sustain the loss of some plants.
- **Serpentine reedgrass** is found on serpentine, generally at the edge of serpentine chaparral. The population is large, and generally away from existing and proposed routes, except the proposed reroute of the Azalea Hill Trail (hiking portion). The initial downslope “oxbow”

cuts below a stand of serpentine reedgrass and trail work in this area may have negative effects on this population.

- **Oakland star-tulip** grows on serpentine, often in chaparral interstices but also in grasslands and barrens. While perennial, this geophyte does not emerge every year so surveys may not identify all potentially impacted individuals. However much of this area was mapped in 2017 which was a good year for Oakland star-tulip. Only one patch was seen within the proposed route, near the “Rare species seep” (see **Figure 1 of Appendix D**), and it is at the edge of a population estimated to contain several thousand individuals.
- **Mt. Tamalpais lessingia** grows primarily on serpentine, but several individuals were found on non-serpentine soils. This population is extensive and is having a particularly successful year in 2018, growing in nearly the entirety of the Liberty Gulch Road section, as well as serpentine portions of the existing Azalea Hill Trail.
- **Tiburon buckwheat** is also a serpentine endemic, and while past years have documented thousands of individuals over much of Azalea Hill, fewer than 100 aboveground plants were seen in 2018. Most of the 2018 findings were in serpentine sections of the Liberty Gulch Road, as well as serpentine portions of the existing Azalea Hill Trail.
- **Marin County navarretia** was not broadly seen during the 2018 surveys, and is similarly variable in aboveground emergence in its serpentine habitat. Three populations—two in serpentine sections of the Liberty Gulch Road, and one around social trails near the summit—were seen, numbering a few dozen plants each.
- **Mount Tamalpais bristly jewel-flower** was not found during the 2018 rare plant surveys.
- **Blue oak** was found trailside at the edge of a live oak woodland; trees should be protected from construction damage.
- **Creeping leather root** was found in a drainage along a non-system trail/game trail. The trail will be decommissioned by blocking access at the top and bottom so the area with leather root will not be disturbed.
- **Dense-flower willow herb** was identified in 2016 in a wetland west of the Azalea Hill parking lot that is no longer part of the proposed route.
- **Hairy bird's beak** was identified in a previous route alignment that is no long part of the Proposed Project.
- **Narrowleaf milkweed** grows in sunny meadows and wetlands; in the project area plants were found adjacent to the Fisherman’s Access Trail. The new Liberty Gulch road will be routed outside the population. Care should be taken to not alter the hydrology at the site, as the re-route proposed would be upslope of the population.
- **Virginia wildrye** grows at chaparral edges and along serpentine stretches of Liberty Gulch Road. Plants seen were outside the Liberty Gulch Road bed (outside project footprint) but should be flagged for avoidance during construction and staging.
- **Stream orchid** grows in a seep above the proposed Liberty Gulch Road; plants should be protected from construction and hydrology at this crossing should not be altered.

- Western pearlwort was found in 2016 in the gullied base of Azalea Hill Trail near the parking lot. This tiny annual prefers wet, disturbed soil. It was not seen in 2018 but if topsoil is saved and the site re-dressed it should be adequate to retain plants.

One wild population of Mt. Tamalpais thistle is known from the Liberty Gulch Road and was seen as recently as 2013 in the “Rare species seep” with stream orchid. This species was not noted in any of the surveys completed for the Proposed Project. It is possible that Douglas-fir shading and/or competition with short-spike hedge nettle (*Stachys pycnantha*) have caused the demise of this population. An additional population of Mt. Tamalpais thistle was planted in a seep below the proposed Liberty Gulch route and repeat surveys have confirmed it is persisting. Consistent with RTMP FEIR **Mitigations Measures 3.2-H.2** and **3.2-H.5**, all proposed spring/seep crossings would maintain the existing Liberty Gulch Road profile and would therefore not impact drainage patterns or change wetland hydrology responsible for supporting Mt. Tamalpais thistle in the “Rare species seep” or additional population planted below Liberty Gulch Road.

Several rare plant species occur to varying extents within the existing Liberty Gulch Road, including Marin County navarretia, serpentine reedgrass, Mt. Tamalpais lessingia, Mt. Tamalpais manzanita, and Tiburon buckwheat. The conversion of Liberty Gulch Road to an unpaved, approximately 4-foot-wide, small vehicle, or multi-use route, and the subsequent use of the route, would result in the loss of some of these special-status plants. While the existing 1.2-mile Liberty Gulch Road is currently subject to unauthorized use, including mountain bikes, construction activities and subsequent authorized use of the route would result in the loss of special-status plants from within the existing road. These impacts would be offset by the decommissioning of a 4.4-mile network of social trails that criss-cross serpentine areas and that support similar special-status plants. While the decommissioning of the network of social trails would improve habitat for special-status species, in the absence of appropriate monitoring and implementing any needed corrective actions to control weeds, the establishment of weeds could interfere with restoration.

Based on the results of the 2016 and 2018 botanical surveys, serpentine reed grass, Mt. Tamalpais manzanita, Mt. Tamalpais lessingia, Tiburon buckwheat, and Oakland star tulip are common in the study area, and therefore, the loss of a low number of individual plants of these species would not have a substantial adverse effect on the local population numbers. However, avoidance measures should still be implemented to limit the loss of these plants. Other special-status plant species that occur or potentially occur in the study area (see **Table 4-1**) are rarer and avoidance and minimization measures would be required to protect these species and reduce related impacts to a less than significant level. Given that the Proposed Project would result in the direct loss of special-status plant species, and that corrective actions would be required to restore habitats within decommissioned social trails, impacts to special-status plants would be potentially significant.

The Proposed Project would be implemented as part of the RTMP, and therefore, the mitigation measures identified in the RTMP FEIR will be implemented. The relevant mitigation measures from the RTMP FEIR include **Mitigation Measures 3.1-B.14, 3.1-B.17, 3.1-B.20, 3.1-B.21, 3.1-B.22, 3.1-B.23, 3.1-B.24, 3.1-B.26, 3.2-A.1, 3.2-A.2, 3.2-A.3, 3.2-B.1, 3.2-B.2, 3.2-B.3, 3.2-B.4, 3.2-B.5, 3.2-C.1, 3.2-D.1, 3.2-D.2, and 3.2-D.3**. The following mitigation measures would reduce potential additional impacts to special-status plant species, not fully addressed by the RTMP FEIR, to a less than significant level.

**Mitigation Measure BIO-1.** Prior to the commencement of construction activities, the district will commission or conduct protocol-level surveys for special-status plant species. The survey

area will include all areas in which construction would occur during that construction season, as well as all adjacent areas that could be disturbed. The surveys will be timed to correspond with the blooming period of the target species to facilitate identification. Given the number of annual special-status plant species in the area, and that the distribution of such species changes annually, the surveys will be considered valid until the following spring. The following shall then be implemented:

- All special-status plants and/or boundaries of the population(s) will be flagged.
- All Marin western flax plants (or other state or federally listed plants) will be avoided, and all work will be avoided within 500 feet of any Marin western flax or other state or federally listed plant population when the plant is above ground (late May-July).
  - In instances where a 500-foot buffer cannot be accomplished, the district should consult with the California Department of Fish and Wildlife on appropriate buffer distances and any potential additional protective measures such as additional species monitoring or installation of fences and signage to dissuade users from going off trail.
- No trail improvements/construction activities will occur within the trail segment in which several Marin western flax plants were observed in 2018. To accomplish this, a district botanist shall survey the area immediately before construction (between May and July when Marin western flax is flowering), identify and mark the portions of the trail supporting Marin western flax. The construction team shall be instructed that no trail improvements or disturbance is permitted in that section of the trail.
- ~~For special-status species of low sensitivity ranking that are common in the project vicinity and/or resilient to disturbance (e.g., serpentine reed grass, Mt. Tamalpais manzanita, Mt. Tamalpais lessingia, Tiburon buckwheat, Oakland star tulip), disturbances shall be minimized to the degree practical but complete avoidance is not necessary, as directed by the district botanist.~~
- If a special-status plant species, other than Marin western flax (as all Marin western flax will be avoided, see above) are found in the project's disturbance boundary during preconstruction surveys, the plants will be avoided to the degree practicable. Removal of special-status plants will be required from within Liberty Gulch Road. Flagging and/or fencing shall be placed near any identified special-status plants that can be avoided during construction to prevent incidental disturbance.
- Supplement to **Mitigation Measure 3.2-B.2** in the RTMP FEIR. If avoidance is not practicable, ~~and if the plant(s) do not have a low sensitivity rating and are not common in the project vicinity and/or resilient to disturbance (as determined by a district botanist),~~ then a rare plant mitigation and monitoring plan shall be designed and implemented for all special-status plants affected. At a minimum, the plan shall include the following elements:
  - a. For annual species, stockpile the topsoil from areas containing special-status plants and re-dress the site with topsoil from the area as directed by the district botanist. See Mitigation Measure HAZ-1 regarding limited wetting of topsoil horizons to maintain seed viability. Seed may also be collected from plants that will be removed or from

other populations of the species on Azalea Hill and those seeds shall be redistributed in the project vicinity as directed by the district botanist.

- b. For perennial species, seed collection may be augmented by transplanting entire plants or cuttings, as directed by the district botanist.
- c. Suitable sites shall be identified and prepared for redistribution of seeds, topsoil, or transplants. The plan shall outline required site preparation activities.
- d. Transplantation methods shall be completed with as little physical disturbance as possible to the individual, and at the time when the individual is photosynthetically inactive or dormant. The transplantation site shall be of the same quality habitat and having similar physical characteristics and soil type as the site the transplanted plant originated from.
- e. ~~Monitoring surveys of the seeded or transplanted areas shall be conducted for a minimum of two years, and weeding shall be conducted as needed. The rare plant mitigation and monitoring plan shall maintain pre-project rare plant populations by replacing all affected rare plants via seeding or transplanting (relocating). The success criteria for seeded and relocated plants shall be full replacement at a 1:1 ratio [number of plants established = number of plants impacted] after five years, accounting for annual variability as measured by reference populations near the project area or in similar environmental (soil, aspect, elevation, etc.) conditions. Both impacted and reference populations should be monitored prior to the commencement of construction activities to provide a baseline comparison that should be used for evaluating post-construction success. Monitoring surveys of the seeded or transplanted areas shall be conducted for a minimum of five years, and weeding shall be conducted as needed. Monitoring of the populations shall be timed to correspond with the blooming period of the target species to facilitate identification.~~
- f. ~~Mitigation will be deemed successful provided that each of the relocated species establishes at least one stable population, defined as species presence over a 2 year period, taking into account fluctuations in local reference populations. If this goal is not achieved in 3 years, then contingency measures shall be implemented. Such measures will include: evaluating the environmental or other characteristics affecting plant survival and implementing corrective measures, which may include additional seeding and planting; altering or implementing a weed control regime; or introducing or altering other management activities. Monitoring efforts shall continue until the relocated individuals have been healthy for two years. Contingency measures should be included in the rare plant mitigation and monitoring plan if it appears the success criterion will not be met after five years. Such measures will include: evaluating the environmental or other characteristics affecting plant survival and implementing corrective measures, which may include additional seeding and planting; altering or implementing weed management activities; or, introducing or altering other management activities. Monitoring efforts shall continue for a minimum of five years and until the relocated individuals have met the success criteria. The rare plant mitigation and monitoring plan shall be developed in consultation with California Department of Fish and Wildlife, and with United States Fish and Wildlife Service for federally-listed plants, prior to the start of local construction activities. Annual~~

monitoring reports shall include photo-documentation, planting specifications, a site layout map, descriptions of materials used, monitoring methods and results, justification for any deviations from the monitoring plan, and recommendations for management or maintenance to improve plant survival.

- g. Annual monitoring surveys for special-status plant populations shall be mapped, documented, and reported to the CNDDB.

**Mitigation Measure BIO-2.** The district or district's contractor shall protect special-status plant species from incidental harm due to construction equipment and spread of weeds by implementing the following:

- All construction personnel must attend a biological resources training to be provided by the district (see **Mitigation Measure 3.2-B.3** in the RTMP FEIR). The training shall address the importance of botanical resources specific to Azalea Hill and techniques for avoiding impacts.
- The number of vehicles on site will be minimized to reduce the potential for disturbance and ensure adequate space to park and maneuver within designated areas.
- All vehicle routes, staging, parking, and turnaround areas will be marked, and vehicle operation in unmarked areas will be prohibited.
- Additional visual or physical barriers (fencing, signs, stakes, marking paint, or flagging) will be installed, as needed, to ensure vehicle compliance with approved vehicle routes, staging, parking, and turnaround areas.
- All vehicles and equipment must be cleaned of soil, seeds, and vegetative material prior to entering the project site; inspection and cleaning measures (washing, steaming, air blast, brushing/scrubbing, vacuuming) should be applied to material transport beds, buckets and blades, radiators, grills/filters, tires/axels and differentials, within slashing mulching and ripping equipment, chassis and body, between dual wheels, ledges and frames, inside drivers cab, and mudguards.
- Erosion control materials shall be composed of coconut/coir fiber, or other 100% biodegradable certified weed-free materials, as approved by the district botanist.
- All open bed vehicles carrying a load of material (unconsolidated fill, erosion control material, etc.) shall be covered to prevent the dispersal of weed seeds.

**Mitigation Measures BIO-1 and BIO-2** would reduce potential impacts to special-status plant species, not fully addressed by the RTMP FEIR, to a less than significant level.



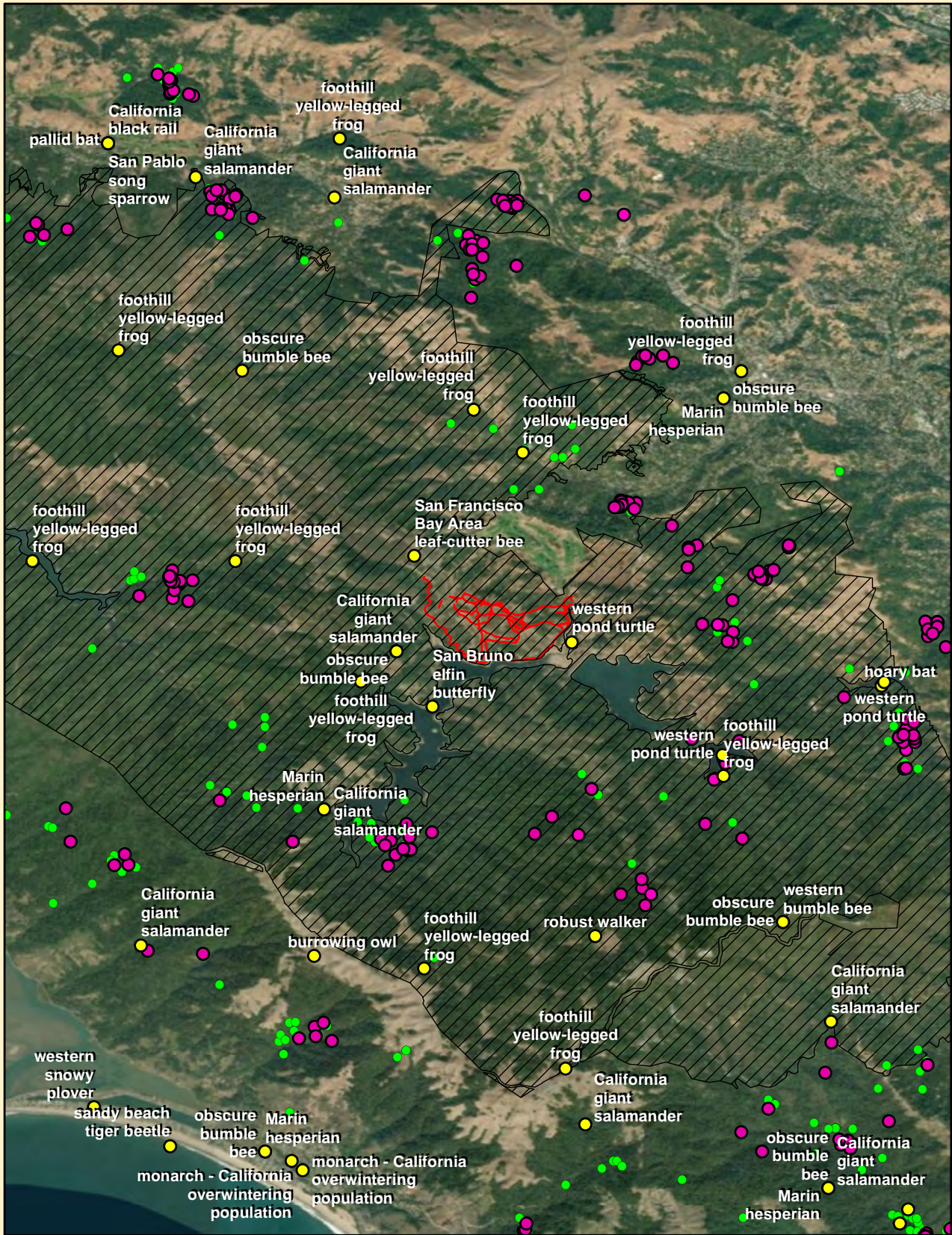
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### Special-status Wildlife Species

**Less than Significant with Mitigation Incorporated.** For the reasons discussed in **Appendix B**, the following special-status wildlife species have some potential to occur on the project site:

- ***Invertebrates*** – Marin blind harvestman, Robust walker, Ubick’s gnaphosid spider, a leaf-cutter bee, western bumble bee, obscure bumble bee, and Marin hesperian.
- ***Amphibians*** – California red-legged frog, foothill yellow-legged frog, and California giant salamander.
- ***Reptiles*** – Western pond turtle
- ***Birds*** – Cooper’s hawk, grasshopper sparrow, Bell’s sage sparrow, great blue heron, oak titmouse, olive-sided flycatcher, yellow warbler, white-tailed kite, California horned lark, San Francisco common yellowthroat, loggerhead shrike, osprey, “marin” chestnut-backed chickadee, purple martin, and Allen’s hummingbird.
- ***Mammals*** – Pallid bat, western red bat, hoary bat, river otter, long-eared myotis, fringed myotis, long-legged myotis, yuma myotis, and American badger.

The potential of these species to occur on the project site, and potential project-related impacts to these species, are further discussed below. The locations of documented occurrences of special-status wildlife species relative to the project site are shown in **Figure 8**.



- Special-Status Wildlife (CNDDB)
- NSO Occurrences 1999-2016
- NSO (CNDDB)
- NSO Critical Habitat
- Project Site

Note: CNDDB points show centroid of polygon data

**FIGURE 8**  
**DOCUMENTED SPECIAL-STATUS WILDLIFE SPECIES**  
**Azalea Hill Restoration Project**

0 1 2 Miles

Scale: 1:70,000  
 Data: CNDDB Sept 2018  
 Data: PRBO NSO Data  
 Data: ESRI Basemap  
 Pacific Biology September 2018

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### ***Invertebrates***

As summarized in **Table 3** of **Appendix B**, several invertebrates which could be considered as special-status have some potential to occur in the study area, including Marin blind harvestman, Robust walker, Ubick's gnaphosid spider, western bumble bee, obscure bumble bee, a leaf-cutter bee, and Marin hesperian. These invertebrates are included on the CDFW Special Animal List, but do not otherwise have any formal state or federal rarity status. Little is known about these species and Marin blind harvestman, robust walker, and Ubick's gnaphosid spider have not been documented within approximately 11 miles of the project site. The leaf-cutter bee has not been documented on district lands since 1962, Marin Hesperian has not been documented on district lands since 1991, and neither species has been documented in the study area. However, given the presence of suitable habitat, Marin blind harvestman and Ubick's gnaphosid spider have some potential to occur in the onsite serpentine habitats, robust walker and Marin hesperian have some potential to occur in onsite wetlands/seeps, western bumble bee and obscure bumble bee have some potential to occur in areas with suitable habitat, while the habitat associations of the leaf-cutter bee are not known.

Many of the proposed activities would have minimal impacts on habitats potentially occupied by these species, as the Proposed Project would improve habitat quality in the long-term (trail decommissioning). Making changes/improvements to existing trails would involve minimal disturbance to undisturbed habitats. New construction (i.e., "reroutes") would occur in a relatively small area, much of which is outside of mapped serpentine habitat (which provides potential habitat for Marin blind harvestman and Ubick's gnaphosid spider). Additionally, construction within seeps/wetlands would be limited to the placement of approximately 9 cubic yards of concrete to support a raised boardwalk and a combined 25 cubic yards of rock in another seep. The seeps are currently within existing trails and the new structures would facilitate crossing the seeps with less disturbance. The rock/crossing improvements would serve to limit ongoing disturbance of the seeps which may provide suitable habitat for robust walker and Marin Hesperian.

Given the limited extent of new construction in serpentine habitat, that new construction in seeps/wetlands would be limited to placing a small amount of rock and concrete to facilitate improved crossing of the features, the low sensitivity status of these potentially occurring invertebrates, and that none of these invertebrates have recently (and in some cases never) been observed on district lands, potential impacts to these species would not rise to a level of significance under CEQA.

### ***Amphibians***

**California red-legged frog (*Rana draytonii*)** is a federally Threatened species and a California Species of Special Concern. The species occurs from sea level to elevations of 1,500 meters (5,200 feet). Breeding occurs in streams, deep pools, backwaters within streams, ponds, marshes, sag ponds, dune ponds, lagoons, and stock ponds. Breeding adults are often associated with deep (greater than 0.7 meter [2 feet]), still, or slow moving water and dense, shrubby riparian or emergent vegetation but frogs have been observed in shallow sections of streams and ponds that are devoid of vegetative cover (see **Appendix B**). The species also utilizes non-aquatic habitats for refuge and dispersal. 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 also been documented dispersing through areas with sparse vegetative cover and dispersal patterns are considered to be dependent on habitat availability and environmental conditions (see **Appendix B**).

There has been only one documented occurrence of California red-legged frog on district lands within the Mt. Tamalpais watershed. This observation of a single frog (CNDDDB Occurrence #892) was documented in 2006 near the outflow of Kent Lake. Protocol surveys of district lands within the Mt. Tamalpais watershed did not detect red-legged frog (GANDA, 2003). Furthermore, the species has not been detected on district lands within the Mt. Tamalpais watershed by district staff or others. Individual red-legged frogs have infrequently been observed in Lagunitas Creek downstream of Kent Lake.

Alpine Lake and Bon Tempe Creek both provide potentially suitable habitat for California red-legged frogs even though California red-legged frogs have not been documented at these locations and bullfrogs are present. Based on the CNDDDB, California red-legged frogs have not been documented within 4 miles of the project site or from a location where the species could disperse onto the project site. The fact that the species has not been documented breeding on district lands within the Mt. Tamalpais watershed and that the species has not been documented near the project site, limit the potential of the species to occur, but do not eliminate the possibility. Therefore, this species is considered to have a low potential to occur on the project site.

The Proposed Project does not include any activities within Alpine Lake, Bon Tempe Creek, or other areas containing long-lasting standing water. However, the Proposed Project includes the construction of a bridge over Bon Tempe Creek and other activities that could result in impacts to California red-legged frog in the unlikely event that the species occurs in the area. Therefore, impacts to this species are potentially significant.

**Foothill yellow-legged frog** (*Rana boylei*) is California Species of Special Concern and is currently proposed for listing as Threatened under the California Endangered Species Act (CESA). The species is characteristically found close to water in association with perennial streams and seasonal streams that retain perennial pools through the end of summer. Adults preferentially utilize shallow edgewater areas with low water velocities for breeding and egg laying, usually characterized by gravel, cobble, and boulder substrate. Juvenile and non-breeding adult frogs may be found adjacent to riffles, cascades, main channel pools, and plunge-pools that provide escape cover.

This species occurs in the Mt. Tamalpais watershed and has been documented breeding in Big Carson and Little Carson Creeks, and was recently documented in the San Anselmo Creek watershed within the Cascade Canyon Open Space Preserve. Big Carson and Little Carson Creeks are approximately 2 miles west of Bon Tempe Creek and the Cascade Canyon Open Space Preserve is approximately 1 mile north of the project site. Bon Tempe Creek is the only portion of the study area that provides potentially suitable habitat for foothill yellow-legged frog.

The Proposed Project does not include any activities within Bon Tempe Creek or other areas providing potentially suitable habitat for foothill yellow-legged frog. However, the Proposed Project includes the construction of a bridge over Bon Tempe Creek which could result in impacts to foothill yellow-legged frog should the species occur in the area. Therefore, impacts to this species are potentially significant.

**California giant salamander** (*Dicamptodon ensatus*) is a California Species of Special Concern. Larvae of this species usually inhabit clear, cold streams, but are also found in mountain lakes and ponds. Adults are found in humid forests under rocks and logs. This species is known from the project area and could occur in portions of the project site containing suitable moist habitat. Alpine Lake and Bon Tempe Creek would not be directly disturbed by the Proposed Project activities. However, the species could occur in nearby construction areas. Should this occur, project activities

could result in the loss or harm of individual giant salamanders. Therefore, impacts to this species are potentially significant.

The Proposed Project would be implemented as part of the RTMP, and therefore, the mitigation measures identified in the RTMP FEIR specific to special-status wildlife species will be implemented. The relevant mitigation measures from the RTMP FEIR include **Mitigation Measures 3.1-B.14, 3.1-B.16, 3.1-B.17, 3.1-B.18, and 3.3-F.1**. The following mitigation measures would further reduce potential additional impacts to special-status amphibians.

**Mitigation Measure BIO-3.** While it is unlikely that California red-legged frog occurs in the study area, the following measures will be implemented to further ensure that the species is not harmed by the Proposed Project:

- Before any construction activities begin on the site, a qualified biologist shall conduct a biological training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if a California red-legged frog is observed in the construction area and the biologist must be immediately notified.
- A qualified biologist shall survey the work sites within 500 feet of Bon Tempe Creek or Alpine Lake or any other work sites containing or adjacent to standing water and saturated soils within 48 hours of the onset of construction activities for California red-legged frog. If California red-legged frogs are found, construction activities will be delayed until the USFWS is notified and guidance is provided on how to proceed.

The implementation of **Mitigation BIO-3** would reduce potential impacts to California red-legged frog, not fully addressed by the RTMP FEIR, to a less than significant level.

**Mitigation Measure BIO-4.** While it is unlikely that foothill yellow-legged frog occurs in the study area, the following measures will be implemented to further ensure that the species is not harmed by the Proposed Project:

- The biological training session to be provided to construction personnel (see **Mitigation Measure BIO-3**) shall also address the potential presence of foothill yellow-legged frog. At a minimum, the training shall include a description of the foothill yellow-legged frog and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if a foothill yellow-legged frog is observed in the construction area and the biologist must be immediately notified.
- A qualified biologist shall survey the work sites within 25 feet of Bon Tempe Creek or any other work sites containing or adjacent to standing water and saturated soils within 48 hours of the onset of construction activities for foothill yellow-legged frog. If foothill yellow-legged frogs are found, construction activities will be delayed until the frog leaves the construction zone on its own or until a biologist in possession of all required permits moves the frog(s) to an area outside of the construction zone. Temporary exclusionary fencing (designed to prevent frogs from entering the work area) will then be installed

under the guidance of a qualified biologist to prevent the relocated frog(s) from re-entering the work site.

The implementation of **Mitigation Measure BIO-4** would reduce potential impacts to yellow-legged frog, not fully addressed by the RTMP FEIR, to a less than significant level.

**Mitigation Measure BIO-5.** The following measures shall be implemented to protect California giant salamander during construction activities:

- The biological training session to be provided to construction personnel (see **Mitigation Measure BIO-3**) shall also address the potential presence of California giant salamander. At a minimum, the training shall include a description of the California giant salamander and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if a California giant salamander is observed in the construction area and the biologist must be immediately notified.
- A qualified biologist shall survey the work sites within 50 feet of Bon Tempe Creek or any other work sites containing or adjacent to standing water and saturated soils within 48 hours of the onset of construction activities for California giant salamander. If the species is found, construction activities will be delayed until the salamander leaves the construction zone on its own or until a biologist in possession all required permits moves the salamander(s) to an area outside of the construction zone.

The implementation of **Mitigation BIO-5** would reduce potential impacts to California giant salamander, not fully addressed by the RTMP FEIR, to a less than significant level.

### **Reptiles**

**Western pond turtle** (*Actinemys marmorata*) is a California Species of Special Concern. This turtle primarily inhabits aquatic habitats, including ponds, slow moving streams, lakes, marshes, and canals. The species frequently basks on logs or other objects out of the water. Western pond turtles also require upland oviposition (i.e., egg-laying) sites in the vicinity (typically within 200 meters, but as far as 400 meters) of the aquatic site. Mating typically occurs in late April or early May and most oviposition occurs during May and June, although some individuals may deposit eggs as early as late April and as late as early August (Rathbun et al., 1993).

Western pond turtle is known to occur in Alpine Lake and in Bon Tempe Creek and may move from these areas to nest in nearby grassland habitats. The Proposed Project includes the construction of a new trail near the shoreline along an existing non-system route. The new trail would be relocated upslope and further from Alpine lake to avoid unsuitable soils. The trail would be built to the design standards of the *Mt. Tamalpais Watershed Road and Trail Management Plan* and would not create a barrier to pond turtle movement between aquatic and nesting habitats. Alpine Lake and Bon Tempe Creek would not be directly disturbed by the Proposed Project activities. However, the species could move onto nearby construction areas and access roads. Should this occur, Proposed Project activities could result in the loss or harm of individual pond turtles. Therefore, impacts to this species are potentially significant.

The Proposed Project would be implemented as part of the RTMP, and therefore, the mitigation measures identified in the RTMP FEIR will be implemented. The relevant measures from the RTMP FEIR include **Mitigation Measures 3.1-B.14, 3.1-B.16, 3.1-B.17, 3.1-B.18, and 3.3-F.1**. The following

additional mitigation measure would be implemented to further reduce potential impacts to western pond turtle.

**Mitigation Measure BIO-6.** The following measures will be implemented to protect western pond turtle during construction activities:

- The biological training session to be provided to construction personnel (see **Mitigation Measure BIO-3**) shall also address the potential presence of western pond turtle. At a minimum, the training shall include a description of western pond turtle and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if a pond turtle is observed in the construction area and the biologist must be immediately notified.
- A qualified biologist shall survey work sites within construction areas where suitable western pond turtle nesting or aquatic habitat exists within 48 hours of the onset of construction activities. If western pond turtle are found, the turtle will be relocated to a suitable location outside of the construction zone by a qualified biologist.
- Prior to the start of construction, construction fencing shall be placed between the lake or Bon Tempe Creek and the construction area or access routes where suitable western pond turtle habitat exists, at the direction of the qualified biologist. The fencing shall be placed at the edge of the construction area or access routes to maximize areas for turtle movement or nesting. Large-mesh construction fencing shall be used to allow hatchlings, but not adults of the species, to pass through the fencing. Additionally, prior to the start of construction each day, a designated biological monitor (who has received training from a qualified biologist) shall inspect the fence and construction area. Any pond turtles found on the upland side of the construction fencing shall be relocated to the lake-side of the construction fencing by a qualified biologist or the trained, designated biological monitor.

The implementation of **Mitigation Measure BIO-6** would reduce potential impacts to western pond turtle, not fully addressed by the RTMP FEIR, to a less than significant level.

### ***Birds***

As discussed in **Appendix B**, the following special-status bird species have potential to nest on or near the project site: Cooper's hawk, grasshopper sparrow, Bell's sage sparrow, great blue heron, oak titmouse, olive-sided flycatcher, yellow warbler, white-tailed kite, California horned lark, San Francisco common yellowthroat, loggerhead shrike, osprey, "Marin" chestnut-backed chickadee, purple martin, and Allen's hummingbird. While none of these species are state or federally listed, they may otherwise be considered to be of special-status under CEQA. Additionally, numerous common bird species could nest on the project site. The active nests of most common bird species are protected by the Migratory Bird Treaty Act (16 U.S.C. 704) and the California Fish and Game Code (Section 3503). Construction activities (i.e., tree and vegetation removal, grading, resurfacing) could result in the direct loss of a nest of a special-status or common bird species. Additionally, construction related noise has the potential to disturb nesting occurring in surrounding areas and to result in the abandonment of an active nest. Therefore, the direct loss or noise-related disturbance of an active nest of a special-status or otherwise protected bird species is a potentially significant impact.



The Proposed Project would be implemented as part of the RTMP, and therefore, the mitigation measures identified in the RTMP FEIR will be implemented. The relevant measures from the RTMP FEIR include **Mitigation Measures 3.1-B.14, 3.1-B.16, 3.1-B.17, 3.1-B.18, 3.3-C.1, 3.3-C-2, 3.3-C-3, and 3.3-F.1**. The following additional mitigation measure would be implemented to further reduce potential impacts to nesting birds.

**Mitigation Measure BIO-7.** If construction activities occur during the nesting season of native bird species, typically February through August in the project region, a pre-construction survey for nesting birds will be conducted by a qualified biologist. The survey will occur within one week of the commencement of construction activities.

If active nests are found in areas that could be directly affected, or that are within 300 feet of construction and would be subject to prolonged construction-related noise, then an appropriate no-disturbance buffer zone shall be created around active nests during the nesting season or until a qualified biologist determines that all young have fledged. The size of the buffer zone and types of construction activities restricted within the buffer zone will be determined through coordination with the California Department of Wildlife, the district, and a qualified biologist taking into account factors such as the following:

- Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity;
- Distance and amount of vegetation or other screening between the construction site and the nest; and
- Sensitivity of individual nesting species and behaviors of the nesting birds.
- To minimize the potential for a construction-related delay due to the presence of an active bird nest, any required tree and vegetation removal may be conducted outside of the nesting season.

The implementation of **Mitigation Measure BIO-7** would reduce potential impacts to nesting birds, not fully addressed by the RTMP FEIR, to a less than significant level.

### ***Mammals***

As discussed in **Appendix B** the pallid bat, western red bat, hoary bat, long-eared myotis, fringed myotis, long-legged myotis, and Yuma myotis have potential to roost in trees within the project area. Collectively, these species may use cavities, crevices, foliage, and exfoliating bark for roosting. However, the presence of large maternity colonies would be restricted to trees with large cavities. The Proposed Project would require the removal of approximately twenty-six trees. Only one tree is over 20-inches in diameter (a mature Douglas-fir that may not need to be removed depending on final route alignment), the rest are all 10 inches or smaller in diameter and are therefore unlikely to support a large maternity colony. Therefore, while only one tree could potentially support a large maternity colony, should an active maternity or hibernation roost be present, the proposed removal of trees could result in harm to roosting bats. Therefore, impacts to roosting bats are potentially significant.

The Proposed Project would be implemented as part of the RTMP, and therefore, the mitigation measures identified in the RTMP FEIR will be implemented. The relevant measures from the RTMP FEIR include **Mitigation Measures 3.1-B.14, 3.1-B.16, 3.1-B.17, 3.1-B.18, 3.3-D.2, 3.3-D.3, 3.3-D.1,**

and **3.3-D.4**. The following additional mitigation measures would be implemented to further reduce potential impacts to roosting bats.

**Mitigation Measure BIO-8.** If vegetation removal occurs during the bat maternity roosting (April 15 to August 31) or hibernation period (October 15 to February 28), a focused tree habitat assessment shall be conducted by a qualified bat biologist of all trees that will be removed or impacted by construction activities. Trees containing suitable potential bat roost habitat features would then be clearly marked.

- The habitat assessment should be conducted enough in advance to allow preparation of a report with specific recommendations and to ensure tree removal can be scheduled during seasonal periods of bat activity, if required. If the absence of roosting bats cannot be confirmed, then the removal of trees providing suitable maternity or hibernation roosting habitat should only be conducted during seasonal periods of bat activity, including:
  - a. Between March 1 (or after evening temperatures rise above 45F and/or no more than 1/2" of rainfall within 24 hours occurs) and April 15; or
  - b. Between September 1 and about October 15 (or before evening temperatures fall below 45F and/or more than 1/2" of rainfall within 24 hours occurs).
- If it is determined that day roosting bats are unlikely to occur, the tree may be removed as described below.
  - a. Appropriate methods will be used to minimize the potential harm to bats during tree removal. Such methods may include using a two-step tree removal process. This method is conducted over two consecutive days, and works by creating noise and vibration by cutting non-habitat branches and limbs from habitat trees using chainsaws only (no excavators or other heavy machinery) on Day 1. The noise and vibration disturbance, together with the visible alteration of the tree, is effective in causing bats that emerge nightly to feed and to not return to the roost that night. The remainder of the tree is removed on Day 2. A bat biologist qualified in two-step tree removal is required on Day 1 to supervise and instruct the tree-cutters who will be on the site conducting the work, but only for a sufficient length of time to train all tree cutters who will conduct two-step removal of habitat trees. The bat biologist is generally not required on Day 2, unless a very large cavity is present and a large colony is suspected.

The implementation of **Mitigation Measure BIO-8** would reduce potential impacts to roosting bats, not fully addressed by the RTMP FEIR, to a less than significant level.

**American Badger** (*Taxidea taxus*) is a California Species of Special Concern. American badgers range throughout California but are most abundant in drier, open stages of shrub, forest, and herbaceous habitats with friable soils where they can dig burrows. No badger dens have been documented on the project site, however the species is known from the project area and may establish dens between the time of biological surveys and project construction. Should a badger den be present in a work area, individual badgers could be harmed and related impacts would be significant.

The Proposed Project would be implemented as part of the RTMP, and therefore, the mitigation measures identified in the RTMP FEIR will be implemented. The relevant measures from the RTMP FEIR include **Mitigation Measures 3.1-B.14, 3.1-B.16, 3.1-B.17, 3.1-B.18, and 3.3-D.1**. The following

additional mitigation measures would be implemented to further reduce potential impacts to American Badger.

**Mitigation Measure BIO-9.** The following measure will be implemented to protect American Badger during construction activities:

- The biological training session to be provided to construction personnel (see **Mitigation Measure BIO-3**) shall also address the potential presence of American Badger. At a minimum, the training shall include a description of American Badger and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if American Badger dens are observed in the construction area and the biologist must be immediately notified.
- Prior to construction, the work areas will be surveyed for the presence of badger dens. If such sites are identified, work shall not start at that site until a qualified wildlife biologist has determined that the den is not active or, if active, until the young have left the site and are capable of surviving away from the site.

The implementation of **Mitigation Measure BIO-9** would reduce potential impacts to American Badger, not fully addressed by the RTMP FEIR, to a less than significant level.

### ***Operational Impacts***

Following construction, it is possible that the number of visitors, particularly along Liberty Gulch Road, would increase. For the Azalea Hill Trail, although the Proposed Project would improve an existing hiking and horse route, it is also possible that the number of visitors may increase. Unlike standards that exist for residential or commercial developments, no documentation has been found or presented that puts forward an estimate of how many users a new or rerouted unpaved recreation route in an open space area would create. The Proposed Project would keep the existing number of parking spaces at Azalea Hill (18-20)<sup>21</sup>, however it is possible that use of the trail system would still increase and that biological resources would be affected by this increase in use. A literature review was conducted that identified the following types of impacts to wildlife and habitat that may occur from use of trails on public lands by hikers, mountain bikes, and horses:

- Recreation such as hiking, jogging, horseback riding, and photography can cause negative ecological impacts to ecosystems, plants and wildlife including trampling, soil compaction, erosion, disturbance (due to noise & motion), pollution, nutrient loading, and introduction of non-native invasive plant species (Jordan, 2000). These activities can also result in increased trash and littering.
- Non-authorized uses are likely to occur, such as unauthorized off-trail use, night time use, disposing of garbage, not obeying dog leash restrictions, etc.

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<sup>21</sup> The existing parking is informal – there are no designated parking stalls. Estimates range from 18 to 20 cars can fit on the lot now. Designation of parking stalls, including the addition of an ADA van accessible parking spot would likely only reduce the number of parking spots, not increase it.

- Corridors such as trails and roads can cause habitat fragmentation and edge effects which may impact some plant and animal species (Jordan, 2000).
- As cited in the Management and Monitoring Strategic Plan for Conserved Lands in Western San Diego County (Bernabe et al., 2017), “Recreation activity has been linked to declines in wildlife species occupancy, changes in spatial or temporal habitat use (George and Crooks, 2006; Cardoni et al., 2008), increased physiological stress (Arlettaz et al., 2007), reduced reproductive success (Finney et al., 2005), and behavioral effects such as increased vigilance and flight (Taylor and Knight, 2003)”.
- Mountain biking can impact the habitat and wildlife in ways unlike hiking. Trampling is a major concern for mountain biking that may occur off-trail, and when on developed trails, erosion is a major concern. Since mountain bikes travel more swiftly than other forms of recreation, they can have a more pronounced impact on certain animals due to the “sudden encounter” effect (Chernoff and Quinn, 2010 - cited in Bernabe et al., 2017).
- Compared to hikers and runners, horses cause greater compaction of the soil and leaf litter (Dawson et al., 1974; Whittaker 1978 – cited in Bernabe et al., 2017). Horses were also found to destroy 8 times as much cover and created an order of magnitude more bare ground than hikers (Nagy and Scotter, 1974 - cited in Jordan, 2000). Additionally, horse manure can be a dispersal mechanism for exotic species in nature preserves (Benninger, 1989 - cited in Jordan, 2000).
- In a Boulder County open space study, in areas that allowed dogs, deer activity was decreased within 100 meters of trails, twice the distance of deer on trails with recreational activity without dogs (Lenth et al., 2006 - cited in Bernabe et al., 2017).
- Increased human presence can cause temporal shifts in wildlife activities - Reilly (2016) found that coyotes shifted their activity from daylight hours to crepuscular nighttime hours. Coyotes did not avoid sites as recreational use increased; they responded by temporal rather than spatial shifts in habitat use (Reilly, 2016).
- Reilly (2016) found no significant difference in the activity patterns of grey fox, raccoon, or opossums. These species have nocturnal activity patterns that do not coincide with activity patterns of recreationists, thus we would not expect them to change their activity patterns in areas with recreation.
- Reilly (2016) found no significant difference in the activity patterns of bobcats, cottontail rabbit (*Sylvilagus spp.*), or mule deer in areas with and without recreation; activity patterns of these species coincide with the activity patterns of recreationists indicating they may have adapted to the presence of recreation.
- In the Santa Cruz Mountains, mountain lions increased nighttime activity and decreased daytime activity in areas with more human presence (Wang et al., 2015 – cited in Reilly, 2016). In Montana, mountain lions adopt more nocturnal feeding behaviors in areas with human disturbance to avoid humans on trails (Jalkotsky et al., 1997 – cited in Reilly, 2016).
- Actively used or overly used trails can cause erosion and a source of sedimentation.

The study conducted by Reilly (2016) did not find a significant relationship between animal habitat use and human recreation, which contrasts with other research on the effects of non-motorized human recreation on coyote and bobcat density and abundance (Reed & Merenlender, 2011 -cited

by Reilly, 2016) and on habitat use by mule deer, rabbits, and bobcats (Lenth et al., 2008 – cited by Reilly, 2016). However, species vary widely in their responses to human activities. In the San Francisco Bay Area, natural areas have long histories of human recreation and mammals in these areas may be habituated to recreation (Steidl & Powell, 2006 – cited by Reilly, 2016).

Based on the above information, it is expected that increased low-intensity recreational use of the trails would result in trampling of plants and wildlife, soil compaction, erosion, disturbance to wildlife (due to noise and motion), pollution, nutrient loading, and introduction of non-native invasive plant species. It is also possible that some wildlife species would shift temporal or spatial use of habitats near existing and proposed routes.

Many wildlife species exist on Azalea Hill other than the special-status species discussed above. Ground dwelling species, such as towhee (*Melospiza crissalis*) and California quail (*Callipepla californica*) which are in declining population and species important to the food chain such as woodrats (*Neotoma fuscipes*) are of particular concern. Such ground dwelling species are particularly vulnerable to impacts from trail construction and post-construction activities. Following construction of the Proposed Project, large areas of open space would still occur in surrounding areas and large areas of open space would be buffered from the trails by large distances and rugged terrain. This would provide wildlife with the opportunity to adjust temporal and/or spatial habitat use. While it is possible that temporal or spatial habitat usage shifts could increase predation risk for individual animals, given the extent of habitat in surrounding open space areas, it is not expected to cause a substantial threat to the regional population of any species that may be put at elevated risk by increased recreational use. In addition, wildlife may benefit from the Proposed Project as it would create approximately one acre of habitat through the decommissioning and restoration of 4.4 miles of roads and trails that are currently impacted by recreational use.

Wildlife/open space managers must find the balance between the benefits of outdoor recreation and its potentially negative effects on species and habitat. In general, passive activities pose a significant threat to biological resources when the level of recreational use becomes too intense or in areas of sensitive resources (Bernabe et al., 2017). The Proposed Project has been designed to avoid or minimize impacts to sensitive resources, such as wetlands, undisturbed serpentine habitats, special-status plant species, and riparian habitat. The Proposed Project will also remove approximately 4.4 miles from the current approximate 7 miles of roads and trails from the area; consolidating use on the two existing routes proposed for upgrades. The Proposed Project would also keep the existing number of parking spaces at Azalea Hill (18-20). However, even with consolidation of the existing hiker, biker, equestrian and staff use on just the two routes and better signage and fencing, potential adverse impacts could occur to biological resources from the day-to-day operation of the Proposed Project if not properly managed.

The district performed an assessment of user intensity within the Azalea Hill project area between May 22 and June 4, 2018 to identify existing use intensity and patterns. During this time period, the district deployed motion triggered game cameras in order to obtain a peak-season long-day visitor use estimates for the angler trail/Liberty Gulch route, Azalea Hill Trail, Meadow Club Road, and Pine Mt. Road facing Bolinas-Fairfax Road. Consistent with the 2012 census surveys, results confirmed relatively low use, peak visitor use on weekends, and an equal proportion of hikers and cyclists. No equestrians were observed. Average daily visits for all visitors for the Azalea Hill Trail and for the Liberty Gulch route were 2.4 and 3.1 respectively, spread evenly across the week despite the Liberty Gulch trail not being a system route. Average daily visits for the Meadow Club

Road and Pine Mt. Road were 55.2 and 49.5 respectively, however weekend use was much higher than mid-week for these two sites. It appears that the Meadow Club Road had much higher number of out and back visitors versus one way trips and accounting for that may reduce its average daily visit count relative to the other sites.

It is difficult to predict how project implementation will change visitor use patterns. Unofficial staff observations across the region and one formal nearby pre- and post- project visitor census have noted that new trail opportunities in the region often see an initial rise in use that declines to pre-improvement levels. It is expected that there will be a redistribution of users over the project area and an increase in use on Liberty Gulch and Azalea Hill routes. However, except for early increased visitor interest, the overall use will remain roughly the same across the three routes (i.e. relatively low use consistent with them being in a remote area).

Given the potential detrimental effects to wildlife, rare plants, and habitat that can occur from low-intensity recreational uses, impacts associated with increased recreational use of the Azalea Hill project area are considered significant. When the level of recreational use becomes too intense habitat degradation along and adjacent to the trails, erosion, trampling of slow-moving wildlife, unauthorized off-trail use, and associated habitat degradation and rare plant disturbance could occur.

The Proposed Project would be implemented as part of the RTMP, and therefore, the mitigation measures identified in the RTMP FEIR will be implemented. The relevant measures from the RTMP FEIR include **Mitigation Measures 3.1-B.14, 3.1-B.16, 3.1-B.17, and 3.1-B.18**. The following additional mitigation measure will be implemented to further reduce potential to special-status species associated with operational impacts and use.

**Mitigation Measure BIO-10.** Given the above, active and adaptive management measures are needed to ensure the routes perform as designed and that they would not have a substantial adverse impact on biological resources. The district has enjoyed several years of successful use of adaptive management concepts to control undesirable road and trail use through its "Project Restore" program. Started in 2009, Project Restore is an implementation program originally developed in Chapter 5 of the RTMP for the management of non-system routes. It uses a multi-disciplinary management approach, including public outreach, stewardship, and education to explain undesirable effects of illegal trail use or construction, complete physical removal of undesirable routes, including full landform restoration in some cases, official closure of the areas pursuant to district regulation Section 9.01.06, and focused patrol and monitoring of the closed and restored areas, including issuing of citations. Consistent with Chapter 5 of the RTMP, the following measures shall be implemented to address potential indirect impacts to biological resources from use of the Proposed Project routes:

- The BMPs and Environmental Protection Measures in the RTMP (Chapter 3) shall be implemented.
- After the project is complete, monitoring and enforcement shall be carried out as part of and pursuant to the annual Project Restore program and methodology (Chapter 5 of the RTMP). The methodology shall include multimedia public outreach including on-site signs to explain the undesirable effects of illegal trail use or construction, complete physical removal of a route, including landform restoration as needed, and official closures pursuant to district regulation 9.01.06, including issuing citations.

- The district’s rangers will regularly patrol the trail system to provide monitoring of trail conditions and enforcement of regulations. As appropriate, additional training may be provided to the rangers so that they can recognize and report areas that are experiencing unauthorized or excessive use.
- At locations where the trail borders sensitive biological resources (e.g., rare plant populations, wetlands), design features (e.g., logs, rocks) will be used where appropriate to clearly demark the tread margins and discourage encroaching into adjacent vegetation.
- Adaptive management measures, including but not limited to implementation of BMPs, Design Standards, Environmental Protections per the RTMP, edge-of-trail barriers, tread surface hardening, seasonal trail closures, restoration of degraded habitats, weeding, and increased patrols shall be implemented as needed to ensure routes perform as designed. These adaptive management measures shall persist and remain in effect for as long as the routes are in use and shall be maintained at a level to protect biological resources, as necessary.
- Interpretative signage shall be installed at key locations (e.g., at trailheads, near sensitive resources) that convey that trail users must stay on designated trails and roads. The signage shall explain open space conservation goals, the natural resources protected, and the regulations in the area. The signage shall also identify which trails are not open to mountain bikes.
- A district botanist will conduct surveys, as needed, of the trail system to identify areas of overuse or illegal use and provide adaptive management recommendations (see above) to address areas that are experiencing habitat degradation or increases in weeds. Other district staff, or consultants retained by the district with an expertise in hydrology, geomorphology, trail maintenance/design, and landform restoration will assist the district botanist in identifying areas of over use and development of adaptive management actions.

The implementation of **Mitigation Measure BIO-10** would reduce potential impacts to sensitive biological resources from anticipated use (non-construction related) and operation of the project, not fully addressed in the RTMP FEIR, to a less than significant level.

- 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 the California Department of Fish and Game or U.S. Fish and Wildlife Service?*

**Less than Significant with Mitigation Incorporated.** Sensitive natural communities include sensitive plant communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. For a discussion of impacts related to riparian habitat see item C, below. Sensitive natural communities may or may not contain special-status species or their habitat. The most current version of the CDFW’s List of California Terrestrial Natural Communities as well as the Manual of California Vegetation indicate which natural communities are of special-status given the current state of the California classification.

The study area encompasses a number of sensitive plant communities (**Appendix B**). There are three plant communities within the study area that are designated as Rare and Threatened by

the CDFW including Serpentine Bunchgrass, Purple Needle Grass Grassland, and Mt. Tamalpais Manzanita Chaparral. The study area also encompasses riparian habitats, wetlands, and other waters subject to the jurisdiction and legal protection of environmental regulatory agencies; these habitats are discussed below under item C.

The Proposed Project would remove (i.e., decommission) approximately 4.4 miles of non-system roads and trails and restore those routes to natural conditions to improve habitat and reduce erosion. Many of the non-system trails traverse serpentine habitats that support sensitive plant communities. The unauthorized use of these trails degrades habitat quality within sensitive plant communities. Therefore, in the long term, the proposed closing and restoration of non-system trails would benefit sensitive plant communities by eliminating trails and providing access to over one acre of restored habitat, including large areas of sensitive serpentine habitats on Azalea Hill.

New construction would generally be limited to the proposed trail reroutes. Some of the proposed trail reroutes would occur within small areas mapped as upland serpentine grassland. However, these reroutes do not include rerouting an existing trail from a common plant community into a sensitive plant community. As required by the RTMP FEIR (**Mitigation Measure 3.2-D.3**), the proposed Azalea Hill Trail has been rerouted to avoid stands of serpentine chaparral. Overall, all proposed trail reroutes avoid sensitive plant communities. Therefore, the restoration of the existing trail would offset impacts to sensitive plant communities associated with the rerouted trail.

The other project components include actions that would occur where a trail or road already exists, such as adopting and improving existing trails and converting an existing trail to a road (or vice-versa). These activities would primarily occur within the footprint of the existing road or trail and related habitat disturbances would be small and adjacent to existing trails.

Given the above, project-related impacts to sensitive plant communities would be largely self-mitigating. The proposed closing and restoration of approximately 4.4 miles of non-system trails would benefit sensitive plant communities by eliminating trails that provide access to large areas of sensitive serpentine habitats on Azalea Hill. Measures would also be implemented to assist these areas in revegetating with native vegetation. Although the Proposed Project does not include relocating any existing trails from a common plant community into a sensitive plant community, and other project activities would primarily occur within the footprint of the existing roads or trails and related habitat disturbances, additional measures are still required to minimize impacts to sensitive natural communities and to restore temporarily disturbed habitats.

Potential impacts to sensitive natural communities could also occur due to the spread of weeds. It is possible that construction equipment or trail users could transport seeds of invasive plant species to the site, or that areas incidentally disturbed during construction could be colonized by invasive plant species. Therefore, given the above, impacts to sensitive plant communities are potentially significant.

The Proposed Project would be implemented as part of the RTMP, and therefore, the mitigation measures identified in the RTMP FEIR will be implemented. The relevant measures from the RTMP include **Mitigation Measures 3.1-B.14, 3.1-B.16, 3.1-B.17, 3.1-B.18, 3.2-E.1, 3.2-F.1, 3.2-I.1, 3.2-I.2, and 3.2-I.3**. The following additional mitigation measures will be implemented to further reduce potential impacts to sensitive natural communities.



**Mitigation Measure BIO-11.** Where trails will be rerouted or where activities will occur outside of existing trails, the protection of native vegetation will be prioritized by adjusting the final alignment, within the regions already surveyed for sensitive species (**Appendix D**). Any trees larger than 8-inch DBH that are removed as part of the Proposed Project shall be replaced. The minimum ratio for tree replacement shall be 3:1 (three trees replaced for each tree removed) but shall be adjusted by the district botanist in concert with the regulatory agencies to re-establish the structure and function of existing landscapes). Areas disturbed by construction will be monitored and adaptively managed to ensure revegetation for a period of five years.

**Mitigation Measure BIO-12.** All areas temporarily disturbed during project construction, including areas where tree replacement is conducted, will be restored and revegetated to their pre-disturbance condition. The pre-disturbance condition will be documented by a qualified botanist prior to project implementation to establish a baseline for recording any changes to vegetation including native and non-native plant cover, density, and distribution.

- For each construction phase, a restoration and monitoring plan, with performance standards, will be implemented to track and restore all temporarily disturbed areas and shall continue annually until revegetation meets the performance criteria.
- The plan shall set specific performance criteria that shall be attained before revegetation is considered complete. The success criteria, at a minimum, shall require that non-native species cover shall not exceed pre-disturbance non-native species cover and re-establishment of native cover to pre-disturbance levels.
- The plan shall also define corrective actions or adaptive management that would be taken if the revegetation actions are not substantially on course to meet the performance criteria and the triggers for taking corrective actions, including those necessary to address weed invasion, including annual grasses encroaching into native grasslands.

**Mitigation Measure BIO-13.** In addition to the requirements of **Mitigation Measure 3.2-F.1** in the RTMP FEIR, all decommissioned trails will be monitored by a qualified botanist annually for a period of five years. Corrective actions will be implemented if it is determined by the botanist, other district staff, or consultants retained by the district with an expertise in botany, weed management, trail maintenance/design, and landform restoration, that the trails are not revegetating with appropriate vegetation characteristic of surrounding areas on similar soils or if non-native weeds require management. To ensure these areas are restored to a natural/native condition, notably in areas that could support special-status plant species, the monitoring shall include weed removal along the decommissioned trails as determined by the botanist for the five-year period. If the Proposed Project is implemented in phases, this mitigation measure shall be carried out independent of other project elements for each phase of work. Also see **Mitigation Measure BIO-2**, which includes measures to prevent the spread of weeds during construction activities.

The implementation of **Mitigation Measures BIO-11, BIO-12, and BIO-13** would reduce potential impacts to sensitive natural communities, not fully addressed by the RTMP FEIR, to a less than significant level.

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

**Less than Significant.** Wetlands, streams, and permanent and intermittent drainages are subject to the jurisdiction of the U.S. Army Corps of Engineers (ACOE) under Section 404 of the Federal Clean Water Act (CWA). The CDFW also generally has jurisdiction over these resources and associated riparian habitat, 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. For example the CDFW asserts jurisdiction to the outer edge of vegetation associated with a riparian corridor. The Regional Water Quality Control Board also generally has jurisdiction over streams, wetlands, as the function and condition of riparian corridors is strongly linked to water quality.

A delineation of potential jurisdictional waters was completed for the project area by Vollmar Natural Lands Consulting (VNLC) in February 2017. The results of the delineation are summarized below while more detailed discussions of potential jurisdictional resources may be found in the jurisdictional delineation report (VNLC 2017). The delineation identified a total of 0.351 acre of potentially jurisdictional waters within the 15.5-acre study area. **Table 4-2**, below, provides a summary of the delineation results. Locations of these features are shown in **Appendix B**.

Habitat Type	Number of Features	Total Acreage
Wetland	5	0.104
Other Waters (Bon Tempe Creek)	1	0.031
Other Waters (ephemeral and seasonal channels)*	28	0.134
Swale	7	0.020
Seep**	3	0.057
Eroded Channel (severely eroded channel along trail)	1	0.006

\* Includes 0.019 acre of tentative other Waters. \*\*Only mapped as polygons along Liberty Gulch Road

Wetlands within the study area are all associated with drainages and/or with springs that augment the drainages. The onsite other waters consist entirely of drainages that lack wetland vegetation (or are un-vegetated) and/or lack hydric soils. All of the drainages in the area flow into Alpine Lake, either on an ephemeral, seasonal, or semi-perennial basis. The drainages include Bon Tempe Creek, a semi-perennial stream (i.e., flows during most of the year and features perennial pools), as well as a large number of ephemeral to seasonal channels ranging from two to fifteen feet in width and featuring subtle to clearly defined bed and bank topography. Additionally, there are a number of seeps and swales that conduct surface water during (and typically for at least several days following) rain events, as observed during field surveys. Several seeps near the northwestern edge of the study area flow onto Azalea Hill Trail and, where the trail is relatively steep and straight, the flow has eroded a gully that conducts water for at least several days following rain. There are smaller rill features throughout the site,

but these were not mapped because they are relatively shallow and conduct water only during rain events.

In addition to the potential jurisdictional waters, the delineation identified 0.074 acre of riparian habitat in the study area, which is present along Bon Tempe Creek. The mapped area represents the outer edge of the dripline of riparian tree species or the tops of the stream channel banks, whichever is farther from the channel centerline. The riparian tree species along Bon Tempe Creek consist of Oregon ash and arroyo willow.

An additional, relatively large wetland exists at the northeast corner of the project site, at the bottom of Azalea Hill. The existing Azalea Hill Trail runs through the middle of the wetland which becomes saturated during the wet season and is susceptible to damage from illegal bicycle activity. The Proposed Project will abandon this section of trail and instead construct a clear span bridge over Bullfrog Creek approximately 150 feet further to the south which would remove impacts to this wetland feature associated with hikers, horses, and bikers. The new bridge over Bon Tempe Creek would eliminate the need for the trail section currently running through the wetland; thus providing an opportunity to restore the wetland to its natural condition. Because of the wetland characteristics in this area, the trail would revert to wetlands naturally. Since no work is proposed in this area, it was not included in the jurisdictional survey.

The Proposed Project includes constructing or improving 34 stream crossing sites, mostly using clear span bridges, puncheons, and/or armored wet crossings (**Figure 4** and **Figure 5**). In total, 308 linear feet and 665 square feet of stream channels would be impacted. The stream crossing sites are generally unvegetated and the stream crossing improvements would serve to remedy existing erosion problems and prevent future erosion problems. Each crossing improvement would include native revegetation, erosion control, and native seeding to stabilize adjacent slopes and establish a functional native riparian corridor as required by the RTMP FEIR. Therefore, in the long term, the proposed stream crossing improvements would serve to reduce erosion and to protect and improve riparian and wetland habitats. The project also includes rerouting trails to avoid seeps, springs, and wetlands as well as decommissioning trails that traverse potential Waters of the United States and/or State of California. Trails would be rerouted around or above springs and seeps along the southern portion of the study area, and numerous potential other Waters, mostly in the form of unvegetated channels, would be avoided by the decommissioning of trails throughout the hillslopes of Azalea Hill.

The proposed work does not necessarily lend itself to traditional buffers from wetlands or riparian zones. Instead, by its nature, the proposed work needs to cross these areas. These crossings have been designed using clear span bridges, puncheons or armored wet crossings with the goal of keeping users out of riparian and wetland areas.

Not all the wetlands, springs and seeps would be avoided. At two sites which include springs, a combination of armored rock crossings and four-foot-wide causeways (set back from the fill slope and above the seeps) would be constructed. Construction within seeps/wetlands would be limited to these two locations and would include the placement of approximately 9 cubic yards of concrete in a seep and 25 cubic yards of rock in another seep to establish footings for causeways; the seeps are currently within existing trails and the rock and concrete would facilitate crossing the seeps with less disturbance. Limited removal of some riparian vegetation may be required to make way for bridge abutments and to provide access for bridge installation. Riparian trees potentially removed by bridge abutment construction at Bon Tempe Creek are included in **Table 4-3**, below.

The small project-related impacts to wetlands would be largely offset by crossing improvements that would reduce sediment inputs and stabilize channel banks. Furthermore, by separating users (hikers, bicyclists, and equestrians) from riparian, wetland, and stream habitats, the Proposed Project will reduce direct operational impacts. Additionally, trails would be rerouted around springs and seeps along the southern portion of the study area, and numerous potential other waters, mostly in the form of unvegetated channels, would be avoided by the decommissioning of trails throughout the hillslopes of Azalea Hill. While the project's impacts to seep, wetlands, and streams would be self-mitigating, permits from the ACOE, RWQCB, and CDFW would be required. In the absence of avoidance and minimization measures, construction activities could result in erosion and sedimentation or incidental disturbance to jurisdictional wetlands, streams, and riparian habitat. Therefore, related impacts are potentially significant.

The Proposed Project would be implemented in accordance with the RTMP and RTMP FEIR which identified specific mitigation measures to reduce potential impacts to riparian, wetland, and creek habitats regulated by the U.S. Army Corps of Engineers, CDFW, and RWQCB to a less than significant level. Elements of the RTMP FEIR that will be implemented as part of the Proposed Project include **Mitigation Measures 3.1-B.1, 3.1-B.2, 3.1-B.4, 3.1-B.5, 3.1-B.7, 3.1-B.8, 3.1-B.9, 3.1-B.10, 3.1-B.11, 3.1-B.12, 3.1-B.12, 3.1-B.14, 3.1-B.16, 3.1-B.17, 3.1-B.18, 3.1-B.20, 3.1-B.23, 3.1-B.27, 3.1-C, 3.1-F.3, 3.1-F.4, 3.1-F.5, 3.2-H.1, 3.2-H.2, 3.2-H.3, 3.2-H.4, 3.2-H.5, 3.2-H.6, 3.2-H.7, 3.2-H.8, and 3.2-H.9.**

Impacts to riparian, wetland, and creek habitats and required mitigations for projects completed as part of the RTMP were previously addressed in the RTMP FEIR. The Proposed Project would not result in additional impacts or require additional mitigations than those already addressed in the RTMP FEIR. Therefore, impacts to riparian, wetland, and creek habitats associated with amending the RTMP for the Restoration of Azalea Hill are considered less than significant and no additional mitigation measures are proposed.

- 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. The project site is located in an undeveloped area and is surrounded by large expanses of open space. Wildlife is expected to currently use the project site for local and regional movements. The Proposed Project does not include the construction of any structures that would inhibit wildlife movement so wildlife movement after completion of the project would return to pre-project levels. None of the proposed stream crossings are located along streams that support migratory fish. The presence of construction equipment and activities may influence wildlife behaviors during construction but given the large area of surrounding landscape available for foraging and limited area of construction activities (along proposed routes), impacts to the movement of fish or wildlife species would be less than significant. Therefore, the Proposed Project would not substantially interfere with the local or regional movement of wildlife species. No mitigation is required.

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

***Less than Significant with Mitigation Incorporated.*** Up to twenty-six trees could be removed as part of the project construction. The largest tree is a Douglas-fir (*Pseudotsuga menziesii*), with a diameter at breast height (DBH) of 22 inches. The smallest trees accounted for, of which there are four, have a DBH of 3 inches. The average DBH of all trees that could be removed is 6.7 inches, as shown in **Table 4-3**. When choosing the proposed alignment, many factors were considered including utilizing existing roads or trails, soils, road or trail grades, hillside slope, proximity to creeks and other waters and vegetation. Whenever possible, the proposed alignments were chosen to avoid tree removal. If avoiding one of the trees proposed to be removed would create other, larger, undesirable environmental impacts, such as an unsustainable road or trail alignment, or excessive earthwork and retaining walls, including in or near creeks, it was assumed that tree removal would have to occur.

As this would be the worst case scenario, it is being used to analyze the potential environmental effect of tree removal. It is possible that all the trees would not need to be removed as part of the Proposed Project depending upon how the road or trail is constructed. In some cases it may be possible to simply limb or trim the tree. While this would be preferable, it could only be determined after the road or trail upgrade is constructed and final grades and soils would continue to support the tree(s). **Mitigation Measure BIO-11** would ensure that trees that do not need to be removed would not be impacted. Additionally, none of the trees proposed for removal are of such size that they could be considered a heritage or otherwise significant tree.

<b>TABLE 4-3. Summary of Potential Tree Removal</b>					
<b>Tree ID</b>	<b>Name</b>	<b>Scientific</b>	<b>DBH (in)</b>	<b>Condition</b>	<b>Stage</b>
001	Willow	Salix ssp.	6	Fair	Mature
002	Douglas Fir	Pseudotsuga menziesii	10	Good	Pole
003	Douglas Fir	Pseudotsuga menziesii	5	Good	Pole
004	Bay	Umbellularia californica	8	Good	Mature
005	Douglas Fir	Pseudotsuga menziesii	3	Good	Sapling
006	Madrone	Arbutus menziesii	3	Moderate	Pole
007	Douglas Fir	Pseudotsuga menziesii	3	Good	Sapling
008	Douglas Fir	Pseudotsuga menziesii	10	Good	Pole
009	Madrone	Arbutus menziesii	4	Fair	Pole
010	Douglas Fir	Pseudotsuga menziesii	10	Good	Pole
011	Live Oak	Quercus agrifolia	10	Moderate	Pole
012	Douglas Fir	Pseudotsuga menziesii	22	Fair	Mature
013	Douglas Fir	Pseudotsuga menziesii	8	Good	Pole
014	Live Oak	Quercus agrifolia	7	Fair	Pole
015	Live Oak	Quercus agrifolia	5	Fair	Pole
016	Douglas Fir	Pseudotsuga menziesii	6	Good	Pole
017	Bay	Umbellularia californica	4	Good	Pole
018	Bay	Umbellularia californica	3	Poor	Pole
019	Douglas Fir	Pseudotsuga menziesii	5	Good	Pole
020	Willow	Salix ssp.	4	Good	Pole
021	Douglas Fir	Pseudotsuga menziesii	5	Good	Pole
022	Ash	Fraxinus latifolia	10	Good	Mature
023	Ash	Fraxinus latifolia	10	Good	Mature
024	Willow	Salix lasiolepis	3	Good	Sapling
025	Ash	Fraxinus latifolia	8	Good	Mature
026	Willow	Salix lasiolepis	6	Good	Mature

The district is exempt from local tree protection ordinances. Therefore, the Proposed Project would not conflict with a local tree protection ordinance or other local ordinance protecting biological resources. However, given the sensitivity of the area, the removal of trees may be considered a significant impact. As described in **Mitigation Measures BIO-10, BIO-11, and BIO-12**, the district will avoid impacts to existing vegetation and tree to the extent practicable, replace trees removed that are greater than 8-inch DBH, and conduct a five-years of monitoring and adaptive management to ensure revegetation. Although the district is exempt from local tree protection ordinances, **Mitigation Measures BIO-10, BIO-11, and BIO-12** have been incorporated into the Proposed Project to facilitate the re-establishment of functional vegetation communities

The project is exempt from local policies regarding the preservation of biological resources including tree preservation ordinances. However, the implementation of **Mitigation Measures BIO-10, and BIO-11, and BIO-12** would reduce impacts related to tree removals, not fully addressed by the RTMP FEIR, to a less than significant level.

- 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.** The site is not part of or near an existing Habitat Conservation Plan or Natural Communities Conservation Plan or any other local, regional, or state habitat conservation plan. Therefore, the Proposed Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, no related impact would occur.

ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>5. CULTURAL RESOURCES. Would the project:</b>					
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?				√	22
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?		√			22
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?				√	22
d) Disturb any human remains, including those interred outside of formal cemeteries?		√			22

### Background Information

The term “cultural resources” as used in this document refers to all “built environment” resources (structures, bridges, railroads, water conveyance systems, etc.), culturally important resources, and archaeological resources (both prehistoric and historic), regardless of significance.

The analysis for the CEQA Initial Study is based on the following cultural resources study conducted for the Proposed Project: Cultural Resources Investigation for the Azalea Hill Restoration Project (DeBakker et al, 2017) which can be found in **Appendix C**. Findings for this investigation are based on the following:

- A records search at the Northwest Information Center of the California Historic Resource Inventory System at Sonoma State University;
- Archival research and historic map review conducted at local, regional, and online repositories;
- Consultation with Native American groups and individuals identified by the Native American Heritage Commission and with local historical societies;
- A field survey of the project area; and,
- Eligibility of cultural resources to the National Register of Historic Places or the California Register of Historical Resources.

On October 24, 2017, the Federated Indians of Graton Rancheria replied to the district’s project notification letter (dated September 5, 2017), stating that the Tribal Heritage Preservation Office reviewed the proposed Azalea Hill project. The tribe noted that construction may result in the

<sup>22</sup> DeBakker, Cassidy, M.A., McWaters, Josh, B.A., and Newland, Michael, M.A., Garcia and Associates, Cultural Resources Inventory and Evaluation Report for the Marin Municipal Water District Azalea Hill Restoration Project. August 2017.



discovery of tribal cultural resources and that if this occurs the district should immediately contact the tribe along with a qualified archaeologist. Required **Mitigation Measures ARC-1** and **ARC-2** (below) satisfactorily address this request.

This investigation resulted in the identification of four historic-period archaeological resources over 45 years old within the project area: Sites 732-01, 732-02, 732-03, and 732-04. These resources are briefly described below and have been recorded on California Department of Parks and Recreation 523 forms. All of these sites are recommended ineligible for listing in either the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR). No prehistoric archaeological resources or built environment resources were identified within the project area.

- 732-01 (Tamalpais Dam Remains): This resource is the remains of the unfinished, historic-era Tamalpais Dam. Construction began circa 1903 by the Marin Water and Power Company, but was halted before completion due to County objections to flooding a portion of the Bolinas-Fairfax Road. All that remains within the project area are two features: a portion of the concrete dam foundation and a cut in the bedrock.
- 732-02 (Foundation Pad/Power Poles): This historic-era resource is comprised of a foundation pad and associated cut power poles. Historic maps indicate a comfort station or restroom is located in proximity to the project area and was likely built between 1917 and 1931, however this location does not coincide with the foundation remnants within the project area. The function and association of this resource is unknown.
- 732-03 (Old Bolinas-Fairfax Road): This site is a historic-era alignment of the Bolinas-Fairfax Road and related features, including culverts and spurs. Some of these spurs were built as truck roads during the construction of Alpine Dam or connecting roads leading to other resources (such as Site 732-02).
- 732-04 (Bull Frog road): This site is comprised of a single context: a road segment that follows Bull Frog road north to a quarry, referred to as the Bull Frog Quarry. The earliest map reviewed that shows the Bull Frog road alignment dates to 1941.

a) *Would the project cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?*

**No Impact.** Based on the results of the cultural resources investigation, there are no significant cultural resources (historic properties or historical resources) identified within the project area. No mitigation required.

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

**Less Than Significant with Mitigation Incorporated.** Based on the results of the cultural resources investigation, no prehistoric archaeological resources were identified within the project area. The historic-era sites that were documented and evaluated during this investigation are considered ineligible for listing in the NRHP or the CRHR and are not considered historical resources under CEQA.

Although construction of the project would have no impact on known archaeological resources, there is a possibility that previously unidentified archaeological resources and subsurface deposits are present within the project area. If present, soil disturbing activities including movement of vehicles and equipment could expose, disturb or damage any such previously unrecorded archaeological resources. Because the possibility of encountering

archaeological resources during construction cannot be completely eliminated, the impact related to the potential disturbance or damage of previously undiscovered archaeological resources, if present, could be significant. Implementation of **Mitigation Measure ARC-1** would reduce impacts on any previously unrecorded and buried archaeological resources to less-than-significant levels by requiring the district and its contractors to adhere to appropriate procedures and protocols for minimizing such impacts in the event that a possible archaeological resource is discovered during construction.

**Mitigation Measure ARC-1.** In the event of an unanticipated discovery of archaeological deposits during project implementation, the district shall ensure that construction crews shall stop all work within 100 feet of the discovery until a qualified archaeologist can assess the previously unrecorded discovery and provide recommendations. Resources could include subsurface historic features such as artifact-filled privies, wells, and refuse pits, and artifact deposits, along with concentrations of adobe, stone, or concrete walls or foundations, and concentrations of ceramic, glass, or metal materials. Native American archaeological materials could include obsidian and chert flaked stone tools (such as projectile and dart points), midden (culturally derived darkened soil containing heat-affected rock, artifacts, animal bones, and/or shellfish remains), and/or groundstone implements (such as mortars and pestles).

The implementation of **Mitigation Measure ARC-1** would reduce impacts to previously unidentified archaeological resources within the project area, not fully addressed by the RTMP FEIR, to a less-than-significant level.

- c) *Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?*

**No Impact.** The Initial Study prepared to inform the scope of the EIR for the RTMP stated that “There are no known paleontological resources in the areas that might be affected by projects, and it is not expected that project construction would affect such resources.” The Proposed Project does not deviate from the land areas or project scale or scope considered in that Initial Study or the FEIR for the RTMP. No mitigation is required.

- d) *Would the project disturb any human remains, including those interred outside of formal cemeteries?*

**Less Than Significant with Mitigation Incorporated.** No evidence of human remains was identified within the project area. However, the potential for their presence cannot be entirely eliminated. Construction-related excavation could expose and disturb or damage previously undiscovered human remains. Therefore, the impact related to the potential disturbance of human remains during construction could be significant. **Mitigation measure ARC-2** would be implemented during project construction to minimize potential impacts on any buried human remains and associated or unassociated funerary objects that may be accidentally discovered during construction activities to less-than-significant levels by requiring the district to adhere to appropriate excavation, removal, recordation, analysis, custodianship, and final disposition protocols. Therefore, this potential impact on buried human remains would be less than significant with mitigation.

**Mitigation Measure ARC-2.** In the event of an unanticipated discovery of human remains during project implementation, the district shall ensure that construction crews stop all work within 100 feet of the discovery. The district shall treat any human remains and associated or

unassociated funerary objects discovered during soil-disturbing activities according to applicable State laws. Such treatment includes work stoppage and immediate notification of the Marin County Coroner, requisition of a qualified archaeologist, and in the event that the Coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission (NAHC), according to the requirements in PRC Section 5097.98. The NAHC would appoint a Most Likely Descendant (MLD). A qualified archaeologist, the district, and the MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of any human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5[d]). The agreement would take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, and final disposition of the human remains and associated or unassociated funerary objects. The PRC allows 48 hours to reach agreement on these matters.

The implementation of **Mitigation Measure ARC-2** would reduce impacts to human remains identified during construction, not fully addressed by the FEIR, to a less-than-significant level.

ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>6. GEOLOGY/ SOILS.</b>					
a) Would the project expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving? i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.			√		23, 24
ii) Strong seismic ground shaking?			√		23, 24
iii) Seismic-related ground failure, including liquefaction?			√		23, 24
iv) Landslides?			√		23, 24
b) Would the project result in substantial soil erosion or the loss of topsoil?			√		23, 24
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?			√		23, 24
d) Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?			√		23, 24
e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?				√	23, 24

### Background Information

The Initial Study prepared to inform the scope of the *Mt. Tamalpais Watershed Road and Trail Management Plan* FEIR stated that “The projects included in the Draft RTMP involve repairing erosion sources and decommissioning and rerouting a few trails and roads.” Further, the FEIR stated implementing all the projects would reduce sedimentation and would repair forty-one

<sup>23</sup> Anderson, Dain (MMWD). Project Site Field Inspection. July 7, 2017

<sup>24</sup> Marin County. *Countywide Plan*. November 6, 2007.

landslides near streams, both beneficial impacts. The RTMP FEIR also stated that the district would implement the BMPs in the Draft Plan to address potential construction related erosion impacts, and would consult with a geotechnical engineer in the design of any road, bridge, or retaining wall on the watershed (see RTMP FEIR **Mitigation Measure 3.4-C.1**). Adherence to geotechnical design recommendations, developed by duly qualified and state certified professionals would reduce potential geologic and soil impacts to less than significant. The Proposed Project does not deviate from the land areas or project scale or scope considered in the Initial Study or the subsequent RTMP FEIR.

- a) *Would the project expose people or structures to 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 for the area or based on other substantial evidence of a known fault, strong seismic ground shaking, seismic-related ground failure, including liquefaction, or landslides?*

**Less than Significant Impact.** The project area, as is the entire San Francisco Bay Area, is a seismically active area traversed by a wide array of faults with their attendant effects. The Proposed Project would result in some existing roads/trails being realigned, some non-system trails being decommissioned, and the installation of puncheons and bridges over drainages and creeks. The Proposed Project has been designed to avoid areas of potential landslides and to ensure that no improvements would generate or exacerbate existing landslides. With the exception of the puncheons and bridges over drainages and creeks, where road bridges or retaining walls would be subject to the original RTMP FEIR mitigation measure for geotechnical consultation (**Mitigation Measure 3.4-C.1**), there are no structures proposed as part of the project's implementation that could be impacted by any naturally occurring geologic characteristics. No additional mitigation is required.

- b) *Would the project result in substantial soil erosion or the loss of topsoil?*

**Less than Significant Impact.** One of the Proposed Project's overarching goals is to minimize erosion. From a cumulative, watershed-wide perspective, every cubic yard of sediment savings is desirable; therefore, allowing an estimated 4,377 cubic yards of erosion to enter Azalea Hill's creeks would not be acceptable.

Construction: The RTMP FEIR stated that the district would implement the BMPs in the Draft Plan to address potential construction-related erosion impacts. These include using silt fences, erosion control blankets and mulch to prevent significant erosion during and after construction. Routes identified for realignment or recontouring, as well as those identified for decommissioning, would reduce erosion from the site that eventually is deposited into Alpine Lake. This would be accomplished through shaping techniques such as outsloping, rolling dips, or water bars consistent with the design standards of the RTMP and revegetation. Decommissioned trails and areas disturbed by construction would be revegetated either through natural or human-assisted means. No additional mitigation is required.

Operation: Poorly designed, un-maintained or unmanaged routes could result in erosion or sedimentation as a result of regular or increased use, especially when during extreme wet weather periods when the routes are saturated. The RTMP notes that one of the simplest ways to maintain an unpaved road or trail and minimize erosion and sedimentation is to close them when they are wet or saturated (Section 3.3.2). The district's regulations also provide for closure or restriction of all or any portion of district land for maintenance or watershed management purposes (Section 9.01.06). Furthermore, **Mitigation Measure BIO-10** which

requires monitoring, enforcement, and adaptive management measures, will ensure routes perform as designed and do not result in substantial soil erosion or loss of topsoil. No additional mitigation is required.

- 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.** Prior to construction of bridges or retaining walls, which would be subject to the RTMP FEIR mitigation measure for geotechnical consultation (**Mitigation Measure 3.4-C.1**), soil sampling would be conducted to inform the bridges' designers of soil characteristics to consider in designing and then constructing bridges to account for any potentially unsuitable geologic unit or soil that is unstable or could become unstable as a result of bridge or retaining wall construction. No additional mitigation is required.

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

**Less than Significant Impact.** The Proposed Project does not include the construction of habitable structures. Prior to construction of bridges or retaining walls, which would be subject to the RTMP FEIR mitigation measure for geotechnical consultation (**Mitigation Measure 3.4-C.1**), soil sampling would be conducted to inform the bridges' designers of soil characteristics to consider in designing and then constructing a bridge to account for any potentially damaging soil conditions. No additional mitigation is required.

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

**No Impact.** The Proposed Project does not include uses or activities that would generate wastewater, nor involve the construction, modification, or demolition of septic tanks or alternative waste water systems that would rely on the underlying soil. The self-contained, serviceable convenience station that would be installed would be either a port-a-potty, self-composting toilet, or other self-contained facility that would not rely on the soil for wastewater disposal.

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ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>7. GREENHOUSE GAS EMISSIONS. Would the project:</b>					
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			√		25, 26, 27
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?				√	25, 26, 27

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 generate greenhouse gas (GHG) emissions from temporary construction-related activities, including from mobile equipment, site preparation, and excavation. BAAQMD has not adopted a GHG emissions threshold with respect to construction-related GHGs. In lieu of specific guidance from BAAQMD regarding significance thresholds for construction-related GHG emissions, significance is assessed by considering the scope and duration of construction-related emissions. Given that the project activities would be temporary in nature and would occur intermittently over the construction time-frame described earlier, the Proposed Project is not expected to result in an ongoing burden to regional or global GHG inventories. No mitigation is required.

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.** California has passed several bills and the governor has signed at least three executive orders regarding GHGs. For example, Assembly Bill (AB) 32 (the Global Warming Solutions Act) was passed by the California legislature on August 31, 2006. It requires the state’s GHG emissions to be reduced to 1990 levels by 2020.

The purpose of the Proposed Project is to reduce erosion and sedimentation from Azalea Hill and would not conflict with any existing GHG laws, plans, policies, or regulations adopted by the California legislature or the CARB and would be consistent with applicable goals and policies of the Marin Countywide Plan. No mitigation is required.

<sup>25</sup> Bay Area Air Quality Management District (BAAQMD). *BAAQMD California Environmental Quality Act Air Quality Guidelines*. May 2012

<sup>26</sup> Bay Area Air Quality Management District (BAAQMD). *Final Bay Area Clean Air Plan 2010*. September 15, 2010

<sup>27</sup> Marin County. *Countywide Plan*. November 6, 2007



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ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>8. HAZARDS &amp; HAZARDOUS MATERIALS. Would the project:</b>					
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?		√			28
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?		√			28
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?				√	28
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?				√	28, 29
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?				√	28, 29
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?				√	28, 29
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				√	28
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?		√			28

*a, b) 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 with Mitigation Incorporated.** Construction of the Proposed Project would involve the use of materials that are defined as hazardous, such as fuels,

<sup>28</sup> Anderson, Dain (MMWD). Project Site Field Inspection. July 7, 2017

<sup>29</sup> Marin County. *Countywide Plan*. November 6, 2007

hydraulic fluids, and coolants for construction equipment. All of these materials are common in the construction industry. The transport, handling, use, and disposal recommendations outlined by their respective manufacturers are designed to ensure that there are no environmental effects. Regardless, inadvertent release of these materials into the environment could adversely impact soil, surface waters, or groundwater quality. This could be a significant impact. The district is a government agency and is subject to the strict safety practices developed and enforced by the Occupational Safety and Health Administration (OSHA). Furthermore, the district has a Safety Officer and safety training program, and its contracting procedures require that any contractor hired to carry out or help in carrying out a project must also comply with OSHA standards.

Within the Azalea Hill project area are serpentine soils, which, when disturbed, could release naturally occurring asbestos, which is a carcinogen, into the immediate atmosphere. Serpentine substrates in the study are concentrated along the central, mostly convex slopes of the study area, as well at the western edge. Accidental release of asbestos fibers into the localized atmosphere would be a significant impact. The BAAQMD has issued a regulatory advisory for an Asbestos Airborne Toxic Control Measure (ATCM) for construction, grading, quarrying, and surface mining operations.<sup>30</sup> This ATCM requires road construction and maintenance activities in areas where naturally occurring asbestos is likely to be found to employ the best available dust mitigation measures.

The following additional mitigation measures would be implemented to further reduce potential impacts associated with the routine transport, use, or disposal of hazardous materials and upset or accident involving the release of hazardous materials into the environment

**Mitigation Measure HAZ-1.** The accidental release of asbestos fibers shall be mitigated by implementing the following measures for construction activities in areas with serpentinite-derived soils:

- Construction vehicle speed at the work site shall be limited to fifteen (15) miles per hour or less.
- The contractor shall only wet organic topsoil designated by the district botanist for salvage to the extent required to control dust emissions. Care should be taken to not over-water topsoil.
- Prior to any ground disturbance, sufficient water must be applied to the area to be disturbed to prevent visible emissions.
- Areas to be graded or excavated must be kept adequately wetted to prevent visible emissions.
- Except for salvaged serpentine topsoil, Temporary storage piles containing serpentinite-derived soils must be kept adequately wetted or covered when material is not being added to or removed from the pile. Salvaged serpentine topsoil shall be lightly wetted at the

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<sup>30</sup> Final Regulation Order – Asbestos Airborne Toxic Control Measure for Construction, Grading, Quarrying, and Surface Mining Operations. California Code of Regulations Title 17, Section 93105

surface only to the extent required to control dust emissions. Care shall be taken to not over-water topsoil piles. Salvaged serpentine topsoil shall not be covered.

- Equipment must be washed down before moving from the work limits onto a paved public road or adjacent work areas.
- Visible track-out on the paved public road must be cleaned using wet sweeping or a HEPA filter equipped vacuum device within twenty-four (24) hours.

**Mitigation Measure HAZ-2.** The district and/or its contractor(s) shall use BMPs that will minimize the potential adverse effect of the Proposed Project to groundwater and soils from chemicals used during construction activities. The BMPs will include the following measures:

- Establish refueling and vehicle maintenance areas away from all drainage courses and design these areas to include secondary containment and to control runoff;
- Follow manufacturer's recommendations on use, storage, and disposal of chemical products used in construction;
- Avoid overtopping construction equipment fuel gas tanks;
- Provide secondary containment for any hazardous materials temporarily stored onsite;
- During routine maintenance of construction equipment, properly contain and remove grease and oils;
- Perform regular inspections of construction equipment and materials storage areas for leaks and maintain records documenting compliance with the storage, handling and disposal of hazardous materials;
- Properly dispose of discarded containers of fuels and other chemicals; and A spill prevention and countermeasure plan shall be developed that will identify proper storage, collection, and disposal measures for potential pollutants (such as fuel, grease, oils, etc.) used onsite. The plan will also require the proper storage, handling, use, and disposal of petroleum products.

Implementation of **Mitigation Measures HAZ-1** and **HAZ-2**, along with the district's existing practices and OSHA's existing regulations, would reduce any risk to the public or environment through the routine transport, use, or disposal of hazardous materials or foreseeable release of hazardous materials, not fully addressed by the RTMP FEIR, to a less than significant level.

- c) *Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?*

**No Impact.** There are no existing or proposed schools located within ¼-mile of the project site. No mitigation is required.

- 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.** California Government Code Section 65962.5(a)(1) requires the California Department of Toxic Substances to compile and update, as appropriate, a list of all hazardous waste facilities subject to corrective action, all land designated as hazardous waste property or border zone property, all information received by the Department of Toxic Substances Control

pursuant to Section 25242 of the Health and Safety Code on hazardous waste disposals on public land, all sites listed pursuant to Section 25356 of the Health and Safety Code, and all sites included in the Abandoned Site Assessment Program. These lists are commonly referred to as the Cortese List. The project site is not listed on any of the individual lists that comprise the Cortese List, and none of the lands bordering the site are on the Cortese List. No mitigation is required.

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

**No Impact.** The project site is not located within an airport land use plan or within 2 miles of a public airport or public use airport, and would not result in a safety hazard for people residing or working in the project area. No mitigation is required.

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

**No Impact.** The project site is not located within the vicinity of a private airstrip and would not result in a safety hazard for people residing or working in the project area. No mitigation is required.

- g) *Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*

**No Impact.** The project site is an existing open space area that does not provide any access for traditional emergency vehicles, such as police cars, ambulances, and fire trucks. After project completion, Liberty Gulch Road would provide district rangers and sheriff's deputies emergency small vehicle access (ATVs) to areas previously un-accessible. During construction activities equipment and materials would be delivered along one of two roadway networks (Bolinas-Fairfax Road and Sky Oaks/Bon Tempe/Bullfrog Roads) and the equipment and materials would not be stored or staged on these roads. Movement of equipment and materials along the roadway network would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. No mitigation is required.

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

**Less than Significant with Mitigation Incorporated.** Construction of the Proposed Project would occur within wildland areas of Marin County. The project setting of mature trees, brush, and grasslands provides a setting conducive to the ignition and spread of a wildland fire if appropriate measures are not taken during construction activities. The project area is generally classified as having a "high" fire risk by the County of Marin (2013b), which could expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Implementation of **Mitigation Measure HAZ-3** would reduce the impact to less than significant.

**Mitigation Measure HAZ-3.** The district and/or its contractor shall implement the following fire safety construction practices:

- The district or its contractors shall check in daily by phone for the NWS daily fire hazard rating for the area. On days when the fire hazard rating is "Very High" or "Critical", use of

two-stroke power tools, such as chainsaws and weed whips, are prohibited at the project site;

- There shall be no work on red flag days declared by Marin County;
- Earthmoving and portable equipment with internal combustion engines shall be equipped with a spark arrestor to reduce the potential for igniting a wildland fire;
- Appropriate fire suppression equipment shall be maintained at the construction site;
- Flammable materials shall be removed to a distance of 10 feet from any equipment that is either operating, a significant heat source, or which could produce a spark, fire, or flame.
- Construction personnel shall be trained in fire safe work practices, use of fire suppression equipment, and procedures to follow in the event of a fire including use of emergency radios provided by the district.

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ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>9. HYDROLOGY /WATER QUALITY. Would the project:</b>					
a) Violate any water quality standards or waste discharge requirements?			√		31
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local ground water table level (for example, the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?				√	31
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?				√	31
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.				√	31
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?				√	31
f) Otherwise substantially degrade water quality?				√	31
g) Place housing within a 100-year flood-hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?				√	31, 32, 33
h) Place within a 100-year flood-hazard area structures which would impede or redirect flood flows?				√	31, 32, 33
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?			√		31, 32, 33
j) Inundation by seiche, tsunami, or mudflow?				√	31, 33

<sup>31</sup> Anderson, Dain (MMWD). Project Site Field Inspection. July 7, 2017.

<sup>32</sup> Federal Emergency Management Agency (FEMA). Flood Insurance Rate Map (FIRM), Marin County, California and Incorporated Areas, Flood Hazard Rate Map Community Panel No. 06041C0453D. May 24, 2009.

<sup>33</sup> Marin County. *Countywide Plan*. November 6, 2007



a) *Would the project violate any water quality standards or waste discharge requirements?*

***Less Than Significant Impact.***

Construction. During construction, water quality could be affected by erosion from grading and earthmoving operations, a release of fuels or other chemicals used during construction, or a release of materials generated during demolition and construction. Grading and earthmoving would expose soil during construction and could result in erosion, with excess sediments carried in stormwater runoff to adjacent drainages. Stormwater runoff from temporary on-site use and storage of vehicles, fuels, wastes, and building materials could also carry pollutants into the combined sewer system if these materials were improperly handled.

The federal Clean Water Act prohibits discharges of stormwater from construction projects unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. Because the project is more than one acre it is subject to the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, NPDES No. CAS000002) which require implementation of a Stormwater Pollution Prevention Plan (SWPPP). A SWPPP contains pollution source identification and a process for implementing best management practices to ensure stormwater leaving the construction site is in compliance with water quality standards.

Post-Construction. The existing and proposed network of roads and trails on Azalea Hill does not include operations or activities that would violate any water quality standard nor are there discharge requirements associated with its operation. The project site is located in the Lagunitas Creek Watershed, which has an established Total Maximum Daily Load (TMDL) for fine sediment and habitat enhancement per the S.F. Bay RWQCB,<sup>34</sup> primarily to conserve listed populations of coho salmon, steelhead, and California freshwater shrimp. Runoff from the project site flows into Alpine Lake via Bon Tempe Creek or smaller unnamed tributaries. Alpine Dam, which created Alpine Lake, traps sediment delivered from the project site before it enters Kent Lake, which drains to salmonid bearing portions of Lagunitas Creek. Nevertheless, a primary purpose of the Proposed Project, and the overarching RTMP is to reduce sedimentation to creeks and reservoirs – a long term beneficial impact. Overall, the Proposed Project would save an estimated 4,377 cubic yards of sediment over 20 years from entering Alpine Lake.

Potential construction and post-construction related impacts to water quality associated with the Proposed Project were addressed in the RTMP FEIR which included implementation of BMPs consistent with the framework required by Order 2009-0009-DWQ. More specifically, **Mitigation Measures 3.1-B.1, 3.1-B.4, 3.1-B.5, 3.1-B.6, 3.1-B.8, 3.1-B.9, 3.1-B.11, 3.1-B.12, and 3.2-H.9** would be implemented as part of the Proposed Project to reduce impacts to water quality and waste discharge to a less than significant level. Therefore, no additional mitigation is required.

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<sup>34</sup> Lagunitas Creek Watershed Sediment TMDL, Final Order R2-2014-0027, approved by the California State Water Resources Control Board on November 18, 2014 and by the Office of Administrative Law on March 17, 2015.

- b) *Would the project substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local ground water table level (for example, the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?*

**No Impact.** The Proposed Project does not include groundwater withdrawals or elements that would change the pattern or rate of groundwater flow or recharge. The Proposed Project would result in a smaller footprint of compacted surfaces than currently exists in the area through the decommissioning of non-system roads and trails, and the improved parking lot would remain a permeable surface. No mitigation is required.

- 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, in a manner which would result in substantial erosion or siltation on- or off-site?*

**No Impact.** One of the project's primary goals is to minimize erosion and sedimentation from the site. Under existing conditions, the old, failed or failing stream crossings constructed on Liberty Gulch Road continue to deposit sediment into Alpine Lake. The Proposed Project includes improvements to stream crossings but does not include alteration of existing drainage patterns which would result in substantial erosion or siltation. Small equipment (i.e. mini-excavators, "bobcat" sized skid-steers or track loaders, motorized wheelbarrows, etc.) would be used to upgrade the creek crossings, transport locally harvested materials (i.e. rock and dirt) from one location to another, and to re-shape the road where necessary to reduce erosion and siltation. The approach used to restore the stream channels would be "light on the land." In other words, instead of trying to do full landform restoration, the work would be the minimum to correct the existing erosion issues. Simply employing hand work at the creek crossing sites would not adequately address the potential erosion issues from the stream crossings (an estimated 610 cubic yards<sup>35</sup> needs to be removed and disposed of in a manner that would not create erosion), even if the route was not proposed for adoption. In part, drainage patterns would be modified to some extent by upgrading or rerouting existing roads and trails, and by decommissioning other roads and trails. Where roads and trails are planned for decommissioning, old stream fills would be removed to return the stream to its historic bed. This is a beneficial impact of the project. The project would create a more natural runoff pattern where water would tend to flow downslope in a dispersed manner, rather than being concentrated in road and trail related ditches and gullies. This would slow runoff to streams and would decrease the potential for erosion. No mitigation is required.

- d) *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 substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site.*

**No Impact.** The project includes minor modifications to stream crossings and localized grading at the Azalea Hill Parking and along proposed routes to improve drainage patterns. The existing drainage pattern and course of each stream will not be modified or substantially altered. The

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<sup>35</sup> 610 cubic yards converts to 123,204 gallons, or roughly 24,640 five gallon buckets of earth to be moved.

Proposed Project will retain the current alignment of existing drainage features (creeks, streams, drainages). Furthermore, none of the proposed actions will substantially change or redirect flow in a manner which would cause flooding or increases in the rate of run-off on or off-site. Trail decommissioning and subsequent revegetation will improve soil conditions and retention of run-off. No mitigation is required.

- e) *Would the project create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff?*

**No Impact.** As noted above, the Proposed Project would reduce sedimentation from road and trail related run-off (pollution), result in a smaller footprint of compacted surfaces, and create a more natural runoff pattern, all of which would reduce storm water flows emanating from the project area. Furthermore, the Proposed Project is subject to the Design Standards and BMPs in the RTMP, in part which require roads and trails to be “storm-proof,” or have the capacity to handle 100-year storm events. All the bridges and puncheons would be clear span, above the top of bank, so would not impede flows during storm events. Overall, the Proposed Project would not contribute runoff that would exceed the capacity of existing drainage systems or result in additional sources of polluted runoff. No mitigation is required.

- f) *Would the project otherwise substantially degrade water quality?*

**No Impact.** A major project objective is to improve storm water flowing from the Azalea Hill area that discharges into creeks and Alpine Lake by reducing the potential for erosion. As discussed under item 9a and 9e (above) the project would improve water quality improving natural drainage processes and reducing the likelihood of erosion. Significant amounts of horse manure would have the possibility of substantially degrading water quality. However, the visitor census conducted in 2012-13 (MMWD, 2013) did not record substantial equestrian use during the surveys even though the existing route is open to horses. Of the total number of visitors surveyed, less than one percent (0.4%) were equestrians. The majority of equestrian use was focused near the Marin Stables. Subsequent user surveys completed in 2018 around Azalea Hill did not identify a single equestrian user. While it is possible that equestrians would use Liberty Gulch Road or the Azalea Hill Trail after they are upgraded, and horse manure on the routes could be deposited, the amount of equestrian use and subsequent manure is expected to be very limited and negligible. No mitigation is required.

- g) *Would the project place housing within a 100-year flood-hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map*

**No Impact.** The project site is located on the Federal Emergency Management Agency (FEMA) Flood Hazard Boundary Map for Marin County, California and Incorporated Areas and within a Zone X Flood Zone. Zone X is defined as being outside of the 0.2% annual chance floodplain (500-year floodplain) and therefore outside the 100-year flood hazard area. Furthermore, the project does not include the placement of housing within a 100-year flood-hazard area. No mitigation is required.

- h) *Would the project place within a 100-year flood-hazard area structures which would impede or redirect flood flows?*

**No Impact.** The project site is located on the Federal Emergency Management Agency (FEMA) Flood Hazard Boundary Map for Marin County, California and Incorporated Areas and within a Zone X Flood Zone. Zone X is defined as being outside of the 0.2% annual chance floodplain

(500-year floodplain) and therefore outside the 100-year flood hazard area. Furthermore, the project does not include the placement of structures within a 100-year flood-hazard area. No mitigation is required.

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

**Less Than Significant.** There are no levees or flood control structures within or adjacent to the project area. Therefore, the Proposed Project would not expose people or structures to a significant risk of loss, injury, or death as a result of levee failure.

Bon Tempe Dam is located above the project area and Alpine Lake. Although the Proposed Project does not include the placement of structures that would not increase the risk of loss, as a result of dam failure, portions of the Proposed Project would be susceptible to inundation if, in the unlikely event, Bon Tempe Dam failed. For example, the proposed Class IV road along Alpine Lake is located directly north and down gradient of Bon Tempe Dam. The district manages and maintains Bon Tempe Dam in accordance with the requirements set forth by the Division of Safety of Dams which includes ongoing monitoring (piezometers and flow rate), topographic surveys, and inspections to ensure performance and safety. In the event that monitoring suggests an impending or imminent failure, the district would execute the Emergency Action Plan for Bon Tempe Dam. Through this process, the district would have the authority to close Liberty Gulch road to avoid exposure of people to injury, loss, or death. Given the ongoing monitoring efforts at Bon Tempe Dam and potential to evacuate Liberty Gulch in the unlikely scenario that Bon Tempe Dam fails, the impact is considered less than significant.

- j) *Inundation by seiche, tsunami, or mudflow?*

**No Impact.** A portion of the project site is adjacent to Alpine Lake which, theoretically could be subject to a seiche. However, the length of available fetch across the lake surface and predominant wind patterns make inundation of the proposed routes by seiche highly unlikely. Furthermore, as part of the Proposed Project, the existing "fishing access" trail would be rerouted several feet up the hill, away from the lake, reducing the potential for inundation by seiche to an extremely low level. The project area is situated at a minimum elevation of 646-feet above mean sea level, and therefore would not be susceptible to a tsunami. Also, the project area is not downstream of an active or known potential mudflow area. Implementation of the Proposed Project would not alter the likelihood of a seiche, tsunami, or mudflow occurring. No mitigation is required.

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ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>10. LAND USE/PLANNING. Would the project:</b>					
a) Physically divide an established community?				√	36, 37
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?				√	36, 37, 38
c) Conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan?				√	36

a) *Would the project physically divide an established community?*

**No Impact.** The Azalea Hill project area is set within the larger Mt. Tamalpais watershed, which totals approximately 18,600-acres. The entire watershed is undeveloped open space and there is no community (defined as residential and/or commercial development) situated on any portion of the watershed. No mitigation is required.

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

**No Impact.** The project site is designated by the Marin Countywide Plan as Open Space (OS), and is within the Open Area (OA) zoning district. The Proposed Project would result in some existing roads/trails being realigned, some non-system trails being decommissioned, and the installation of puncheons and bridges over drainages and creeks, with the overarching goal of reducing erosion and sedimentation from the site. No aspect of the Proposed Project would conflict with the Countywide Plan’s land use designation of Open Space or the Marin County’s Open Area Zoning district. No mitigation is required.

The project area is included in the district’s RTMP, which covers the entire 18,600-acre Mt. Tamalpais watershed. The district adopted the *Mt. Tamalpais Watershed Road and Trail Management Plan* in 2005. The RTMP is a both a description of the official system of roads and trails and a detailed work plan on how to manage the roads and trails for the next quarter

<sup>36</sup> Anderson, Dain (MMWD). Project Site Field Inspection. July 7, 2017

<sup>37</sup> Marin County. *Countywide Plan*. November 6, 2007

<sup>38</sup> Marin County. *Municipal Code, Title 22, Development Code*

century. It also serves as a guide to further the protection of water quality in creeks and reservoirs, further the protection of environmentally sensitive habitats and special-status species, and minimize road and trail related impacts on the Mt. Tamalpais watershed.

The goals of the Plan are:

1. *To improve water quality and minimize sediment into the creeks and reservoirs;*
2. *To reduce the impact of the road and trail network on wetlands, riparian areas, other environmentally sensitive habitats and special-status plant and animal species; and*
3. *To reduce the impact of the road and trail network on the Watershed's natural ecological functions.*

Azalea Hill is called out in Chapter 2 of the plan as an area proposed for changes<sup>39</sup>. Azalea Hill Road is proposed to be converted to a trail, mainly to keep cyclists from continuing beyond the road and down onto the trail, or worse, creating new trails that damage the environment and stress limited enforcement resources. In addition to being a dead end, other undesirable effects include its steepness, the presence of special-status plant species and erosive serpentine soils. Azalea Hill Trail is proposed for a reroute because it is too steep and gullied in areas, passes through erosive serpentine soils in other areas and through a wetland at the bottom of the trail (a new creek crossing would be needed to avoid the section that currently runs through the wetland). Once amended to include revisions to the RTMP, the Proposed Project would be consistent with the Plan. No mitigation is required.

- c) *Would the project conflict with any applicable Habitat Conservation Plan or Natural Community Conservation Plan?*

**No Impact.** The project area is not part of or near lands subject to an existing Habitat Conservation Plan or Natural Communities Conservation Plan.

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<sup>39</sup> Section 2.1.2 – Changes to the Old Road and trail System and Table 2.4 – Proposed Changes to the Road and Trail System on the Mt. Tamalpais Watershed.

ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>11. MINERAL RESOURCES. Would the project:</b>					
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?				√	40, 41
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?				√	40, 41

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 California Legislature enacted the Surface Mining and Reclamation Act (SMARA) in 1975 to address the need for a continuing supply of mineral resources, and to prevent or minimize the negative impacts of surface mining to public health, property, and the environment. SMARA requires the California Department of Conservation (CDC), CGS, to conduct Mineral Land Classification surveys. These surveys designate land areas, such as mineral resources zones or aggregate resource zones, depending on the type of resources identified in the area. The CGS has mapped aggregate availability in the state, and no aggregate resource zones have been identified in the project area or surrounding the project area. No mitigation is required.

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 Marin Countywide Plan, adopted in 2007, does not identify the project area as a locally important mineral resource site. No mitigation is required.

<sup>40</sup> Anderson, Dain (MMWD). Project Site Field Inspection. July 7, 2017

<sup>41</sup> Marin County. *Countywide Plan*. November 6, 2007



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ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>12. NOISE. Would the project result in:</b>					
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies?				√	42, 43
b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?			√		42, 43
c) Substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?				√	42
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?			√		42
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?				√	42, 44
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?				√	42, 44

- a) *Would the project result in exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies?*

**No Impact.** The short-term noise that would be generated during project construction is discussed in 11.d below. Post construction, use of the area and any associated noise generation with that use would not change from current levels. No mitigation is required.

- b) *Would the project result in exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?*

**Less than Significant Impact.** Ground borne vibration or noise is typically associated with earth moving activities or various types of pile driving; both are construction related activities. Depending on soil type, ground borne vibration can be generated from heavy equipment moving over large expanses of unpaved earth. Typically, most ground borne vibration and noise dissipate rapidly as the distance from the source increases. There are no structures that

<sup>42</sup> Anderson, Dain (MMWD). Project Site Field Inspection. July 7, 2017

<sup>43</sup> Marin County. *Municipal Code, Chapter 6.70, Loud and Unnecessary Noises.*

<sup>44</sup> Marin County. *Countywide Plan.* November 6, 2007

house residents or workers within ¼-mile of Azalea Hill, which is well beyond a distance over which ground borne vibration or noise would be perceptible. No mitigation is required.

**Construction.** Most of the work involved in re-routing trails and decommissioning non-system trails would be accomplished using hand labor and tools. As noted on **Figure 3**, there are select locations where the decommissioning work would involve the use of small equipment (similar to Bobcat branded tractors and excavators). Additionally, small equipment would be used to construct the footings for the bridges, re-routing and storm-proofing Liberty Gulch Road and re-grading the parking lot. It is projected that the work involving the use of small power equipment would require no more than 800-hours over the overall construction of the Proposed Project. Further, the use of small power equipment would be spread over several years in all likelihood, since project implementation is closely tied to grant and similar off-budget resources. All work would be conducted during daylight hours, and access by non-construction personnel would be limited (for assurance of visitor safety) and at most of brief duration. As such, exposure to protracted periods of ground borne vibration or noise would be very limited, if at all. No mitigation is required.

**Operation.** After full implementation of the Proposed Project, there would be no on-site source of activities that would generate ground borne vibration or noise. No mitigation is required.

- c) *Would the project result in substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*

**No Impact.** The project area is part of the 18,600-acre Mt. Tamalpais watershed, which except for routine maintenance activities, is generally devoid of urban noise influences. The Proposed Project is limited to re-routing of existing open space trails, decommissioning of non-system trails, and general open space restoration activities. No aspect of the Proposed Project would result in activities or operations that would include new or additional sources of noise when compared to the existing conditions. No mitigation is required.

- d) *Would the project result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*

**Less than Significant Impact.**

**Construction.** As noted, most of the work to implement the Proposed Project would be accomplished with manual labor and hand tools. Small heavy equipment would be used to decommission select locations of non-system road and to construct footings for the bridges, reroute and stormproof Liberty Gulch Road and re-grade the parking lot. During use of the small equipment, there would be noise generated that would exceed ambient levels for the area.

The evaluation of project construction noise is based on typical noise level emissions. The Federal Highway Administration (FHWA) Construction Noise Handbook includes a listing of typical noise levels for construction activities. Average noise levels for the types of construction equipment expected on site are:

- Compressor – 78 dBA @ 50 feet
- Mini Excavator – 85 dBA @ 50 feet
- Medium Excavator – 85 dBA @ 50 feet
- Small Dozer – 83 dBA @ 50 feet

- Roller Compactor – 74 dBA @ 50 feet
- Pickup truck – 75 dBA @ 50 feet

This above information is an average value; typically the magnitude of construction noise emission varies over time because construction activity is intermittent and power demands on construction equipment (and the resulting noise output) are cyclical.

Section 6.70.030(5) of the Marin County Municipal Code establishes limitations on the hours of construction as a means of ensuring a minimum of noise generation associated with construction activities.

- a. *Hours for construction activities and other work undertaken in connection with building, plumbing, electrical, and other permits issued by the community development agency shall be limited to the following:*
  - i. *Monday through Friday: 7 a.m. to 6 p.m.*
  - ii. *Saturday: 9 am to 5 pm*
  - iii. *Prohibited on Sundays and Holidays (New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.)*

Section 6.70.030(5)(c)(ii) establishes a “*Special exceptions to these limitations may occur for*” “*Construction projects of city, county, state, other public agency, or other public utility.*”

The nearest habitable structure to the Azalea Hill area is the district-owned Sky Oaks Ranger Residence, a distance of more than ½ -mile. The most probable user group who could be impacted by temporary and intermittent construction noise would be trail users who frequent the Azalea Hill area. However, Azalea Hill is part of the larger 18,600-acre Mt. Tamalpais watershed which affords considerable alternative recreational trail areas should users experience impact levels deemed personally unacceptable, but which do not exceed County-established standards for construction activities.

The compliment of power equipment expected to be used for the project’s construction coupled with the District’s intent to conform to the construction hour limitations outlined by Marin County, and the fact that active construction areas would be closed to watershed users, would ensure that any increase in the ambient noise level of the area would be minimal and of short duration. No mitigation is required.

Post-Construction. Following completion of project construction there would be no noise generated by the project that would differ from current conditions. No mitigation is required.

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

**No Impact.** Azalea Hill and the surrounding area is not located within an airport land use plan, within two miles of a public use airport. Additionally, the Proposed Project does not include housing or other facilities that would harbor employees or residents. No mitigation is required.

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

**No Impact.** Azalea Hill and the surrounding area is not located within the vicinity of a private airstrip. Additionally, the Proposed Project does not include housing or other facilities that would harbor employees or residents. No mitigation is required.

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ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>13. POPULATION/ HOUSING. Would the project:</b>					
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?				√	45,46
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?				√	45, 46
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?				√	45, 46

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

**No Impact.** The Proposed Project is limited to re-routing of existing open space trails, decommissioning of non-system trails, and general open space and habitat restoration activities. The Proposed Project does not include the construction of housing units nor changes to public road or utility systems that in turn would induce any population growth. No mitigation is required.

b, c) *Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?*

**No Impact.** There is no housing on, nor population inhabiting the Azalea Hill area, and as such the Proposed Project would not displace people or housing. No mitigation is required.

<sup>45</sup> Anderson, Dain (MMWD). Project Site Field Inspection. July 7, 2017

<sup>46</sup> Marin County. *Countywide Plan*. November 6, 2007

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ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>14. PUBLIC SERVICES. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or need for new or physical 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:</b>					
a) Fire protection?				√	47, 48
b) Police protection?				√	47, 48
c) Schools?				√	47, 48
d) Parks?				√	47, 48
e) Other public facilities?				√	47, 48

a-e) *Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or need for new or physical 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 public services including fire protection police protection, schools, parks, or other public facilities?*

**No Impact.** The Proposed Project is limited to re-routing of existing open space trails, decommissioning of non-system trails, and general open space and habitat restoration activities. The Proposed Project does not include the construction of any structures or facilities, nor include housing that might generate additional demands on public schools or would require a net increase in public services. Furthermore, the adoption and conversion of the Liberty Gulch Road, and the addition of improved trail marker signage, would improve ranger patrol and emergency response in the area. No mitigation is required.

<sup>47</sup> Anderson, Dain (MMWD). Project Site Field Inspection. July 7, 2017

<sup>48</sup> Marin County. *Countywide Plan*. November 6, 2007

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ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>15. RECREATION. Would the project:</b>					
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?		√			49
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?		√			49

- 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?*

**Less than Significant Impact with Mitigation Incorporated.** The Azalea Hill project area is used for passive recreation and would be available for passive recreation activities during and after project implementation. Adopting and converting the existing Liberty Gulch Road would provide an additional route for recreationists in the area with a primary goal of improving connectivity in the area for all users, District staff, emergency response personnel and recreationalists (hiker, bicyclists and equestrians). This additional route would in part, reduce the recreational demand on degraded areas of Azalea Hill thereby allowing those areas to be restored to natural habitat.

Existing recreational facilities within the project area include the Azalea Hill parking lot, various parking lots and restrooms accessible through the Sky Oaks Watershed entrance, and the existing road and trail infrastructure. The Proposed Project would improve, yet maintain existing parking capacity at Azalea Hill, and would not increase the number of parking spaces available for users at other locations within the watershed. Therefore, the Proposed Project itself will not introduce a direct increase in visitor capacity within the project area. As described below, potential impacts to recreational facilities are primarily associated with the redistribution and increase of visitors and potential impacts to adopted routes and adjacent biologically sensitive areas (serpentine chaparral, wetlands, seeps, springs, etc.).

<sup>49</sup> 2012-2013 Mt. Tamalpais Visitor Use Census and Survey. Prepared by Alta Planning+Design. Available at: <https://www.marinwater.org/357/Mt-Tamalpais-Visitor-Use-Census-and-Survey>

Construction:

While some portions of the project area may be closed during construction, between those areas that remain open on Azalea Hill and the remainder of the 18,600-acre Mt. Tamalpais watershed, there would be an abundance of alternatives to offset any temporary closures in the project area. No mitigation is required.

Operation:

The Azalea Hill region sits at the junction of two distinct recreational regions within the watershed: the “Lakes” area and the more remote “Pine Mt.” area, and is currently used by recreationalists as a connector between the two. Visitors have limited choices in traversing the project area: (1) the existing steep and braided Azalea Hill Trail that goes through sensitive serpentine habitats, (2) the more gradually sloped, non-system Liberty Gulch Road, and (3) the Bolinas-Fairfax Road. Cyclists and district patrol vehicles cannot use the Azalea Hill Trail or Liberty Gulch Road and are limited to Bolinas-Fairfax Road. Even though the Liberty Gulch Road is a non-system route, it is included on privately developed trail maps and on digital platforms such as Google Maps, OpenStreetMap, and USATopo. As a result, Liberty Gulch Road is regularly used by hikers and cyclists.

The district’s visitor census of 2012-13 included Azalea Hill which averaged a peak of 57 visitors per two-hour count period. This is well below the East Peak, Phoenix Lake area, and Sky Oaks area which had the most visitor activity on the Watershed, averaging over 200 visitors per two-hour count period. For Azalea Hill, the majority of users (total 44) were bicyclists using Bolinas-Fairfax Road. Excluding cyclists traveling on the Bolinas-Fairfax Road, overall use within the Azalea Hill area was relatively low. It is possible that some of the cyclists (mountain bikers) would use the newly adopted Liberty Gulch Road instead of traveling along Bolinas Fairfax to reach the “Pine Mt.” area, however the proportion of mountain bikes versus road bikes was not recorded.

The district performed an additional assessment of user intensity within the project area between May 22 and June 4, 2018 using 24-hour motion triggered game cameras in order to obtain a peak-season long-day measure for project area specific roads and trails. Deployed cameras recorded users on the angler trail/Liberty Gulch route, Azalea Hill Trail, Meadow Club Road, and Pine Mt. Road facing Bolinas-Fairfax Road. Consistent with the 2012 census surveys, results confirmed relatively low use, peak visitor use on weekends, and an equal proportion of hikers and cyclists. No equestrians were observed. Average daily visits for all visitors for the Azalea Hill Trail and for the Liberty Gulch route were 2.4 and 3.1 respectively, spread evenly across the week, despite the Liberty Gulch trail not being a system route. Average daily visits for the Meadow Club Road and Pine Mt. Road were 55.2 and 49.5 respectively, however weekend use was much higher than mid-week for these two sites. It appears that the Meadow Club Road had much higher number of out and back visitors versus one way trips and accounting for that may reduce its average daily visit count relative to the other sites.

It is difficult to predict how project implementation will change visitor use patterns. Unofficial staff observations across the region and one formal nearby pre- and post-project visitor census have noted that new trail opportunities in the region often see an initial rise in use that declines to pre-improvement levels. It is expected that there will be a redistribution of users for

the overall area and an increase in use on Liberty Gulch and Azalea Hill routes. However, except for early increased visitor interest, the overall use will remain roughly the same across the three routes (i.e. relatively low use consistent with them being in a remote area).

Nevertheless, the Proposed Project could attract more visitors to the project area above those which are currently using Liberty Gulch Road or Azalea Hill Trail and potentially degrade existing recreational facilities which are composed of system roads, trails, and parking lots. **Mitigation measure BIO-10** will be implemented to track and control potential user impacts on district facilities through the implementation of edge-of-trail treatments, trail surface hardening, seasonal closures, monitoring, and enforcement. The following additional measure would be incorporated into the Proposed Project to reduce impacts to recreational facilities.

**Mitigation Measure REC-1.** The main trailhead at the upper Azalea Hill parking lot shall include interpretive signage (kiosk, etc.) that explains and illustrates the sensitive plants and communities on Azalea Hill, encourages their avoidance and protection, and identifies the importance of staying on system trails. Interpretive signage shall also be placed at the lower trailhead on Bullfrog Road for both the Azalea Hill Trail and the Liberty Gulch route. In both cases, signs should clearly indicate allowed use and direct bikes away from the Azalea Hill Trail.

**Mitigation Measure REC-2.** The survey required by **Mitigation Measure BIO-10**, shall also include an identification adaptive management actions to treat any deterioration in trail and road segments and parking lots serving the project area. The adaptive management actions shall be included in annual trail maintenance and operation activities to be performed by the district.

**Mitigation Measure REC-3.** On Liberty Gulch Road, speed calming features (e.g. signs, changes in elevation such as earthen speed bumps, lane narrowing, diagonal diverters using local logs or rocks, etc.) to reduce the downhill speed of bicyclists shall be constructed that integrate standard trail design guidelines (hiking, equestrian, biking) and a focus on safety. To discourage cycling on the Azalea Hill Trail bicycle deterrence elements (e.g. signs, abrupt changes in elevation that are difficult to roll over, horse friendly diverters or step-overs using local logs or rocks, etc.) shall be constructed. The effectiveness of these features shall be monitored to ensure they perform as designed in accordance with **Mitigation Measures BIO-10 and REC-2**.

**Mitigation Measure REC-4.** The District shall conduct focused patrols at Azalea Hill, similar to those it conducts for Project Restore, and document its patrol and enforcement activity in the Azalea Hill area and prepare a report on its findings after five years. The number of focused patrols shall be determined based on the illegal activity discovered or reported (the schedule of such patrols need to remain confidential). Findings of illegal activity, including failure to abide by permitted use on a route, failure to comply with speed limits, including when passing, and failure to keep out of closed areas, shall trigger corrective actions as described in **Mitigation Measure BIO-10**. These efforts shall continue until the desired outcome, compliance with District regulations preventing illegal activities, is achieved.

Implementation of **Mitigation Measures BIO-10**, in combination with **REC-1**, **REC-2**, and **REC-3**, and **REC-4** would reduce the potential for substantial physical deterioration of existing recreational facilities to a less than significant level.

- b) *Would the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*

***Less than Significant Impact with Mitigation Incorporated.*** The Proposed Project includes a recreational facility which, as described elsewhere in this document, may have an adverse physical effect on the environment during construction and operation.

The Proposed Project is part of the RTMP and will implement the mitigation measures identified in the RTMP FEIR. This IS/MND includes a range of additional mitigation measures that specifically address construction and operation related impacts of the Proposed Project on the environment including **BIO-1, BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, BIO-8, BIO-9, BIO-10, REC-2, and REC-3**. Operational impacts to the environment, associated with potentially higher use and changes in use patterns are specifically addressed with **Mitigation Measure BIO-10** which requires adaptive management and **REC-2** which requires assessment and maintenance activities. Implementation of the mitigation measures contained in this IS/MND would ensure that the Proposed Project would not have an adverse physical effect on the environment. No additional mitigations are required.

ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>16. TRANSPORTATION/TRAFFIC. Would the project:</b>					
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?				√	50, 51
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?				√	50, 51
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location, that results in substantial safety risks?				√	50, 51
d) Substantially increase hazards due to a design feature (for example, sharp curves or dangerous intersections) or incompatible uses (for example, farm equipment)?				√	50, 51
e) Result in inadequate emergency access?				√	50, 51
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?				√	50, 51

*a, b) Would the project conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit, or conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?*

**No Impact.** Vehicular access to the Azalea Hill area is available off of Bolinas-Fairfax Road at the Azalea Hill parking lot and from Bullfrog Road (for District vehicles only) (**Figures 1 and 6**).

<sup>50</sup> Anderson, Dain (MMWD). Project Site Field Inspection. July 7, 2017

<sup>51</sup> Marin County. *Countywide Plan*. November 6, 2007

Construction. Implementation of the Proposed Project would be periodic and likely span several years since it is dependent on funding from both the District and outside sources. At any one time the number of construction vehicles needed for the project would be minimal. Hand-tool work would likely be served by one or two crew trucks. During activities involving small heavy equipment it would be expected that 2-3 crew trucks and a lowboy truck to deliver the equipment to and from the site would be required. Access to the area would be divided between Bolinas-Fairfax Road and from Bullfrog Road. Bullfrog Road is an unpaved roadway on the Mt. Tamalpais watershed and is open only to District vehicles, and as such is not covered by any plan or performance standard.

The addition of at most 4 vehicles on any one day along Bolinas-Fairfax Road for a few days each of the next several years would not be discernible within the context of existing traffic volumes on the area's network. Typical construction days would tend to have construction traffic concentrated at the beginning and end of the workday. Development along the roadway network leading to the project site is low density residential. The project area's roadway network traffic volumes would not be marginally impacted by construction activities or traffic.

Because the construction period is expected to be periodic and span several years and is temporary, there would be no conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit. Further, there would be no conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways. No mitigation is required.

Operation. Following construction, the number and frequency of motor vehicle trips associated with district operation and maintenance of the Azalea Hill area would be unchanged from existing conditions. As described above, it is assumed that the total number of users may increase as a result of the Proposed Project and therefore potentially increase traffic leading to the trailheads and parking lots serving Azalea Hill. Given the Proposed Project will not increase capacity of parking areas serving the Azalea Hill area and that the overwhelming proportion of anticipated increase would be associated with users accessing the site via non-motorized modes of transportation, any increase in traffic would not be discernible within the context of existing traffic volumes on the area's network. No mitigation is required.

- c) *Would the project result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?*

**No Impact.** The Proposed Project is not adjacent to or beneath the flight path of any existing airports. No mitigation is required.

- d) *Would the project substantially increase hazards due to a design feature (for example, sharp curves or dangerous intersections) or incompatible uses (for example, farm equipment)?*

**No Impact.** The Proposed Project would decrease hazards to bicyclists that currently use Bolinas-Fairfax Road. As mentioned above in 16a-b, the Proposed Project is expected to redistribute bicyclists from the paved (bicycle/vehicle) route along Bolinas-Fairfax to the Liberty



Gulch Road. This will reduce the number of district vehicles and bicyclists traveling on Bolinas-Fairfax Road between the Sky Oaks Watershed turnoff and the parking lot at Azalea Hill and potential accidents. Users would still need to traverse Bolinas-Fairfax Road from the terminus of Liberty Gulch Road to the parking lot at Azalea Hill, however the length (and duration) of shared bicycle/vehicle use would decrease to just 0.3 miles of Bolinas-Fairfax road. The reduction in the number of bicyclists along Bolinas-Fairfax Road between Sky Oaks Watershed turnoff and the parking lot at Azalea Hill is expected to reduce hazards associated with incompatible or competing uses between bicyclists and vehicles. No mitigation is required.

e) *Would the project result in inadequate emergency access?*

**No Impact.**

Construction. Construction vehicles and material deliveries would utilize the existing roadway network on the watershed and along Bolinas-Fairfax Road to travel to and from the project site. There would be no material staging on any of the local public roadways; the project's construction would not impede the movement of emergency vehicles or otherwise hamper emergency response activities since there is currently no emergency access along the Proposed Project routes. The movement of construction-related vehicles along the roadway network leading to the project site would have no greater or lesser impact on the movement of emergency vehicles than would any other vehicle on the roadway network. No mitigation is required.

Operation. Following construction, the maintenance of the Azalea Hill area would be changed from the current pattern in that 4.4 miles of non-system roads and trails would be decommissioned and visitors would most likely use the rerouted Azalea Hill Trail or the adopted and converted Liberty Gulch Road. Furthermore, the adoption and conversion of the Liberty Gulch Road, and the addition of improved trail marker signage, would improve ranger patrol and emergency response in the area. No mitigation is required.

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

**No Impact.** The Proposed Project would reroute several existing open space roads and trails, decommissioning non-system roads and trails, and also include general open-space and habitat restoration activities. Additionally, the Proposed Project includes the amendment of the District's RTMP for the adoption and conversion of the Liberty Gulch Trail. No element of the Azalea Hill as it currently exists or as it would after full implementation of the Proposed Project would affect public transit. Equestrian, bicycle and hiking (pedestrian) facilities would be improved by the addition and conversion of the Liberty Gulch Road to a Class IV, or small vehicle road, and the reroute of the Azalea Hill Trail to a gentler, more sustainable grade. Furthermore, the performance (sediment reduction, habitat restoration and protection) of these "facilities" on Azalea Hill would be improved. Similarly, safety would be improved throughout the length of the route, speed calming features (changes in elevation (e.g. earthen speed bumps), lane narrowing, diagonal diverters using local logs or rocks, etc.) would be maintained or installed to reduce the downhill speed of bicyclists. Passing opportunities, lines of sight and horse-friendly tread surfaces would also be included throughout the design to improve user safety along the route.

The proposed amendment to the RTMP for Azalea Hill is consistent with the policies and guidelines of the RTMP. Furthermore, all other actions associated with the Proposed Project are consistent with the RTMP in that they: (1) strictly minimize road and trail related erosion into creeks and reservoirs, (2) reduce the impact of the road and trail network (both system and non-system trails) on environmentally sensitive habitats, and (3) reduce impacts on the watershed's natural ecological functions. Construction and operational impacts associated with the Proposed Project, all of which can be mitigated to a level of less than significant with implementation of "Best Management Practices" and "Environmental Protection Measures" identified in the RTMP (Chapter 3) and the mitigation measures identified throughout this IS/MND, would ensure the Proposed Project remains consistent with the RTMP. The Proposed Project is also consistent with the policies in the Marin Countywide Plan and Marin County's Congestion Management Program that encourage non-motor vehicle modes of travel. No mitigation is required.

ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>17. TRIBAL CULTURAL RESOURCES. 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:</b>					
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 section 5020.1(k)?			√		52
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 Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?			√		52

a, 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 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); or 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?*

**Less Than Significant.** As part of the tribal consultation process with Native American groups and individuals, as per CEQA (PCR section 21080.3.1), the district sent letters on January 26, 2017, to the Federated Indians of Graton Rancheria (FIGR) who are listed by the Native American Heritage Commission and who are identified as the California Native American tribe that is traditionally and cultural affiliated with the project area. Letters were sent to Greg Sarris, FIGR Chairperson, Gene Buvelot, FIGR member, and Buffy McQuillen, FIGR Tribal Heritage Preservation Officer (THPO). Included in the correspondence were the project description and project maps, with the request that the district be notified of any information or concerns about the project. On February 21, 2017 Dain Anderson, district Environmental Compliance Manager, received a letter from Buffy McQuillen requesting formal tribal

<sup>52</sup> DeBakker, Cassidy, M.A., McWaters, Josh, B.A., and Newland, Michael, M.A., Garcia and Associates, Cultural Resources Inventory and Evaluation Report for the Marin Municipal Water District Azalea Hill Restoration Project. August 2017.

consultation under the provisions of CEQA. On March 14, 2017 District personnel Dain Anderson and Nick Salcedo, Cassidy DeBaker of Garcia and Associates, and FIGR representatives Tim Campbell and Gene Buvelot met to discuss the details of the Proposed Project including topics such as, potential project alternatives, mitigation measures, project effects, and the results of the archaeological research and field efforts. On July 20, 2017, Cassidy DeBaker contacted Buffy McQuillen to follow up on the previous meeting held in March 2017. At that time, Buffy McQuillen stated that the tribe did not have any project-specific requests, however she would like to receive a copy of the cultural resources report for review. An electronic copy of the technical report was emailed to FIGR on September 5, 2017.

Based on the results of the cultural resources investigation and consultation with FIGR, no tribal cultural resources have been identified within the project area. In the event that Native American resources or prehistoric archaeological resources are identified during construction, the project would adhere to the measures and protocols described under Section 5b and 5d. No additional mitigation is required.

ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>18. UTILITIES/ SERVICE SYSTEMS. Would the project:</b>					
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?				√	53, 54
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction or which could cause significant environmental effects?				√	53, 54
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?				√	53, 54
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?				√	53, 54
e) 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?				√	53, 54
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?				√	53
g) Comply with federal, state, and local statutes and regulations related to solid waste?				√	53, 54

a-e) *Would the project: a) exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board, b) require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction or which could cause significant environmental effects, c) require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects, d) have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed, or e) 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?*

<sup>53</sup> Anderson, Dain (MMWD). Project Site Field Inspection. July 7, 2017

<sup>54</sup> Marin County. *Countywide Plan*. November 6, 2007

**No Impact.** The Proposed Project is limited to re-routing of existing open space trails, decommissioning of non-system trails, and general open space and habitat restoration activities. The Proposed Project does not include the construction of any structures or facilities that would require typical municipal services such as water, waste water collection and treatment, or storm water drainage systems. As such, implementation of the Proposed Project would have no negative effect on any utilities or service systems. No mitigation is required.

*f, g) Would the project be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs, and comply with federal, state, and local statutes and regulations related to solid waste?*

**No Impact.** Implementation of the Proposed Project would not yield any construction debris that would be delivered to area landfills. Furthermore, operation of the project would not result in additional solid waste generation. No mitigation is required.

ENVIRONMENTAL IMPACTS	Potentially Significant Impact	Potentially Significant Impact Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Sources
<b>19. MANDATORY FINDINGS OF SIGNIFICANCE. Does the project:</b>					
a) Have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?			√		
b) 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 the past projects, the effects of other current projects, and the effects of probable future projects.)			√		
c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?				√	

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

**Less Than Significant Impact.** The Proposed Project would amend the *Mt. Tamalpais Watershed Road and Trail Management Plan* for the Azalea Hill area of the watershed. There are several protected or special-status plant or animal species known or having the potential to occur within the project area and mitigation measures have been identified that would reduce project impacts to less than significant levels. Additionally, the project site does not include any structures or buried resources that would be considered an example of major periods of California history or prehistory. No further mitigation is required.

- 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 the past projects, the effects of other current projects, and the effects of probable future projects.)*

**Less Than Significant Impact.** The Proposed Project would generate a series of individual impacts that could be potentially significant, but can be mitigated to less than significant levels with mitigation measures outlined in this Initial Study. Cumulatively, those potential impacts after mitigation would not be expected to combine to generate a potentially significant effect for the project by itself or in combination with past or future projects in the area. No further mitigation is required.

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


**No Impact.** Construction and operation of the Proposed Project would not have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly. No further mitigation is required.



## Environmental Determination

On the basis of this initial evaluation, I find that although the Proposed Project could have a significant effect on the environment, there would not be a significant effect in this case because revisions to the Project have been made by or agreed to by the Project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

  
\_\_\_\_\_  
Signature

  
\_\_\_\_\_  
Date

Crystal Yezman  
\_\_\_\_\_  
Printed Name

Facilities & Watershed Division Manager  
\_\_\_\_\_  
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The following information sources were used in the preparation of this document and referenced throughout the Initial Study:

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# **Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan – Restoration of Azalea Hill**

**MMWD Mt. Tamalpais Watershed, Unincorporated Marin County**

**Initial Study/Mitigated Negative Declaration – Appendix A**

**Mt. Tamalpais Watershed Road and Trail Management Plan –  
Restoration of Azalea Hill – Amendment**

## **Proposed Amendments to Chapter 2 of the *Mt. Tamalpais Watershed Road and Trail Management Plan***

This document identifies the amendments to the Mt. Tamalpais Watershed Road and Trail Management Plan (Plan) for the Restoration of Azalea Hill. Because only a portion of the Plan is being amended, this document identifies the chapter and paragraph of the proposed changes and the associated deletions and additions as red ~~strikeout~~ (i.e. ~~strikeout~~) and red underlined (i.e. underlined) text.

### **Chapter 2: Developing the Official Road and Trail System**

#### **Page 2.8, Paragraph 5, Redundancy and Connectivity**

The District took a very conservative approach in adopting any new routes for route connectivity. This approach resulted in only a very few adoptions (just over 1% percent of the old system) of stable, low impact and relatively well-known trails. ~~No~~ Only one non-system roads ~~were~~ was adopted for use as a small vehicle road (Liberty Gulch Road). Before recommending a ~~trail~~ route for adoption, the District carefully considered each prospective route to see if it could possibly increase any undesirable effects on the Watershed. In some cases, the ~~trails~~ routes recommended for adoption were already signed by the District and received some sort of improvement work. In these cases, it is beneficial for the District to adopt these trails for good connectivity and to include them in the system for scheduled maintenance and patrol.

#### **Page 2.11, Chart, Determining the Future of the Road and Trail Network**

Add as a footnote to the chart:

Liberty Gulch Road is being adopted as a Class IV road (small vehicle, unpaved roads) and therefore is being considered a trail for the purposes of this flow diagram.

#### **Page 2.13, Paragraph 2, Changes to the Old Road and Trail System**

Noteworthy changes include the removal of redundant or unused roads in the vicinity of Peters Dam. Some other roads will be converted to Class IV, or small vehicle roads, to minimize erosion while still providing route connectivity. These include Grassy Slope Rd., Old Vee Rd., Lower Rocky Ridge, the southern portion of Concrete Pipe Rd., ~~and~~ Lower Eldridge Grade, and Liberty Gulch Rd. A few roads will be converted to trails. Azalea Hill Rd. will be converted to a trail, mainly to keep cyclists from continuing beyond the road and down onto the trail, or worse, creating new trails that damage the environment and stress limited enforcement resources. A noteworthy area of decommissioning is in the Upper Berry-Lagoon Road area,



primarily because of environmentally sensitive habitat concerns (serpentine soils), erosion and route redundancy that results in considerable search and rescue efforts. Most of the adoptions are on the periphery of the watershed and serve as established connectors to the near-by cities and towns. The decommissioning of Bald Hill Road and the end of Worn Springs Road, totaling approximately 0.15 miles, will be replaced with a new trail rerouted to a more stable location. No Only one non-system roads were was adopted, Liberty Gulch Road, to improve connectivity for all users between the lakes area and the Pine Mountain area.

**Page 2.17, Table 2.4, Non-System Routes to Become System - Adoptions**

Add to Table 2.4 the following line:

Name of Route	Existing Class: Road or Trail	1 <sup>st</sup> Level Action: System or Non-System	2 <sup>nd</sup> Level Action: Convert, Decom, Reroute or Adopt	Criteria for Decisions				Comments
				Water Quality	Redundant	Habitat	Cost	
<u>Liberty Gulch Rd</u>	<u>Road</u>		<u>Adopt 9,978 ft</u>	<u>X</u>				<u>Important connector, Improve drainage</u>

**Page 2.29, Table 2.5, Road Classifications on the Watershed**

Change the total miles for Class IV and the Total as follows:

Classification	Road Type	Characteristics	Miles
<b>Class I</b>	Paved Roads	High traffic volumes, year round access to critical facilities, main ingress and egress routes for the Watershed.	17.6
<b>Class II</b>	All Season Unpaved Roads	Receive regular use, typically have hardened surfaces, provide access to important water infrastructure and for important Watershed management.	44.2
<b>Class III</b>	Seasonal Unpaved Roads	Serves as emergency and recreational access. Typically, unsurfaced, narrower than Class I and II roads. Closed to vehicle traffic in the winter.	24.5
<b>Class IV</b>	Small Vehicle, Unpaved Roads	Primary use for patrol and route connectivity. Unsurfaced. Some sections only passable with small vehicles (i.e. ATV quads or small “bobcat” sized tractors). Limited truck and heavy vehicle traffic. Seasonal closures may apply.	<del>4.5</del> <u>6.5</u>

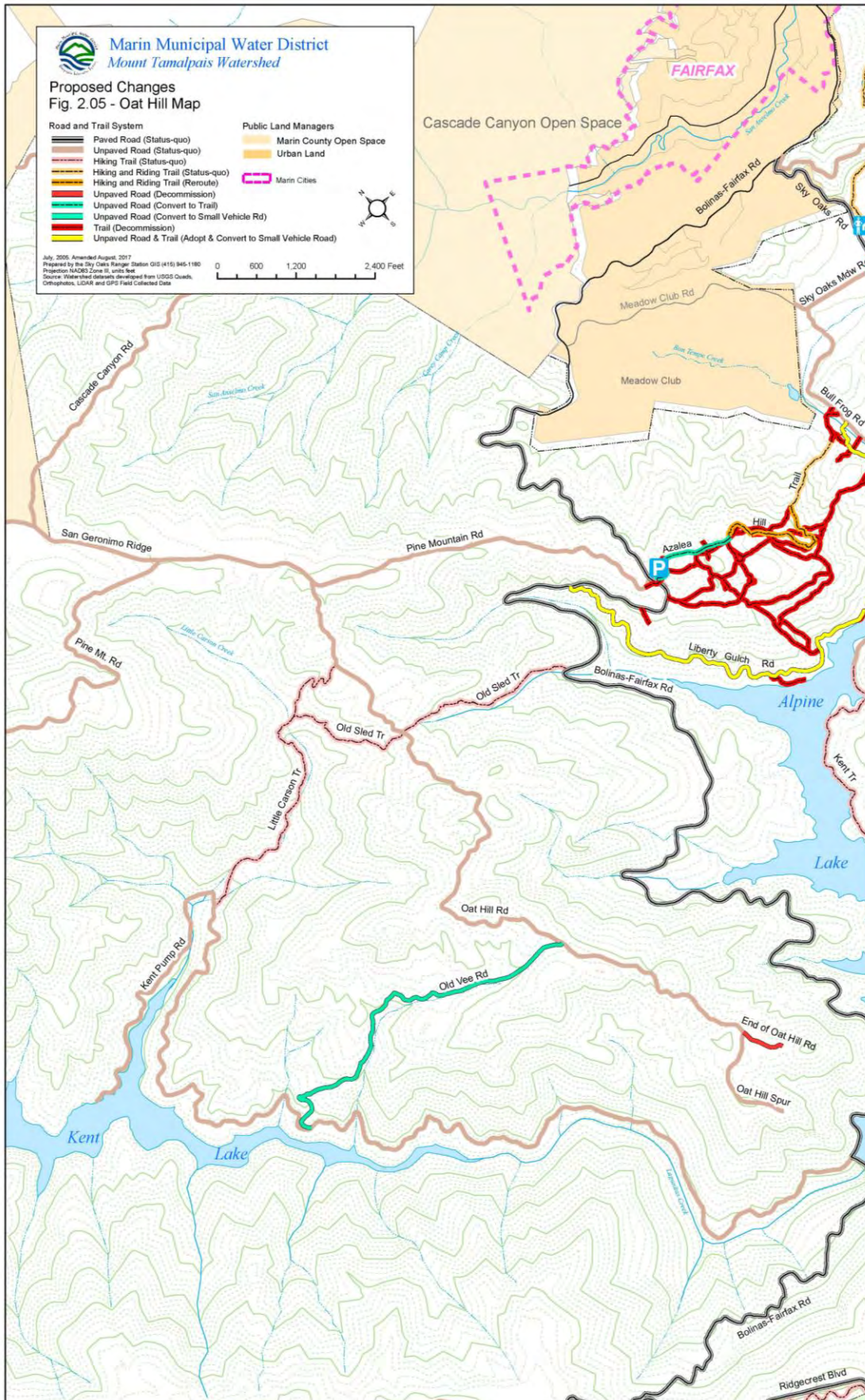
<b>Class V</b>	Restricted Roads	Roads with special use restrictions (e.g. FAA facility)	3.7
			<b>Total</b> <del>94.5</del> <u>96.5</u>

**Page 2.30, Table 2.6, Trail Classifications on the Watershed**

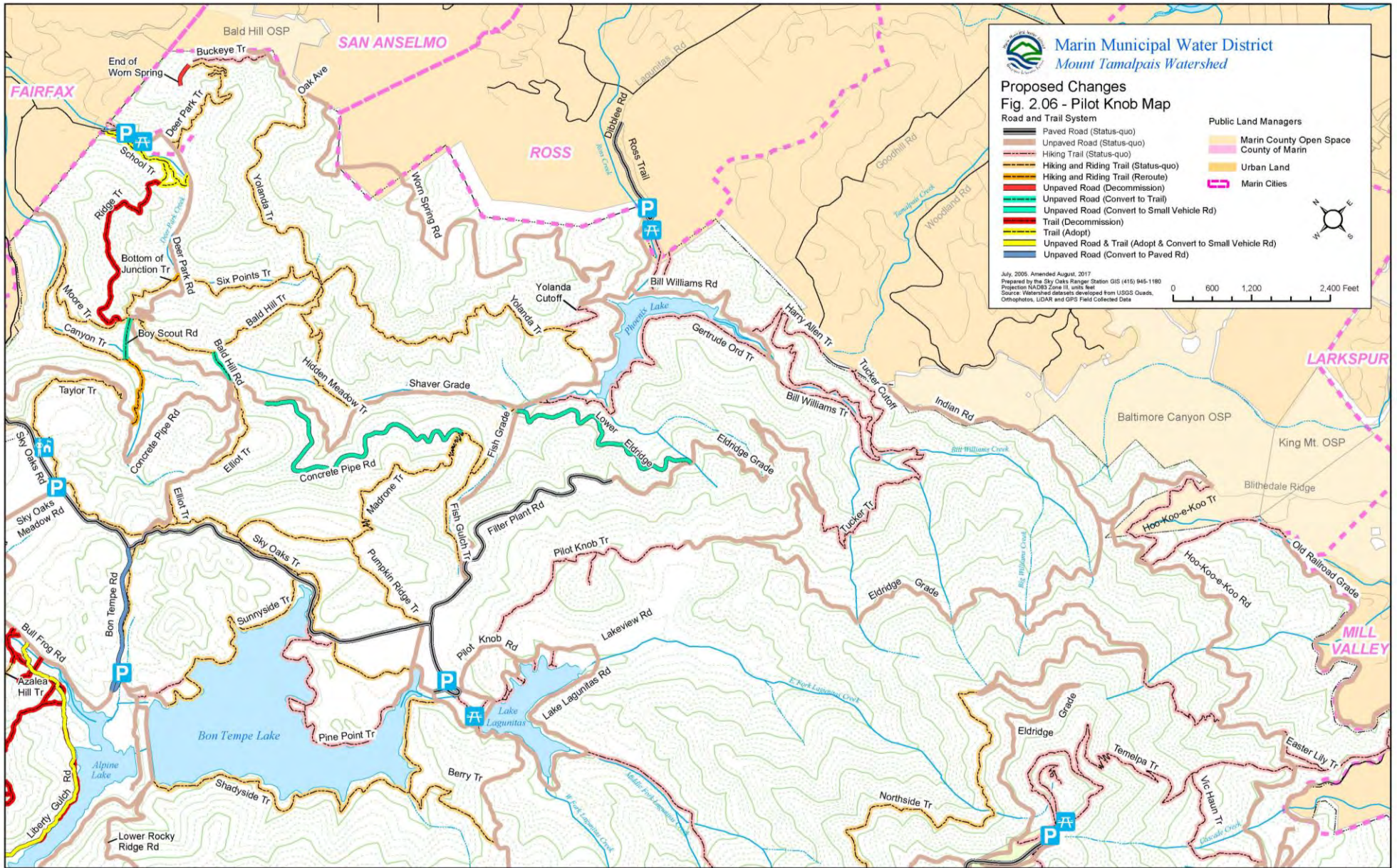
Change the total miles for Class VI and the Total as follows:

<b>Classification</b>	<b>Road Type</b>	<b>Characteristics</b>	<b>Miles</b>
<b>Class VI</b>	Equestrian Trails	Substantial infrastructure improvements required to support use. Seasonal closures may apply.	<del>17.8</del> <u>18.3</u>
<b>Class VII</b>	High Use Hiking Trails	Hikers only. High to medium level of use and maintenance. Can be an important trail connector. Infrastructure improvements consistent with use levels.	26.2
<b>Class VIII</b>	Moderate Use Hiking Trails	Hikers only. Medium to low level of use. Not an important trail connector. Little to no trail infrastructure improvements. Seasonal closures may apply.	11.8
<b>Class IX</b>	Backcountry Trails	Hikers only. Low level of use. Minor maintenance. Not important trail connectors. Rustic-style trail infrastructure improvements only. Typically farthest from parking areas and towns.	1.7
<b>Class X</b>	Reserved	This classification reserved for future use.	n/a
		<b>Total</b>	<del>57.5</del> <u>58.0</u>

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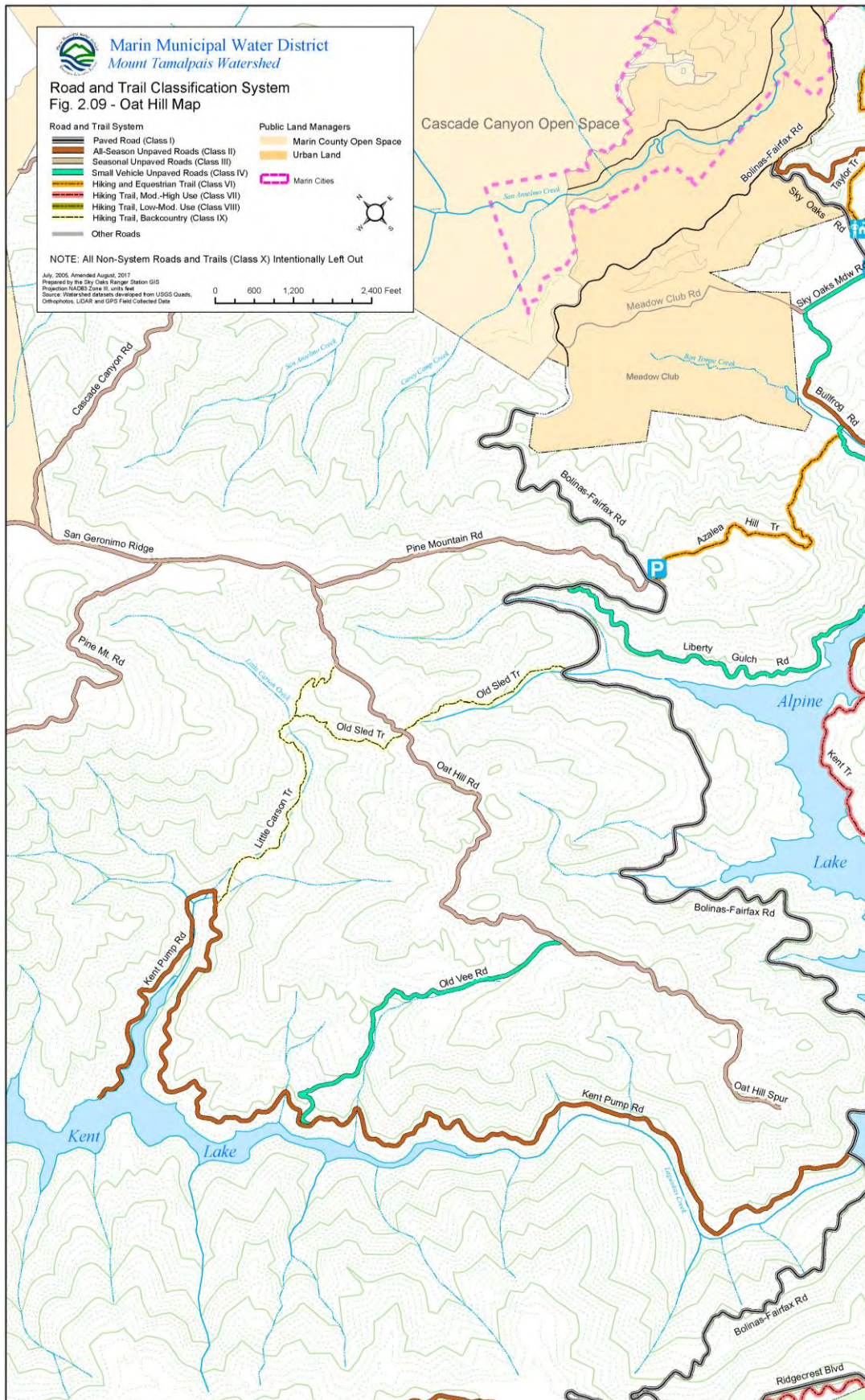


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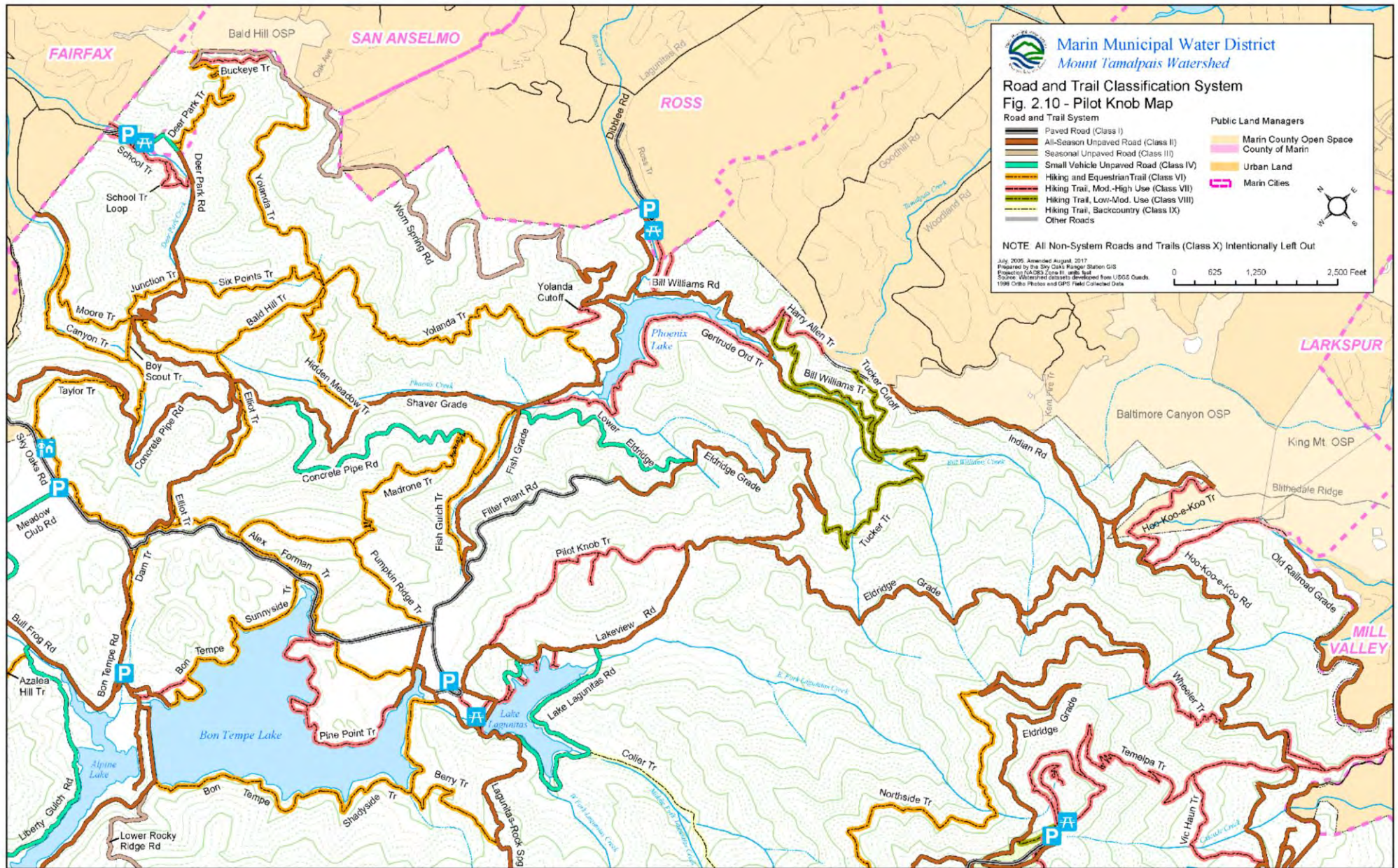
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**Page 2.33, Figure 2.09 Oat Hill Classifications**





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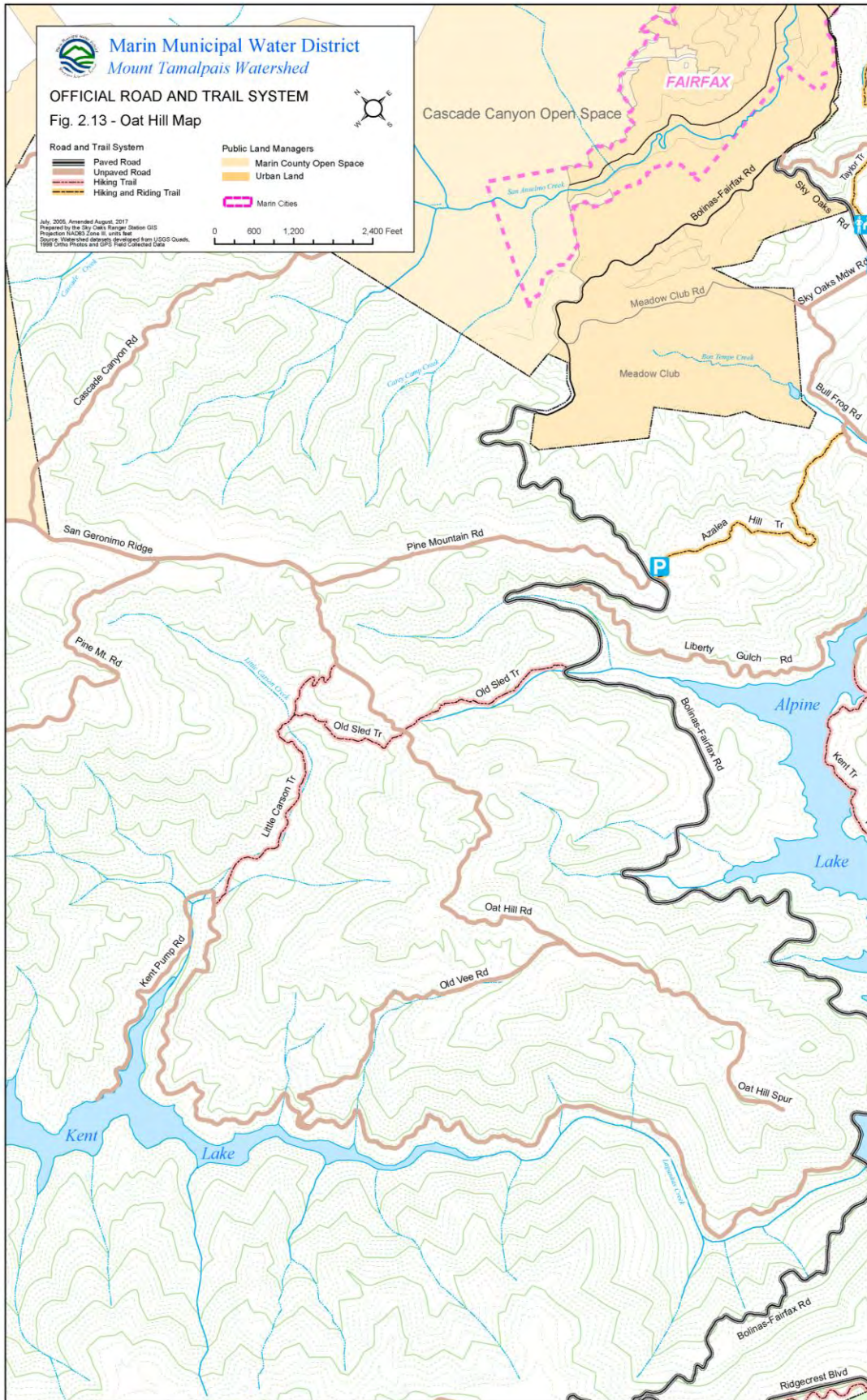
## **Page 2.39, 2.4 The Official System of Roads and Trails**

As a result of the process detailed above, the District developed this current plan for the officially recognized system of roads and trails on the Watershed. The official system of roads and trails, after the changes, will include ~ ~~91~~93 miles<sup>1</sup> of roads and ~ ~~57.5~~58 miles of trails. This amount is similar to the ~ 90 miles of roads and ~ 54 miles of trails identified by the District as part of the old road and trail system. However, consistent with some of the goals, objectives and assumptions in this Plan, it represents a reduction in the number of routes when compared to the ~ 100 miles of roads and ~ 110 miles of trails that were identified on the Watershed as part of this planning effort.

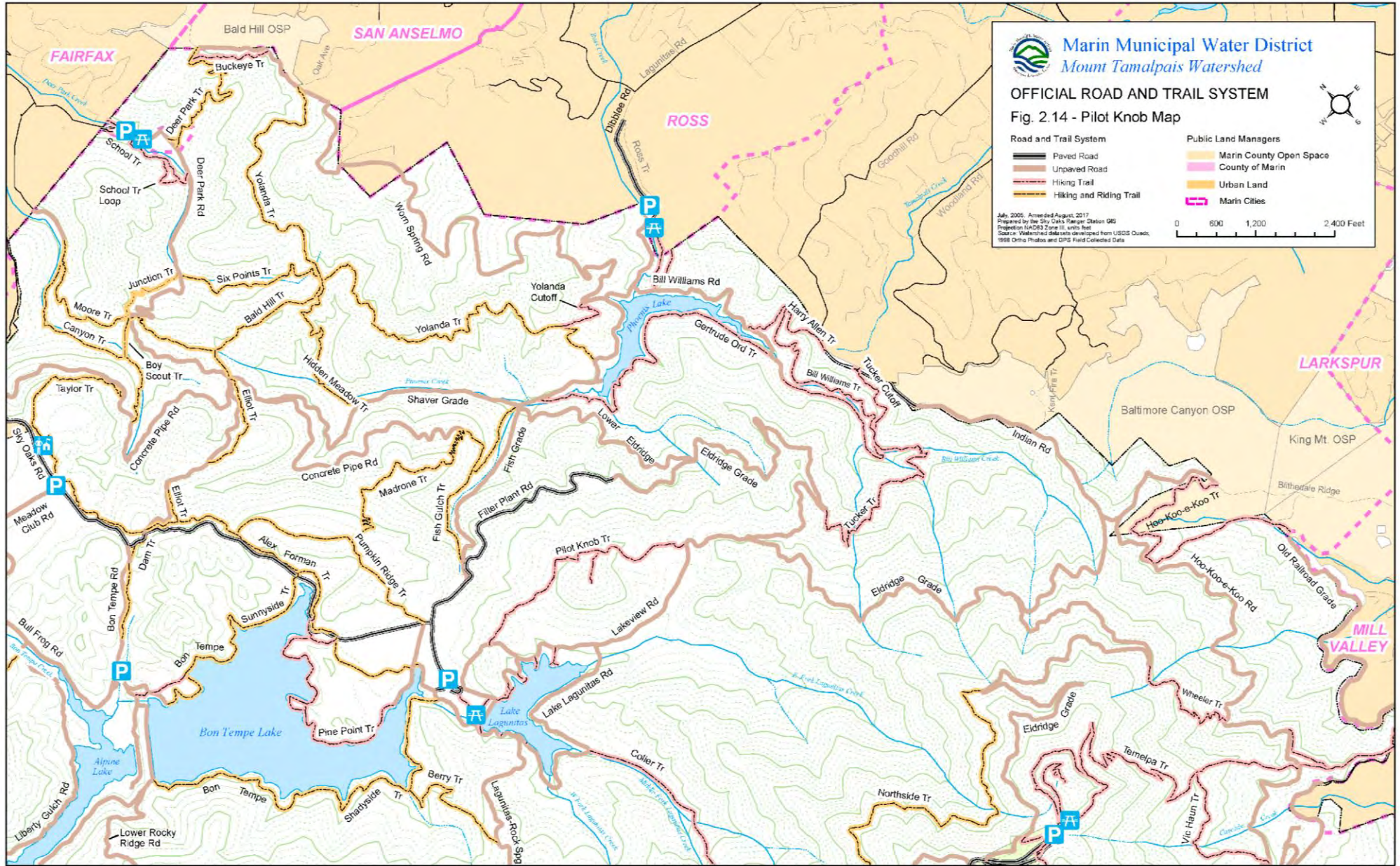
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<sup>1</sup> Does not include the 3.7 miles of "Restricted Roads," (Class V) which are not available to the general public for recreational use.

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# **Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan – Restoration of Azalea Hill**

**MMWD Mt. Tamalpais Watershed, Unincorporated Marin County**

**Initial Study/Mitigated Negative Declaration – Appendix B**

**Biological Evaluation Report**

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**PACIFIC BIOLOGY**



635 Carmel Avenue, Albany, CA 94706

**AZALEA HILL RESTORATION PROJECT  
BIOLOGICAL EVALUATION REPORT**

**PREPARED FOR:**

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**August 2017**

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## EXECUTIVE SUMMARY

The Marin Municipal Water District (District or MMWD) is proposing the Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan – Restoration of Azalea Hill. The project would:

1. Amend the *Mt. Tamalpais Watershed Road and Trail Management Plan* for the Azalea Hill area;
2. Remove approximately 4.4-miles of non-system roads and trails and restore those routes to natural conditions to improve habitat and water quality;
3. Adopt and improve an approximately 1.9-mile route as an unpaved, approximately 4-foot-wide, small vehicle (e.g., ATV), or multi-use route (comprised of the existing Liberty Gulch Road [1.2 mi] and conversion of some existing non-system trails [0.7 mi] to the wider, small vehicle route);
4. Improve the existing, approximately 1.1-mile hiking and horse route over Azalea Hill to fix its erosion problems and make it more sustainable; and
5. Treat the Azalea Hill parking lot to fix its erosion problems and improve the visitor amenities serving Azalea Hill.

The Azalea Hill Restoration Project's goals are to (1) restore habitat, including sensitive serpentine habitats, by removing unnecessary roads and trails; (2) provide environmentally sensitive routes (i.e. routes that avoid environmentally sensitive areas wherever possible); (3) improve the visitor experience; and (4) ensure the routes are sustainable, and designed and managed in a manner that strictly minimizes erosion and water quality impacts.

Upon its completion, the project would prevent up to an estimated 219 cubic yards (CY) of sediment from entering Azalea Hill's creeks or Alpine Lake annually (or 4,377 CY over 20 years), and would restore approximately one acre of habitat.

With the implementation of avoidance measures, potential impacts to federally listed wildlife species would be avoided. California red-legged frog (*Rana draytonii*), a federally Threatened species, has not been documented within four miles of the project site. However, as potentially suitable habitat is present, avoidance measures will be implemented to protect the species during construction activities. The project site is located entirely within designated critical habitat for the northern spotted owl (*Strix occidentalis caurina*), a federally Threatened species. Impacts to

this species and its habitat are not expected to occur because suitable nesting habitat does not occur on or adjacent to the project site, and no activity centers have been documented within 0.5 mile of the site. Bon Tempe Creek and the other drainages on the project site are inaccessible to steelhead (*Oncorhynchus mykiss*) and coho salmon (*Oncorhynchus kisutch*) due to reservoir dams and other downstream barriers, and no construction activities are proposed within creeks that could otherwise potentially be used by these species.

Other special-status wildlife species with potential to occur on the project site include foothill yellow-legged frog (*Rana boylei*), western pond turtle (*Actinemys marmorata*), numerous bird species, several bat species, and American badger (*Taxidea taxus*). The implementation of the recommended avoidance measures would protect these species during construction activities.

The project site supports several special-status plant populations, and provides high-quality habitat for additional special-status species. The proposed project would remove approximately 4.4-miles of non-system roads and trails and restore those routes to natural conditions to improve habitat. Many of the non-system trails traverse serpentine habitats known to support special-status plant populations. The unauthorized use of these trails degrades habitat quality for special-status plants and native plants in general, and can result in direct impacts via trampling or other disturbances to special-status plants. Therefore, in the long term, the proposed closing and restoration of non-system trails would benefit special-status plants and sensitive plant communities. The proposed project has also been designed to minimize impacts to sensitive plant communities (which are associated with special-status plants) and would avoid large stands of serpentine chaparral and native grasses. Avoidance measures would be implemented to avoid impacts to federally listed plants and to minimize and compensate for impacts to other special-status plant species. Avoidance measures would also be implemented to protect sensitive plant communities and to restore temporarily disturbed habitats.

The proposed project includes constructing or improving 25 stream crossings, using clear span bridges, puncheons, and/or armored wet crossings. At one site (Site 30), an existing culvert will be slip-lined to prolong its life. The stream crossing sites are generally unvegetated and the improvements would serve to address existing erosion problems and prevent future erosion problems. Therefore, in the long term, the proposed stream crossing improvements would serve to reduce erosion and to protect habitats. Construction within seeps/wetlands would be limited to two sites and would include the placement of approximately 15 CY of rock in a seep (Site 42) and 25 CY of rock in another seep (Site 45); the seeps are currently within existing trails and the rock would facilitate crossing the seeps with minimal disturbance. Avoidance measures would be

implemented to protect jurisdictional resources during construction, and impacts to wetlands would be compensated for through removing existing trails from wetlands, facilitating crossings of seeps to minimize ongoing disturbances, and the implementation of the other required measures.

## **1.0 INTRODUCTION**

Pacific Biology conducted a biological habitat evaluation of the Azalea Hill Restoration Project (project site), located in Marin County, California. The purpose of this biological habitat evaluation is to review the proposed project in sufficient detail to determine to what extent the proposed action may affect any federally listed Threatened or Endangered species or their designated critical habitat, species proposed to be federally listed, or other species or biological resources considered to be of special-status under the California Environmental Quality Act (CEQA). The evaluation identifies and characterizes onsite and surrounding habitats; assesses the potential of these habitats to support special-status plant and wildlife species; identifies all wetlands, riparian areas, and other sensitive habitats present; evaluates potential project-related impacts to sensitive biological resources; and identifies feasible mitigation and avoidance measures to protect sensitive biological resources.

The project site is an approximately 2.97-mile stretch of existing and proposed trails and fire roads that straddle the base and ridges of Azalea Hill. The study area that was surveyed in support of this document consists of buffers surrounding the existing and proposed roads and trails, with roads buffered by 25 feet on either side, and trails buffered by 10 feet on either side. The total size of the study area is 15.5 acres.

## **2.0 PROJECT LOCATION**

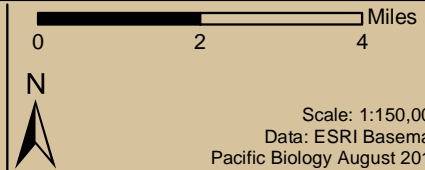
The project site is located on Azalea Hill, approximately 4 miles west-southwest of the Town of Fairfax, in Marin County, California (**Figure 1**). Azalea Hill is an approximately 370-acre area of the Mt. Tamalpais watershed bordered by Bon Tempe Creek and the Sky Oaks/Bullfrog area to the east, Alpine Lake to the South, Liberty Gulch, Bolinas-Fairfax Road and the Pine Mountain area to the west and the Meadow Club golf course further to the north. The project site is approximately 6.5 air miles from the Pacific Ocean and is mapped on the San Rafael and Bolinas USGS 7.5-minute topographic quadrangles. Elevation ranges from 646 feet along the shore of Alpine Lake to 1,217 feet at the high point of the project site (USGS 1997). The approximate centroid of the project site is -122° 37' 12.8" longitude and 37° 57' 34.8" latitude.

The site may be accessed from State Highway 101 by exiting at Sir Francis Drake Boulevard in Larkspur, and heading northwest on Sir Francis Drake to the town of Fairfax, then turning left (southwest) onto Bolinas Road in central Fairfax—this road becomes Bolinas-Fairfax Road in the vicinity of the Meadow Club Golf Course, near the study area. The study area is most easily accessed from a parking lot along Bolinas-Fairfax Road, approximately four miles southwest of the intersection of Sir Francis Drake Boulevard and Bolinas Road.





**FIGURE 1**  
**REGIONAL LOCATION**  
**Azalea Hill Restoration Project**



Scale: 1:150,000  
 Data: ESRI Basemap  
 Pacific Biology August 2017

At a regional scale, Azalea Hill is situated within the outer Coast Range Province of California, and is mapped within the Jepson Manual's San Francisco Bay Area ecological subregion (SnFrB) (Baldwin et al. 2012). The SnFrB subregion is defined as encompassing a wide diversity of vegetation types, "from very wet redwood forest to dry oak/pine woodland and chaparral" (Baldwin et al. 2012).

### 3.0 PROJECT DESCRIPTION

#### *Project Overview and Proposed Improvements*

The Marin Municipal Water District (District or MMWD) is proposing the Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan – Restoration of Azalea Hill. The project would:

1. Amend the *Mt. Tamalpais Watershed Road and Trail Management Plan* for the Azalea Hill area;
2. Remove approximately 4.4-miles of non-system roads and trails and restore those routes to natural conditions to improve habitat and water quality (see **Appendix A, Figure 3**). This work would generally be accomplished by uncompacting the trail tread with hand tools (picks, McLeods, or shovels), then raking adjacent top soil, duff and leaf litter on top of the decommissioned tread to aid its re-vegetation. There are two sites where equipment would be used to do the restoration work, one at a spur road at its intersection with Liberty Gulch Road near the bottom of the hill, the second at the upper end of the Azalea Hill Road.
3. Adopt and improve an approximately 1.9-mile route as an unpaved, approximately 4-foot-wide, small vehicle, or multi-use route (comprised of the existing Liberty Gulch Road (1.2 mi) and conversion of some existing non-system trails (0.7 mi) to the wider, small vehicle route) (see **Appendix A, Figure 4**). Key components include:
  - At Bullfrog Road, convert approximately 0.4 mile of an existing non-system trail to an approximately four-foot-wide Class IV road. Two 40-foot-long bridges, and two puncheons would be installed along this section, all of which would be clear span construction so there would be no construction in the creeks or ephemeral drainages.
  - Adjacent to Alpine Lake, convert approximately 0.3 mile of an existing, non-system, "fishing access" trail to an approximately four-foot-wide Class IV road. One 20-foot-long bridge, one puncheon, and two armored rock crossings would be installed to cross the four small creeks along this section.

Additionally, a second 16-foot-long bridge would be constructed over an old “dam pit,” which is a remnant of an old dam that was never completed.

- Once the route meets the old Liberty Gulch Road, the next approximately 1.2 miles would need little in the way of tread improvements except near the upper end. The majority of the work here would be to address the old road’s drainage issues by implementing best management practices from the Mt. Tamalpais Road and Trail Management Plan (RTMP) (storm-proof creek crossings, critical and rolling dips, outsloping, etc.). Fifteen creek crossing sites would be upgraded along this section to strictly minimize their erosion potential. Nine of the upgrades would be armored rock crossings, two would be puncheons, one would be a bridge and one existing culvert would be slip-lined to prolong its lifespan. At two sites which include springs, a combination of armored rock crossings and four-foot-wide causeways (set back from the fill slope) would be constructed. Lastly, one section of gullied road would be treated with rolling dips and one landslide would be mitigated by pulling its unstable fills and de-watering the road above with outsloping and rolling dips. Near the top of the old Liberty Gulch Road a pile supported bridge or trestle would be constructed across the unstable scree slope left over from the construction of Bolinas-Fairfax Road above. Lastly, at its intersection with Bolinas-Fairfax Road, and generally within the existing alignment of the route, a new approach and landing would be graded to provide a better, more sustainable connection to Bolinas-Fairfax Road.
4. Improve the existing, approximately 1.1-mile hiking and horse route over Azalea Hill to fix its erosion problems and make it more sustainable (see **Appendix A, Figure 5**). Puncheons would also be used as necessary to span road-related drainage features and to cross a small creek at the top of the hill.
  5. Treat the Azalea Hill parking lot to fix its erosion problems and improve the visitor amenities serving Azalea Hill (see **Appendix A, Figure 6**).

Upon its completion, the project would prevent up to an estimated 219 CY of sediment from entering Azalea Hill’s adjacent creeks or Alpine Lake annually (or 4,377 CY over 20 years), and would restore approximately one acre of habitat.

This biological habitat evaluation report focuses on Actions 2 through 5 (above), as these actions would require construction activities that could disturb biological resources. The complete project description is included in **Appendix A**.

### *Project Goals*

The Azalea Hill Restoration Project’s goals are to:

- Restore habitat, including sensitive serpentine habitats, by removing unnecessary roads and trails;

- Provide environmentally sensitive routes (i.e. routes that avoid environmentally sensitive areas wherever possible, and minimize and mitigate their impacts when not possible) over Azalea Hill for all users (hikers, equestrians, cyclists and district patrol and response staff) to improve connectivity between the lakes area and the Pine Mountain area;
- Improve the visitor experience of these users by providing improved signage, new trash and recycling facilities, parking lot improvements, etc.; and
- Ensure the routes are sustainable, and designed and managed in a manner that strictly minimizes erosion and water quality impacts (e.g. routes that meet the best management practices, design standards and environmental protection measures per Chapter 3 of the RTMP).

#### **4.0 METHODS**

##### Information and Database Review

Prior to conducting the field surveys, project biologists from Pacific Biology and Vollmar Natural Lands Consulting (VNLC) reviewed all relevant existing documentation pertaining to the project site's habitats and special-status plant taxa and plant communities. Geographic Information Systems (GIS) boundaries for the study area were overlaid with aerial photography and special-status species and habitat data (e.g., CNDDDB and critical habitat data), as well as geomorphic and hydrographic data (e.g., geology and soils, topography, hydrography, and public wetlands data).

Documents and data that were reviewed prior to the field survey include the following:

- MMWD in-house documentation on rare plants and plant communities (2009-2016)
- The MMWD in-house plant inventory for the project area (2016)
- Special-status species plant and wildlife occurrence records in the vicinity of the study area from California Department of Fish and Wildlife's CNDDDB (CDFW 2016)
- A four-quad plant search on the CNPS database website, using the following 7.5' USGS quadrangles: San Rafael, Novato, San Geronimo, and Bolinas.
- U.S. Fish and Wildlife Service (USFWS) critical habitat data (2017)
- Geologic mapping of the project vicinity (USGS 2012)
- Site aerial photography (Digital Globe 2014 and U.S. Department of Agriculture [USDA] National Agriculture [NAIP] Imagery Program 2014)
- MMWD-provided county-wide LiDAR-based DEM and contour data (2007-2010)
- USGS 7½ minute topographic quadrangles

- USDA SSURGO soil survey data (USDA 2012) and online USDA Web Soil Survey (2017)
- Bay Area Aquatic Resources Inventory (BAARI) wetlands and streams data (SFEI 2015)

Spatial data layers were integrated using GIS software, in order to analyze spatial relationships between mapped biological resources and other site characteristics. Maps and data were loaded onto a professional-grade GPS unit to facilitate navigation and data collection in the field.

### Field Survey

Josh Phillips (Principal Biologist with Pacific Biology) and Jake Schweitzer (VNLC Senior Botanist) conducted an intensive habitat survey in the study area on January 17, 2017. The purpose of this survey was to confirm the accuracy of existing vegetation mapping of the study area, characterize the biological resources occurring in the study area, and to evaluate the potential of special-status species to occur based on the suitability of habitat, known range and life history requirements of special-status species occurring in the region, and other factors. Additional vegetation data were collected concurrently with jurisdictional wetland delineation surveys that were conducted by VNLC from late November to early December 2016. It should be noted that the surveys were conducted within several days to one week following rain events, and there was above average rainfall for the winter of 2016-2017.

The surveys involved walking along the study area roads and trails and recording dominant plant species and relative abundance from each stratum (tree, shrub/vine/sapling, and herbaceous strata) throughout the study area. Additional habitat parameters recorded include hydrology, geology and soils information, and level of disturbance. Representative digital photographs were taken of habitat conditions and features of interest. The recorded habitat data and photos were then compared with existing mapped habitats and the project area plant inventory, in order to assess the accuracy and completeness of the documentation.

It should be emphasized that the surveys were conducted during late fall and winter, and were reconnaissance in nature. As such, the focus of the surveys was to document habitat conditions rather than to document special-status plant taxa (most of which were not identifiable during the surveys). The study area has been intensively surveyed by MMWD for botanical resources in recent years, including during May and June of 2016.<sup>1</sup>

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<sup>1</sup> Approximately 100 meters of Liberty Gulch Road at the northwestern edge of the study area was not included in the 2016 survey by MMWD because it was originally to be decommissioned.

## **5.0 EXISTING BIOLOGICAL CONDITIONS**

### **(i) Climate**

The climate of the project area is characterized as “Mediterranean,” with cool, wet winters and warm, fairly dry summers. Approximately 99% of precipitation in the area occurs during the “wet season,” from October through May. The site is approximately 6.5 air miles from the Pacific Ocean, and is thus subject to considerable maritime influences. The moisture-laden westerly winds bring most of the moisture to the region, and the study area’s high elevation help to extract the moisture as the air rises and condenses upon contact with the local mountains and ridges. According to the PRISM climate data model (2017), mean annual temperature and precipitation at the study area (from 1981 to 2010) are 58.1° F and 48.6 inches, respectively. The 2015-2016 wet season, which would have influenced the 2016 botanical surveys in the study area, experienced slightly lower than average precipitation and higher than average temperatures. Specifically, mean precipitation modeled for the study area was 88% of normal, and mean temperatures were 103% of normal (ibid). It is expected that the 2015-2016 wet season, which is also the growing season for the region, provided fairly normal conditions for plant growth and persistence, though conditions may have been impacted to some degree by the historic drought conditions of the previous few years.

### **(ii) Geology and Soils**

The study area encompasses two distinct geologic formations: Coast Range ophiolite and Franciscan complex, mélangé (USGS 2012). In turn, soils derived from each geologic formation are distinct and support different vegetation. The geologic formation and soil types occurring within the study area are described below.

#### Coast Range Ophiolite

An “ophiolite” is broadly defined as a section of the earth’s oceanic crust and/or the underlying upper mantle that has been uplifted and emplaced within continental crust (Alexander et al. 2007). In contrast to more strictly continental crust (i.e., rocks from shallower depths in the earth’s crust—far above the mantle), which is relatively high in silicates such as quartz and feldspar, ophiolites are composed of higher concentrations of minerals such as olivine, chromite, and pyroxene. Referred to as mafic (a term derived by contracting “magnesium” and “ferric”—iron), or ultramafic for materials with even higher concentrations of these minerals (up to 90 percent), ophiolites include sedimentary, igneous, and metamorphic rocks, but all are relatively low in minerals more associated with continental materials. The Coast Range ophiolite in the vicinity of the study area consists primarily of serpentinite (often simply referred to as

serpentine), an ultramafic rock of great botanical significance. Most plant taxa, having evolved on soils derived from continental materials, are adapted to minerals with higher concentrations of elements such as potassium and calcium, as well as elements such as nitrogen that are associated with the atmosphere. Far fewer plants have adapted to oceanic and mantle minerals that are high in magnesium, iron and nickel, and relatively low in such elements as potassium and calcium (Kruckeberg 1984).

Thus soils derived from ultramafic rocks such as serpentinite generally support relatively few—often uniquely-adapted—plant taxa. The Calflora website (2017) lists 320 of California’s 2,424 special-status plants as having an affinity for serpentine substrates. Despite the fact that only one third of the study area encompasses serpentine substrates, all of the special-status plants identified in the study area were identified on serpentine or serpentine-influenced habitats (e.g., downslope of serpentine soils).

Serpentine substrates in the study are concentrated along the central, mostly convex slopes of the study area, as well at the western edge. The onsite serpentine soils are generally shallow and rocky, and in many areas appear to underlie Franciscan complex, mélange substrates. The serpentine has likely been exposed as a result of uplift and erosion of overlying soils. Therefore, several small serpentine outcrops are evident in the area, and in some cases, they are mixed with other substrates where the erosion is relatively shallow.

#### Franciscan Complex, Mélange

Rocks from the Franciscan complex formation, which are found in the central and eastern portions of the study area, are primarily the result of sediments from submarine fans and igneous (volcanic) rocks associated with oceanic crust. The rocks were amalgamated in transit to a subduction zone (where the Pacific Plate was forced under the North American Plate upon contact), where the sediments were ground up and often metamorphosed at great depths during the Mesozoic era (Sloan 2006). This Complex is dominated by sandstone and shale rocks and sporadic outcroppings of radiolarian chert as well as igneous, limestone, and intrusive ophiolitic rocks. While rocks generally consist of marine sediments, most of the sediments are originally derived from materials deposited in marine fans resulting from turbidity currents (the marine equivalent of landslides, possibly caused by earthquakes) from the North American Plate’s edge (ibid). About 80 percent of the complex consists of greywacke sandstone and shale, mostly from turbidity currents. Thus, though Franciscan rocks are highly deformed from being thrust deep into the subduction zone, occasionally forming such metamorphic rocks as schist and gneiss, a majority of Franciscan complex rocks are sedimentary and consist primarily of continental

minerals and elements, to which most plants are adapted. Special-status or otherwise rare plants are less frequently associated with soils derived from such sedimentary rocks. All of the special-status plants indentified in the study area are primarily associated with serpentine substrates.

### Soil Units

Two soil units are mapped within the study area: Henneke stony clay loam, and the Tocaloma-Saurin association. The Henneke stony clay loam is derived from serpentinite, while the Tocaloma-Saurin association is derived from Franciscan complex mélange. In many cases, the serpentine areas mapped on **Figure 2**, which are derived from the mapped plant communities, are more precise than the soil mapping, though in a few areas the soil mapping is more precise. All areas not mapped as serpentine on **Figure 2** are classified as Tocaloma-Saurin association. Table 1 below presents characteristics of the soil units that are most significant for botanical resources. As the table indicates, the Henneke stony clay loam soils are generally stony/gravelly and low in nutrients, while the Tocaloma-Saurin association soils are more loamy and slightly more fertile. In addition, the former is considered to be “somewhat excessively drained,” while the latter is considered to be “well drained”. These soil characteristics are clearly reflected in the plant communities, most conspicuously as a complete absence of tree habitats on the serpentine substrates.

**TABLE 1. Characteristics of Soil Units Mapped within the Study Area**

Soil Unit Name	Parent Material	Surface Texture*	pH*	Organic Content*
Henneke stony clay loam	residuum weathered from serpentinite of Coast Range ophiolite	Stony clay loam	7.0	1.24%
Tocaloma-Saurin association	residuum weathered from sandstone and shale of Franciscan complex mélange	Loam	6.1	1.33%

Source: U.S. Department of Agriculture Natural Resources Conservation Service, 2017.

\*Dominant condition of top 24 inches.



**FIGURE 2**  
**Plant Communities and**  
**Sensitive Botanical Resources**

Azalea Hill Restoration Project  
 Marin County, California

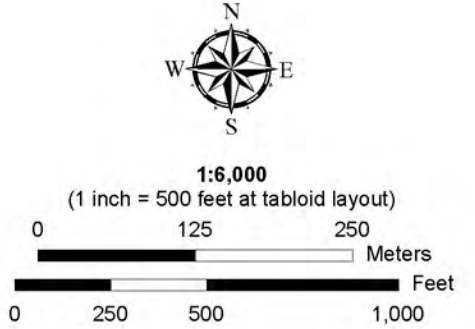
**Legend**

- Habitat Not as Mapped (see map notes)
  - Field-Verified as Serpentine
  - Field-Verified as Not Serpentine
  - ▲ Special-status Plant Occurrence<sup>1</sup>
  - Spring or Seep
  - Project Area Road
  - Project Area Trail
  - Other Road
  - Trail Section to be Decommissioned by Hand<sup>2</sup>
  - Stream or Other Drainage Channel
  - ▭ Study Area (roads and trails buffer)<sup>3</sup>
- Plant Communities/Habitats**
- 1 Chaparral (1)
  - 2 Mt. Tamalpais Manzanita Chaparral (2)
  - 3 Conifer Forest (3)
  - 4 Conifer Forest (Serpentine) (4)
  - 5 Grassland (5)
  - 6 Hardwood Forest (6)
  - 7 Oak Woodland (7)
  - 8 Upland Redwood Forest (Pure and Mixed) (8)
  - 9 Willow/Alder Riparian Woodland (9)
  - 10 Other Riparian Woodland (10)
  - 11 Shrubland (11)
  - 13 Unvegetated (13 [code 12=unmapped areas])
  - 14 Wetland (15)
  - 14 Water Body (14)
  - ▨ Serpentine Habitat

1. From MMWD and CNDDB. Many serpentine-associated plants are widespread in area surrounding point. Some species are not fully mapped, as they are quite widespread (e.g., little glandular lessingia, Mt. Tamalpais manzanita, and serpentine reed grass).  
 2. Areas of no impact to botanical resources. Not surveyed.  
 3. Roads are buffered by 25 feet and trails are buffered by 10 feet



Data Sources: Vollmar Natural Lands Consulting, 2016  
 USDA, 2014 (photo) | MMWD, 2009-2016  
 SFEI BAARI Streams Database, 2012  
 GIS/Cartography by: Jake Schweitzer, Feb. 2017  
 Map File: Veg\_233-15\_B-L\_2017-0828.mxd



### **(iii) Onsite Plant Communities and Habitats**

The majority of the study area is dominated by the following plant communities/habitat types, in order of extent: grassland, chaparral (two types), hardwood forest, oak woodland, and un-vegetated. These habitats comprise approximately 93% of the study area; the remaining 7% is comprised of shrubland, conifer forest, and riparian woodland and wetlands (**Figure 2**). The named habitats depicted on **Figure 2** have been grouped, with the purpose of focusing on the most important habitats and reducing the very large number of treated habitats. With the exception of conifer forest, which is not a sensitive habitat and covers less than 1% of the study area, all habitats mapped within the study area are described in detail below. Representative photographs of the habitats are included as **Appendix B**.

In general, the woodland and forest habitats are associated with Franciscan complex geology and derivative soils (Tocaloma-Saurin association), and most of the chaparral and grassland habitats occur on the Coast Range ophiolite/serpentine substrate (Henneke stony clay loam soils). As a result of the prevalence of serpentine soils, as well as the relative lack of disturbance throughout the study area, the percentage of native plants is high, even in open, sunny habitats (which in cismontane California, are often dominated by introduced plant species).

It should be noted that, while the study area encompasses natural habitats, many of which are biologically sensitive, the project site disturbance area consists primarily of existing stretches of dirt fire roads and trails, which are generally un-vegetated.

#### **Sensitive Habitats**

The study area encompasses a number of sensitive plant communities and other sensitive habitats. There are three plant communities that are designated as rare and Threatened by the California Department of Fish and Wildlife (CDFW): Serpentine Bunchgrass, Purple Needle Grass Grassland, and Mt. Tamalpais Manzanita Chaparral. The study area also encompasses riparian habitats, wetlands, and other waters subject to the jurisdiction and legal protection of environmental regulatory agencies. The riparian woodland and wetland habitats are included on **Figure 2** and discussed below. Other potentially jurisdictional waters, primarily drainage channels, are not discussed since they are generally un-vegetated and/or feature the same vegetation as the surrounding mapped habitats, as a result of the steep gradients with which they are associated. The channels are documented within a separate wetland delineation report.

Sensitive habitats within the study area are discussed below:

#### Serpentine Bunchgrass/Purple Needle Grass Grassland

The entire 15.5-acre study area is mapped as Serpentine Bunchgrass in the CNDDDB, and extensive portions of this habitat in the study area and larger project area also include Purple Needle Grass Grassland. The habitat polygon is not included on the plant community map in this report due to the highly generalized nature of the mapped area. However, all areas of grasslands on serpentine soils mapped on **Figure 2** would qualify as Serpentine Bunchgrass. This area amounts to 28% of the mapped grasslands in the study area, and 12% of the entire study area. Significant areas of the Serpentine Bunchgrass as well as a large portion of all other mapped grasslands in the study area are dominated by purple needle grass (*Stipa pulchra*) and would be considered “Purple Needle Grass Grassland” in the Manual of California Vegetation (MCV) classification system. Most of the mapped grasslands meet the requisite threshold of purple needlegrass constituting at least 10% relative cover in the herbaceous layer and/or greater than 5% absolute plant cover. Specific stands of this habitat have not been mapped and are not included on the habitats map due to the fact that they are so widespread. Purple Needle Grass Grassland is ranked as a G4 S3? plant community in the MCV (Sawyer et al. 2009). Within the MCV, the “G” is the global rank, with a rank of “4” indicating it is relatively common at the global scale, while the “S” is a California state rank, with the rank of “3” indicating it is “rare or Threatened in California” (i.e., sensitive). The “?” indicates that the rank is provisional. The broader grassland plant community that encompasses both Serpentine Bunchgrass and Purple Needle Grass Grassland is described below (**Section 3.3.2**) in terms of species composition and general habitat conditions.

These grassland habitats have potential to support numerous special-status plants, and several have been documented within the study area and surrounding areas. Documented species include the federally Threatened Marin western flax (*Hesperolinon congestum*), as well as the Mt. Tamalpais lessingia (*Lessingia micradenia* var. *micradenia*) (CRPR List 1B.2), Oakland star tulip (*Calochortus umbellatus*) (CRPR List 4.2), and serpentine reed grass (*Calamagrostis ophitidis*) (CRPR List 4.3); these and other special-status plant species are further discussed in **Section 6**.

#### Mt. Tamalpais Manzanita Chaparral

Within the study area and surrounding region, Mt. Tamalpais manzanita (*Arctostaphylos montana* ssp. *montana*) is a dominant shrub species within chaparral habitat occurring on serpentine soils. This species is ranked by the CNPS as California Rare Plant Rank (CRPR) List 1B.3, and chaparral including the species as a dominant is ranked “sensitive” by the CDFW. The habitat is ranked as G2 S2 in the MCV, indicating that there are only 6-20 occurrences

worldwide (G rank) and statewide (S rank), and/or more than 32,000 acres (12,950 hectares). This is the second most rare habitat rank in the MCV, after G1 S1. It should be noted that Mt. Tamalpais Manzanita Chaparral is defined as chaparral in which Mt. Tamalpais manzanita represents greater than 50% of the relative shrub cover. The species percent cover is not included in the habitat documentation for the plant community mapping depicted on **Figure 2**. Therefore, only habitats which list this namesake manzanita as the primary shrub species are mapped as this sensitive habitat.

This onsite habitat comprises approximately 6% of the study area, occurring primarily on moderately steep to steep slopes and features gravelly soils with abundant stones and boulders. The most common associate shrubs include musk brush (*Ceanothus jepsonii*) and leather oak (*Quercus durata*). Other associated shrubs include chamise (*Adenostoma fasciculatum*), toyon (*Heteromeles arbutifolia*), and California coffeeberry (*Frangula californica*). Associated herb species observed include Torrey's melic (*Melica californica*), amole (*Chlorogalum pomeridianum*), yarrow (*Achillea millefolium*), Indian's dream (*Aspidotis densa*), and the special-status serpentine reed grass (CRPR List 4.3). Other special-status plants associated with this habitat, aside from the eponymous manzanita itself, include Marin County navarretia (*Navarretia rosulata*) (CRPR List 1B.2), Tiburon buckwheat (*E. luteolum var. caninum*) (CRPR List 1B.2), Tamalpais bristly jewelflower (*Streptanthus glandulosus ssp. pulchellus*) (CRPR List 1B.2), Tamalpais lessingia (CRPR List 1B.2), and Mt. Saint Helena morning glory (*Calystegia collina ssp. oxyphylla*) (CRPR List 4.2): these and other special-status plant species are further discussed in **Section 6**.

### Riparian Woodland

Riparian woodland forms a mappable stand (i.e., meets the minimum mapping unit set for the vegetation mapping) within the study area along Bon Tempe Creek, at the northeastern corner of the study area. Within the study area, Bon Tempe Creek is a fourth-order semi-perennial stream that flows south into Alpine Lake (SFEI 2015). The stream supports willow riparian woodland and "other" riparian woodland along most of its length, with the latter occurring within the study area. Though only covering 1% of the study area, this plant community is addressed here due to the importance of riparian woodland as habitat for a great diversity of plants and animals. The dominant riparian tree species in this habitat is Oregon ash (*Fraxinus latifolia*), a tree that seldom occurs outside of stream corridors. Arroyo willow (*Salix lasiolepis*) is relatively common as well, but not sufficiently to classify the habitat as willow riparian woodland. Both of these species are only found within the floodplain of Bon Tempe Creek, though several individuals are

large enough that their driplines extend well beyond the stream bank tops. The stream bank slopes and tops are dominated by California bay (*Umbellularia californica*) and coast live oak (*Quercus agrifolia*) trees, neither of which occurs within the floodplain. The shrub/vine stratum consists of toyon, poison oak (*Toxicodendron diversilobum*), California blackberry (*Rubus ursinus*), and a few scattered French brooms (*Genista monspessulana*). As expected, most of these upland plants were observed along the bank slopes and bank tops, though a few were growing along a stream terrace that supported mostly upland plant species. The herbaceous stratum consists of a mix of wetland and upland species. Wetland herbs identified within a small wetland in the stream floodplain include tall nutsedge (*Cyperus eragrostis*), sneezeweed (*Helenium puberulum*), and pennyroyal (*Mentha pulegium*). Upland herbs along the bank slopes and tops include wood fern (*Dryopteris arguta*), trailing snowberry (*Symphoricarpos mollis*), wild strawberry (*Fragaria vesca*), and blue wildrye (*Elymus glaucus*). With the exception of French broom and pennyroyal, all of the plants noted above are native species, indicating that the habitat is generally undisturbed. However, no special-status plants have been documented within this habitat, and few are associated with the habitat.

#### Wetland

Aside from the wetland within Bon Tempe Creek, several other wetlands occur within the study area, most of which are fed by springs and/or small streams. Some of these features flow across Liberty Gulch Road, such that as part of the project the road will be re-routed or modified to reduce the impact to the wetlands, and in some cases to reduce sedimentation into Alpine Lake. Another wetland occurs at the bottom of the hill, on its northeast side, and is bisected by the existing Azalea Hill Trail. This section of trail would also be re-routed to remove its impact from the wetland. All of the wetlands extend beyond the study area boundaries. The percent cover of wetlands in the study area amounts to well under 1%, but the habitat is addressed here due to the unique nature of the vegetation as well as the its sensitive status.

Consistent with the formal definition of wetlands, the onsite habitats feature hydric, often saturated soils that support plant species adapted to the anoxic soils. The common wetland species include, at the shrub stratum, western azalea (*Rhododendron occidentale*) (the namesake plant for the project and topographic feature—Azalea Hill). The most prevalent herbs observed include giant horsetail (*Equisetum telmateia* ssp. *braunii*), tall nutsedge, yellow monkeyflower (*Mimulus guttatus*), short spike hedge nettle (*Stachys pycnantha*), and giant chain fern (*Woodwardia fimbriata*). The special-status Mt. Tamalpais thistle (*Cirsium hydrophilum* var. *vaseyi*) (CRPR List 1B.2) is documented within wetland habitats on serpentine soils in the study

area vicinity, but was not observed within any of the mapped wetlands in the study area boundary.

In addition to springs, there are numerous seeps scattered throughout the study area. Seeps are distinguished from springs by the relatively short duration during which water flows, or by a complete lack of flowing water. Many of the seeps in the study area do feature flowing water, but only during and within a few days of a rain event. While seeps are considered a sensitive habitat and may be regulated by the state of California, none of the onsite seeps support wetland vegetation and thus are not further discussed here.

## **Other Habitats**

### Grassland

The most widespread habitat in the study area is Grassland, which occupies approximately 45 percent of the study area. The majority of this habitat occurs along central and eastern portions of the study, and occurs on both serpentine and Franciscan complex soil units. With the exception of a few small areas, the grassland habitats are in generally good condition and support significant covers of native plant species. Despite not being grazed, thatch from dead annual grasses is thick in only a few areas. The most common grass species observed within the habitat include the native and perennial purple needle grass as well an assortment of introduced annual grasses, particularly slim oat (*Avena barbata*), Italian rye grass (*Festuca perennis*), and big rattlesnake grass (*Briza maxima*). Associated forbs identified in the grasslands include smooth cats ear (*Hypochaeris glabra*), big heron bill (*Erodium botrys*), rosin weed (*Calycadenia multiglandulosa*), English plantain (*Plantago lanceolata*), and several *Clarkia* species. While several of these dominant species are introduced (see plant inventory included as **Appendix C**), none are considered to be invasive weeds that cause ecological disruption. In addition to herbaceous species, the grasslands support occasional individual shrubs or small stands of shrubs, primarily coyote brush (*Baccharis pilularis*) and poison oak. This is a result of the lack of grazing as well as fire suppression, which allows colonization by such shrubs.

Several of the same special-status plant taxa associated with the special-status grasslands described above may be associated with the wider grassland habitat, which is generally characterized by relatively low levels of disturbances.

### Hardwood Forest

This plant community encompasses 17% of the study area. It is widely distributed on lower slopes of Azalea Hill and within drainages and swales, in areas generally featuring greater soil

depth and moisture. As its name suggest, the habitat is comprised of predominantly hardwood tree species, and forms a nearly contiguous canopy cover (hence “forest”). The most common tree species include coast live oak, California bay, and madrone (*Arbutus menziesii*). The habitat presumably once included large numbers of tanoak (*Notholithocarpus densiflorus*), but this species has suffered from sudden oak death syndrome and has declined precipitously throughout the region in the past two decades (author’s observation). A conifer species that has increased in cover within this habitat in recent decades is Douglas-fir (*Pseudotsuga menziesii*), which has benefited from fire suppression—it is shade tolerant and is more susceptible to the detrimental effects of fire compared to the hardwood tree species known from the region. The shrub and herb strata are sporadic, with cover depending on the degree of shade. The most prevalent shrubs include coyote brush, poison oak, and toyon. The herb stratum is primarily comprised of low-growing broadleaf forbs, ferns, and scattered, mostly native stands of grasses. The most common forbs observed are rough hedgenettle (*Stachys rigida*), Pacific sanicle (*Sanicula crassicaulis*), irises (*Iris* spp.), and trailing snowberry. Common ferns include gold back fern (*Pentagramma triangularis*), wood fern, common maidenhair (*Adiantum jordanii*), and western sword fern (*Polystichum munitum*). The few grass species include leafy bentgrass (*Agrostis pallens*), woodland brome (*Bromus laevipes*), and blue wildrye.

No special-status plants have been documented within hardwood forest in the study area, and relatively few are expected to occur as compared with other onsite habitats.

#### Oak Woodland

This habitat is similar to the hardwood forest habitat described above, but occupies slightly steeper slopes and more shallow, less fertile soils. It occupies 13% of the study area, and is most prevalent along the southern slopes of Azalea Hill. Coast live oak is the dominant tree species, with interior live oak (*Quercus wislizeni*) forming occasional small stands as an associate. Other hardwood tree species such as California bay and madrone are present but are less abundant than within the hardwood forest. Douglas-fir is similarly common as an associate and poses a potential problem for the regeneration and long-term persistence of the oaks. The shrub and herb strata are quite similar to the hardwood forest (see above), though the cover is slightly higher due to the increased sunlight.

No special-status plants have been documented within oak woodland in the study area, and relatively few are expected to occur as compared with other onsite habitats.

### Chaparral and Shrubland

Covering just under 8% of the study area, this habitat is most prevalent in the central and western portions of the study area, and is primarily associated with steeper slopes with shallow, rocky soils, a majority of which are serpentine. The primary difference between the mapped chaparral occurring on serpentine and Mt. Tamalpais Manzanita Chaparral is that the namesake species for the latter is not dominant in the former—though it may be present in relatively low cover. Within the serpentine chaparral, the same shrub species are common as the associates of Mt. Tamalpais manzanita, particularly musk brush and leather oak. Shrub species common to both serpentine and Franciscan complex substrates include chamise, toyon, and California coffeeberry. The shrub stratum throughout the chaparral is occasionally punctured by emergent tree species, especially California bay, but also coast live oak and Douglas-fir in areas with less pure serpentine soils. Herbaceous understory species are generally sparse except in areas with lower shrub cover. Associated herb species observed include Torrey’s melic, amole, bird’s foot fern (*Pellaea mucronata*), and coast sanicle (*Sanicula laciniata*). Special-status species documented in the serpentine habitat within and surrounding the study area include the same as those found in the Mt. Tamalpais Manzanita Chaparral, as noted for this habitat above.

Areas mapped as “shrubland” on **Figure 2** represent only 3% of the study area. The plant community overlaps to some degree with chaparral, and at least one area mapped as chaparral is classified as shrubland. This habitat occurs primarily along the northern edge of the study area, within generally deeper soils derived from Franciscan complex geology. The most dominant shrub within this habitat is coyote brush, which also occurs in areas mapped as chaparral, albeit in relatively low cover. The most common associate shrub species is poison oak, a species that is dominant in a few localized areas of the habitat. The invasive French broom, which is widespread and has had detrimental impacts within MMWD watershed lands in other locations, is relatively sparse in the study area. It is present in this habitat, but does not form large stands. The composition of understory herbaceous species consists primarily of annual grasses and forbs, a majority of which are non-native. These include slim oat, dogtail grass (*Cynosurus echinatus*), and English plantain. No special-status plants have been identified in the shrublands habitat, though a few known from the region are associated with the habitat (see **Appendix D**)

### Unvegetated

This habitat type within the study area includes developed areas along larger roads (i.e., paved roads and gravel-filled shoulders) and trails as well as serpentine balds. The habitat amounts to 4% of the study area. Much of the mapped habitat in the study area is along Liberty Gulch Road



where natural serpentine balds have been augmented by road cuts. All of the mapped areas feature some amount of plant cover, but the cover is generally well under 5%. Within the developed road areas the plants are mostly weedy introduced herbs, such as English plantain, coastal heron's bill (*Erodium cicutarium*), purple false brome (*Brachypodium distachyon*), and bristly ox-tongue (*Helminthotheca echioides*). In contrast, the serpentine balds support primarily native species, such as Indian's dream, naked buckwheat (*Eriogonum nudum*), and small fescue (*Festuca microstachys*). A few occurrences of the special-status serpentine reed grass (CRPR List 4.3) were also observed within this habitat, and other serpentine-associated special-status plants with an affinity for rocky soils have potential to occur as well, including the Tamalpais bristly jewelflower.

## **6.0 SPECIAL-STATUS SPECIES**

**Figures 2, 3A, and 3B** shows the location of special-status plant and wildlife species documented in the CNDDDB within the project area (i.e., within approximately three miles of the project site). The potential of these and other locally occurring special-status species to occur on the project site is discussed below.

### **(i) Special-Status Plant Species**

For the purposes of this report, 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.

Primarily as a result of the widespread serpentine substrates, multiple special-status plants occur within the study area and surrounding project area. The serpentine habitats support a significant majority of native plant species, and are associated with a large percentage of special-status plants. Indeed, of the 29 special-status taxa documented by the CNPS within the four topographic quadrangles surrounding the study area, 12—amounting to 41%—are associated with serpentine habitats, most of which are typically associated with habitats found within the study area. The onsite serpentine grassland and chaparral habitats are equally likely to support special-status plants known to occur on those habitats.

In addition, nearly all of the onsite habitats, serpentine and non-serpentine alike, are relatively undisturbed and support relatively high percentages of native plant species, and thus have potential to support additional special-status plant taxa known from the vicinity. Special-status plant taxa that have been documented in the general project area by the CNPS are identified in

**Appendix D**, along with their status, habitat association(s), blooming period, and an evaluation of the suitability of onsite habitats to support the plant.<sup>2</sup>

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<sup>2</sup> It should be noted that **Appendix D** includes only CRPR List 1-3 taxa – it excludes List 4 plants. List 4 plants are not included within CNPS quadrangle searches. List 4 plants are also not mapped in the CNDDDB reliably but may occasionally be included. An analysis of potential impacts to CRPR List 1-4 taxa is included in this report.



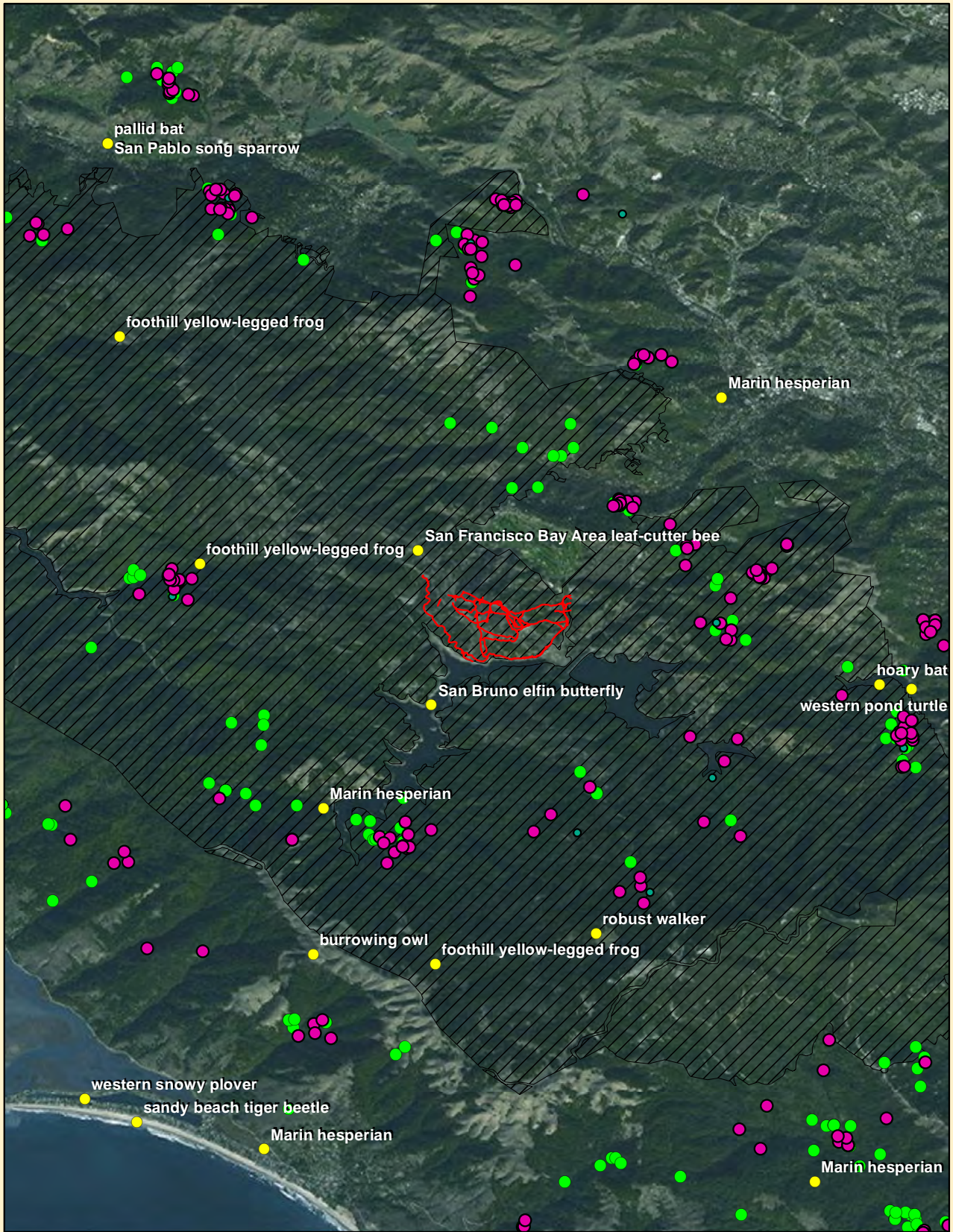
- Special-Status Plant Species (CNDDB)
- Project Site
- Serpentine Habitats

**FIGURE 3A**  
**DOCUMENTED SPECIAL-STATUS**  
**PLANT SPECIES**  
**Azalea Hill Restoration Project**

0 1 2 Miles

N

Scale: 1:70,000  
 Data: CNDDB 2017  
 Data: ESRI Basemap  
 Pacific Biology August 2017



- Special-Status Wildlife Species (CNDDB)
- NSO Occurrences 1999-2016
- NSO (CNDDB)
- Project Site
- NSO Critical Habitat

**FIGURE 3B**  
**DOCUMENTED SPECIAL-STATUS**  
**WILDLIFE SPECIES**  
**Azalea Hill Restoration Project**

Miles  
 0 1 2

N

Scale: 1:70,000  
 Data: CNDDB 2017  
 Data: PRBO NSO Data  
 Data: ESRI Basemap  
 Pacific Biology August 2017

All special-status plants documented or potentially occurring within and adjacent to the study area are listed in **Table 2**, below, and many are mapped on **Figures 2** and **3A**. In total, 10 special-status plant species have been documented within or adjacent to the study area, while an additional 14 special-status plant species have potential to occur based on the presence of suitable habitat and known occurrences in the region. Many of the special-status plant species documented in or adjacent to the study area were identified during botanical surveys conducted by the MMWD in 2016 (**Appendix C**).

**TABLE 2. Special-status Plants Documented or Potentially Occurring in Study Area**

Common Name	Scientific Name	Listing Status
<b>Documented Within or Adjacent to Study Area</b>		
Marin western flax	<i>Hesperolinon congestum</i>	Federally and State Threatened, CRPR List 1B.1
Mt. Tamalpais thistle	<i>Cirsium hydrophilum</i> var. <i>vaseyi</i>	CRPR List 1B.2
Tiburon buckwheat	<i>Eriogonum luteolum</i> var. <i>caninum</i>	CRPR List 1B.2
Mt. Tamalpais lessingia	<i>Lessingia micradenia</i> ssp. <i>micradenia</i>	CRPR List 1B.2
Marin County navarretia	<i>Navarretia rosulata</i>	CRPR List 1B.2
Tamalpais bristly jewelflower*	<i>Streptanthus glandulosus</i> ssp. <i>pulchellus</i>	CRPR List 1B.2
Mt. Tamalpais manzanita	<i>Arctostaphylos montana</i> ssp. <i>montana</i>	CRPR List 1B.3
Oakland star-tulip	<i>Calochortus umbellatus</i>	CRPR List 4.2
Mt. Saint Helena morning glory*	<i>Calystegia collina</i> ssp. <i>oxyphylla</i>	CRPR List 4.2
Serpentine reed grass	<i>Calamagrostis ophitidis</i>	CRPR List 4.3
<b>Potentially Occurring Based on Suitable Habitat</b>		
Napa false indigo	<i>Amorpha californica</i> var. <i>napensis</i>	CRPR List 1B.2
Bent-flowered fiddleneck	<i>Amsinckia lunaris</i>	CRPR List 1B.2
Marin manzanita	<i>Arctostaphylos virgata</i>	CRPR List 1B.2
Tiburon paintbrush	<i>Castilleja affinis</i> ssp. <i>neglecta</i>	Federally Endangered and State Threatened, CRPR List 1B.2
Western leatherwood	<i>Dirca occidentalis</i>	CRPR List 1B.2
Marin checker lily	<i>Fritillaria lanceolata</i> var. <i>tristulis</i>	CRPR List 1B.1
Fragrant fritillary	<i>Fritillaria liliacea</i>	CRPR List 1B.2
Diablo helianthella	<i>Helianthella castanea</i>	CRPR List 1B.2
Pale yellow hayfield tarplant	<i>Hemizonia congesta</i> ssp. <i>congesta</i>	CRPR List 1B.2
Mt. Diablo cottonweed	<i>Micropus amphibolus</i>	CRPR List 3.2
Marsh microseris	<i>Microseris paludosa</i>	CRPR List 1B.2
North Coast semaphore grass	<i>Pleuropogon hooverianus</i>	State Threatened, CRPR List 1B.1

\*Not mapped on **Figure 2**

### *Potential Impacts to Special-Status Plants*

As summarized in **Table 2**, 10 special-status plant species have been documented within or adjacent to the study area, while an additional 12 special-status plant species have potential to occur based on the presence of suitable habitat and known occurrences in the region. While many of the occurring and potentially occurring special-status plant species are associated with serpentine habitats (see **Appendix D**), nearly all of the onsite habitats, serpentine and non-serpentine alike, are relatively undisturbed and support relatively high percentages of native plant species, and thus have potential to support special-status plant taxa known from the vicinity.

The proposed project would remove approximately 4.4-miles of non-system roads and trails and restore those routes to natural conditions to improve habitat. Many of the non-system trails traverse serpentine habitats known to support special-status plant populations. The unauthorized use of these trails degrades habitat quality for special-status plants and can result in trampling or other disturbances to special-status plants. Therefore, in the long term, the proposed closing and restoration of non-system trails would benefit special-status plants.

The MMWD conducted botanical surveys in 2016 and one state and federally listed plant was observed (Marin western flax). As shown in **Figure 2**, this occurrence is adjacent to a non-system trail that would be decommissioned by hand, and is near a location where an existing trail would be improved (and construction equipment would be used). In the absence of avoidance measures, this population of Marin western flax could be harmed due to its proximity to where trail improvements and decommissioning of a non-system trail would occur. However, this population of Marin western flax is not within an area where construction equipment must be operated or where other ground disturbances must occur, and therefore, the one known population of Marin western flax in the study area can be avoided and protected during construction with the implementation of the avoidance measures described below.

In the absence of avoidance measures, the restoration of trails to be closed could result in short-term impacts to other special-status plants. Similarly, other proposed project actions (e.g., improving existing trails, trail re-routes, conversion of non-system trail to official trails, bridge construction) could result in the loss of special-status plants. Based on the results of the 2016 botanical surveys, serpentine reed grass and Mt. Tamalpais manzanita are common in the study area, and therefore, the loss of a low number of individual plants of these species would not have a substantial adverse effect on the local population numbers. However,

avoidance measures should still be implemented to limit the loss of individual serpentine reed grass and Mt. Tamalpais manzanita plants. Other special-status plant species that occur or potentially occur in the study area (see **Table 2**) are rarer and avoidance and minimization measures would be required to protect these species and reduce related impacts to a level of below significance. Given the above, in the absence of avoidance and mitigation measures, potential impacts to special-status plant could be significant.

The proposed project would be implemented as part of the *Mt. Tamalpais Watershed Road and Trail Management Plan*, and therefore, the mitigation measures required by the associated EIR would be implemented as part of the project. These measures are identified below, and as appropriate, additional measures are recommended to further reduce potential impacts to sensitive biological resources.

### **Measures Required by the *Mt. Tamalpais Watershed Road and Trail Management Plan* EIR**

#### ***Federal or State Listed Plant Species***

- 3.2-A.1 Prior to finalizing construction plans for each project, a qualified botanist will survey the area to be disturbed for Marin dwarf (western) flax, Mason's ceanothus, Baker's larkspur, Santa Cruz tarplant, white-rayed pentachaeta, Hoover's semaphore grass, and other Federal or State listed plant species, unless the area has been previously surveyed by the MMWD Vegetation Ecologist. NOTE: The MMWD conducted botanical surveys in 2016 and identified a population of Marin western flax; the location of this population is discussed above and is shown in **Figure 2**.
- 3.2-A.2 All projects will be designed to avoid any Marin dwarf (western) flax, Mason's ceanothus, or other Federal or State listed plant species (if subsequent surveys find these species on the Watershed). NOTE: The identified population of Marin western flax, which is the only state and federally listed plant documented in the study area, is not within an area where construction is required, and therefore, can be avoided and protected during construction with the implementation of the avoidance measures described below.
- 3.2-A.3 For projects near known populations, the individual plant will be identified for protection with flagging and construction monitoring will occur to ensure that there will be no adverse impacts to the populations.

### ***Other Special-Status Plant Species***

- 3.2-B.1 Project sites not yet surveyed for Special Status Species shall be surveyed prior to final project design. NOTE: The MMWD conducted botanical surveys in 2016 and updated surveys will be conducted prior to construction activities.
- 3.2-B.2 To the maximum degree feasible, projects will be designed and constructed to avoid eliminating other Special Status Species of plants. Where avoidance of these Special Status Species of plants is unavoidable, then MMWD shall reestablish the plants that are eliminated. Efforts should be made to collect and preserve propagules from the affected population for later reintroduction. Reintroduction can occur near the disturbed area or in other suitable habitat where the species would benefit from reintroduction (e.g., on decommissioned roads and trails or, for reroutes, the old trail/road that is being abandoned, if there are suitable soils and habitat). (Also see Mitigation Measure 3.1-B.14 and BIO-1A)
- 3.2-B.3 The District will conduct regular training for its permanent and seasonal construction crews in Special Status Species and environmentally sensitive habitats so they are more likely to prevent accidental environmental impacts to these resources. (Also see Mitigation Measure 3.1-B.14 and BIO-1B)
- 3.2-B.4 The District shall monitor construction to ensure that plants scheduled for avoidance are protected during the construction process.
- 3.2-B.5 The District will retain records of all surveys and the locations of all special status plants identified at project sites so that these plants can be avoided during construction of any future projects in the area. Roadside plants that could be harmed by normal maintenance activities shall be flagged or otherwise marked so that equipment operators and other staff are aware of their presence and avoid them.

### ***Decommissioning Roads and Trails***

- 3.2-C.1 When decommissioning roads, MMWD shall survey the areas to be disturbed for Special Status Species. Areas supporting such plants will not be included in fillslope/cutbank decommissioning unless such decommissioning is critical to repair potentially failing fillslopes that would deposit sediment into streams or



decommissioning is essential to closing the route or to restoring the integrity of the habitat, and revegetation of such species is feasible.

***Construction of Trails and Road Reroutes, Conversion of Roads and Trails, Adoption of Roads and Trails***

- 3.2-D.1 The area where the new trail section for the Potrero Meadow Trail, Laurel Dell to Barth's Retreat Trail, and Azalea Hill Trail could be constructed will be surveyed for the presence and location of Special Status Species of plants. NOTE: The MMWD conducted botanical surveys in 2016 and additional surveys will be conducted prior to construction (see BIO-1A).
- 3.2-D.2 To the maximum degree feasible, the location for the new trail shall be selected to avoid destruction of Special Status Species of plants. Where avoidance is not feasible, then revegetation per Mitigation Measure 3.2-B.2 shall apply. Note: Also see BIO-1A.
- 3.2-D.3 The Azalea Hill Trail reroute shall be rerouted to avoid the stand of serpentine chaparral. The non-system trail that proceeds south of the Azalea Hill Trail shall be decommissioned. NOTE: The proposed project complies with both of these requirements.

**Additional Recommended Avoidance and Mitigation Measure**

BIO-1A: Prior to the commencement of construction activities, the District will commission or conduct protocol-level surveys for special-status plant species. The survey area will include all areas in which construction would occur during that construction season, as well as all adjacent areas that could be disturbed. Given the number of annual special-status plant species in the area, and that the distribution of such species changes annually, the surveys will be considered valid until the following spring. The following shall then be implemented:

- All special-status plants and/or boundaries of the population(s) will be flagged.
- For special-status species of low sensitivity ranking, that are common in the project vicinity, and/or resilient to disturbance (e.g., serpentine reed grass, Mt. St. Helena morning-glory, Mt. Tamalpais manzanita), disturbances shall be minimized to the degree practical but complete avoidance is not necessary, as directed by the MMWD botanist.

- If a special-status plant species is found in the project's disturbance boundary, the plants will be avoided to the degree practicable. Flagging and/or fencing shall be placed near any identified special-status plants during construction to prevent incidental disturbance.
- Supplement to Measure 3.2-B.2. If avoidance is not practicable, and if the plant(s) do not have a low sensitivity rating and are not common in the project vicinity and/or resilient to disturbance (as determined by a MMWD ecologist), then a rare plant mitigation shall be designed and implemented. At a minimum, the plan shall include the following elements:
  - a. For annual species, seed shall be collected from plants that will be removed or from other populations of the species on Azalea Hill, and those seeds shall be redistributed in the project vicinity, as directed by the MMWD botanist. For perennial species, seed collection may be augmented by transplanting entire plants or cuttings, as directed by the MMWD botanist.
  - b. Suitable sites shall be identified and prepared for redistribution of seeds (or transplants). The plan shall outline the site preparation activities.
  - c. Monitoring surveys of the seeded or transplanted areas shall be conducted for a minimum of two years.
  - d. Mitigation will be deemed successful provided that each of the relocated species establishes at least one stable population, defined as species presence over a 2-year period, taking into account fluctuations in local reference populations. If this goal is not achieved in 3 years, then contingency measures shall be implemented. Such measures will include: evaluating the environmental or other characteristics affecting plant survival and implementing corrective measures, which may include additional seeding and planting; altering or implementing a weed control regime; or introducing or altering other management activities. Efforts shall continue until the relocated individuals have been healthy for two years.

BIO-1B: The following measures to protect special-status plant species from incidental harm from construction equipment and the spread of weeds will also be implemented:

- a. All construction personnel must attend a biological resources training to be provided by the MMWD (see 3.2-B.3). The training will address the importance of Azalea Hill's sensitive botanical resources and techniques for avoiding impacts.
- b. The number of vehicles on site will be minimized to reduce the potential for disturbance and ensure adequate space to park and maneuver within designated areas.
- c. All vehicle routes, staging, parking, and turnaround areas will be marked, and vehicle operation in unmarked areas is prohibited.
- d. Additional visual or physical barriers (fencing, signs, stakes, marking paint, or flagging) will be installed, as needed, to ensure vehicle compliance with approved vehicle routes, staging, parking, and turnaround areas.
- f. All vehicles and equipment must be cleaned of soil, seeds, and vegetative material prior to entering the project site; inspection and cleaning measures (washing, steaming, air blast, brushing/scrubbing, vacuuming) should be applied to material transport beds, buckets and blades, radiators, grills/filters, tires/axels and differentials, within slashing mulching and ripping equipment, chassis and body, between dual wheels, ledges and frames, inside drivers cab, and mudguards.
- g. Erosion control materials shall be composed of coconut/coir fiber, or other certified weed free materials, as approved by the MMWD botanist.
- h. All open bed vehicles carrying a load of material (unconsolidated fill, erosion control material, etc.) shall be covered to prevent the dispersal of weed seeds.

## **(ii) Special-Status Wildlife Species**

The presence of special-status wildlife species on District lands has been well documented through focused surveys, and other observations made by District staff and the public. The District conducts annual surveys for northern spotted owls (nesting/activity centers), steelhead, and Coho salmon. The District has also conducted surveys for California red-legged frog, foothill yellow-legged frog, western pond turtle, osprey, and bat species.

Based on data collected and maintained by the District, a review of the CNDDDB and the USFWS database, information provided by District wildlife staff, and other sources, 45 special-status wildlife species were identified that are known to occur or possibly occur on District lands or surrounding areas. These species are identified in **Table 2** below, along with their regulatory status, habitat requirements, and a short discussion of their occurrence or potential occurrence in the study area. The location of documented special-status wildlife species and /or designated critical habitat on and surrounding the project site is shown in **Figures 3B**. As shown, almost the entire Mt. Tamalpais watershed, including the project site, is within designated critical habitat for the northern spotted owl.

**Table 3. Special-Status Wildlife Known to Occur or with Potential to Occur on Project Site**

Common Name <i>Scientific Name</i>	Federal/State Status <sup>1</sup> / Other	Habitat	Potential to Occur on Project Site
<b>INVERTEBRATES</b>			
Marin blind harvestman <i>Calicina diminua</i>	--/SA/--	Rocky serpentine grasslands.	<b>Potential (low):</b> Suitable habitat present. However, not observed on District lands and the species has not been documented in over 30 years. Type location is Mt. Burdell in Novato, approximately 11 miles north of project site; specimens collected at that location between 1968-1986.
San Bruno elfin butterfly <i>Callophrys mossii bayensis</i>	FE/--/--	Steep, north-facing slopes within the fog belt. Larval host plant is stonecrop ( <i>Sedum spathulifolium</i> ).	<b>Not Expected:</b> Specimen collected (date unknown) from "near Alpine Lake", in the Mt. Tamalpais watershed. However, the larval host plant has not been observed on the project site. Additionally, all known locations are restricted to San Mateo County, where several populations are known from San Bruno Mountain, Milagra Ridge, the San Francisco Peninsula Watershed and Montara Mountain.
Marin elfin butterfly <i>Callophrys mossi marinensis</i>	--/SA/--	North-facing slopes near redwood forest. Larval host plant is stonecrop.	<b>Not Expected:</b> Redwood forest habitat not present and the larval host plant has not been observed on the site. One specimen has been recorded from the Mt. Tamalpais watershed in 1971, at the confluence of Lagunitas Creek and San Geronimo Creek.

Common Name Scientific Name	Federal/State Status <sup>1</sup> / Other	Habitat	Potential to Occur on Project Site
Robust walker <i>Pomatiopsis binneyi</i>	--/SA/--	Freshwater springs and seeps.	<b>Potential (low):</b> Suitable habitat is present, but the species has not been documented on District lands in over 38 years - 1978 specimen from Potrero Meadow, in the Mt. Tamalpais watershed.
California freshwater shrimp <i>Syncaris pacifica</i>	FE/SE/--	Shallow pools away from main streamflow. Winters under exposed underwater roots; may be found in summer under leafy branches touching water.	<b>Not Expected:</b> Not known to occur on District lands or in any streams/drainages that cross the project site. Known to occur downstream of District land in Lagunitas Creek and Walker Creek. Only 17 coastal streams known to support this species endemic to Marin, Sonoma and Napa Counties.
Ubick's gnaphosid spider <i>Talanites ubicki</i>	--/SA/--	Moist, rocky serpentine.	<b>Potential (low):</b> Suitable habitat present. However, not observed on District lands and the species has not been documented in over 24 years. Type location is Mt. Burdell in Novato, approximately 11 miles north of project site; specimens collected from location between 1982-1992.
A leaf-cutter bee <i>Trachusa gummifera</i>	--/SA/--	Unknown – chaparral?	<b>Potential (low):</b> This species was documented near the project site in 1962- specimen from Carson Ridge, in the Mt. Tamalpais watershed. However, there are no known reported occurrences in the last 54 years.

Common Name Scientific Name	Federal/State Status <sup>1</sup> / Other	Habitat	Potential to Occur on Project Site
Marin hesperian <i>Vespericola marinensis</i>	--/SA/--	Moist brushy areas or grasslands, around springs or seeps, in riparian forest.	<b>Potential:</b> Suitable habitat present and the species has been documented nearby on District lands - 1991 specimen from Lagunitas Creek below Alpine Dam, in the Mt. Tamalpais watershed. There is another documented occurrence of the species (not on District lands) approximately 1.5 miles northeast of the project site.

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#### FISHES

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Tomales roach <i>Lavinia symmetricus</i> ssp. 2	-/CSC/-	Freshwater tributaries to Tomales Bay.	<b>Not Expected:</b> Bon Tempe Creek and the other drainages on the project site are inaccessible to Tomales Roach due to reservoirs and associated dams. Occurs on District lands in Lagunitas Creek below Peters Dam, also in downstream locations. Present in Walker Creek downstream of SoulaJule Reservoir, and in Devils Gulch. Also present in Ross Creek (below Phoenix Lake) and Corte Madera Creek.
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Common Name Scientific Name	Federal/State Status <sup>1</sup> / Other	Habitat	Potential to Occur on Project Site
Central California coast coho salmon <i>Oncorhynchus kisutch</i>	FE/SE/-	Anadromous; migrates through San Francisco Bay and spawns in coastal rivers and streams.	<b>Not Expected:</b> Bon Tempe Creek and the other drainages on the project site are inaccessible to coho due to reservoirs, associated dams, and other barriers. Occurs on District land in Lagunitas Creek below Peters Dam, also in downstream locations. Low likelihood of occurrence in other waters within District lands. Present in Redwood Creek, Walker Creek (downstream from Soulajule Reservoir), Devils Gulch, San Geronimo Creek, and Olema Creek (all on State Parks Land).
Central California coast steelhead <i>Oncorhynchus mykiss irideus</i>	FT/-/-	Anadromous, migrates through San Francisco Bay spawns in coastal rivers and streams.	<b>Not Expected:</b> Bon Tempe Creek and the other drainages on the project site are inaccessible to steelhead due to reservoirs, associated dams, and other barriers. Known to occur in Lagunitas Creek and most of its perennial tributaries, Arroyo Sausal, Corte Madera Creek, Redwood Creek, Walker Creek, San Geronimo Creek, Devils Gulch, Arroyo Corte Madera del Presidio, Tamalpais Creek, Larkspur Creek, and Miller Creek.



Common Name Scientific Name	Federal/State Status <sup>1</sup> / Other	Habitat	Potential to Occur on Project Site
<b>AMPHIBIANS</b>			
California red-legged frog <i>Rana draytonii</i>	FT/CSC/-	Marshes, stream pools, reservoirs, ponds. Uses both riparian and upland habitats for foraging, shelter, cover, and non-dispersal movement (Recovery Plan 2010)	<b>Potential (low):</b> Alpine Lake and Bon Tempe Creek provide potentially suitable habitat. However, the species has not been documented within 4 miles of the project site. Very infrequent observations of individual California red-legged frogs in Lagunitas Creek. Documented at a location 0.75 mile due west of Peters Dam, and in Olema Creek
Foothill yellow-legged frog <i>Rana boylei</i>	-- /SPT/CSC/--	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.	<b>Potential (low):</b> Not known to occur in Bon Tempe Creek or the other onsite drainages. However, the species has been documented within approximately 1 mile of the project site. Known to occur in Little Carson Creek and Big Carson Creek. Also observed in Walker Creek and Salmon Creek (downstream of Soulajule Reservoir).
<b>REPTILES</b>			
Western pond turtle <i>Actinemys marmorata</i>	--/CSC/-	Perennial ponds, deep slow moving streams, marshes and lakes are habitat for this species at 6,000 ft. and below in elevation. However, eggs are laid in loose soil on land in oak woodlands, mixed coniferous forests, broadleaf forests and grasslands, usually within 400 ft. of ponds, lakes, slow streams and marshes with vegetated borders, rocks, or logs. Logs, rocks, cattail mats, and exposed banks are required for basking.	<b>Potential:</b> Known to occur in Alpine and Bon Tempe Reservoirs, and in Bon Tempe Creek, and to nest in nearby areas.

Common Name Scientific Name	Federal/State Status <sup>1</sup> / Other	Habitat	Potential to Occur on Project Site
<b>BIRDS</b>			
Cooper's hawk <i>Accipiter cooperi</i>	-/WL/-	Mature forests, open woodland, riparian forest. Nests in coast live oak and other forest habitats.	<b>Potential:</b> Suitable nesting habitat present.
Sharp-shinned hawk <i>Accipiter striatus</i>	-/WL/-	Mixed woodlands and forests. Nests in conifers or deciduous trees in dense woodlands or mountain forests.	<b>Not Expected:</b> Occurs as a winter migrant on MMWD lands. Very localized nesting on east slope of Bolinas Ridge (Kent Lake Watershed) and Point Reyes Peninsula, but does not nest in the project vicinity.
Grasshopper sparrow <i>Ammodramus savannarum</i>	-/CSC/-	Nests in grasslands; especially moist coastal prairie.	<b>Potential:</b> Suitable nesting habitat present.
Bell's sage sparrow <i>Amphispiza belli belli</i>	FCC/CSC/-	Homogenous stands of chaparral dominated by chamise.	<b>Potential:</b> Suitable nesting habitat present. Nests on MMWD lands, with very limited distribution, confined to south-facing slopes in the Carson Ridge/Pine Mountain area.
Golden eagle <i>Aquila chrysaetos</i>	- /WL, CFP/-	Frequents open woodlands and less populated areas.	<b>Not Expected:</b> No documented nesting occurrences on or near project site. Known to occur on MMWD lands, but nesting status unknown.
Great blue heron <i>Ardea herodias</i>	-/SOLI (4)/-	Nests in large stands of trees near water	<b>Potential:</b> Nests (or formerly nested) within MMWD lands at Lake Nicasio and Alpine Lake.
Oak titmouse <i>Baeolophus inornatus</i>	FCC/-/-	Nests in tree cavities in oak-woodlands.	<b>Potential:</b> Suitable nesting habitat present.
Vaux's swift <i>Chaetura vauxi</i>	-/CSC/-	Nests in hollow trees and snags in heavily forested areas.	<b>Not Expected:</b> Marginal nesting habitat as the project site is not heavily forested. Known to occur on MMWD lands, but nesting status is unknown.

Common Name Scientific Name	Federal/State Status <sup>1</sup> / Other	Habitat	Potential to Occur on Project Site
Northern Harrier <i>Circus cyaneus</i>	-/CSC/-	Nests on ground in swales and low-lying grasslands	<b>Not Expected:</b> Marginal nesting habitat given the lack of large open foraging habitat. Known to occur on MMWD lands, but nesting status unknown.
Olive-sided flycatcher <i>Contopus cooperi</i>	FCC/-/-	Nests in trees, with preference for conifers, but also eucalyptus.	<b>Potential:</b> Some suitable nesting habitat. Nests on MMWD lands, relatively common around Phoenix Lake and Kent Lake.
Yellow warbler <i>Dendroica petechial brewsteri</i>	FCC/CSC/-	Nests in deciduous saplings or shrubs in riparian habitats.	<b>Potential:</b> Some suitable nesting habitat present.
White-tailed kite <i>Elanus leucurus</i>	-/FP/-	Generally nests in trees near fields, open groves, grasslands, or marshes.	<b>Potential:</b> Some suitable nesting habitat present.
California horned lark <i>Eremophila alpestris actia</i>	-/WL/-	Nests in grasslands.	<b>Potential:</b> Some suitable nesting habitat present.
San Francisco Common Yellowthroat <i>Geothlypis trichas sinuosa</i>	FCC/CSC/-	Freshwater marsh, swale, etc.	<b>Potential:</b> Some suitable nesting habitat present. Likely occurs on MMWD land, but nesting status unknown.
Bald eagle <i>Haliaeetus leucocephalus</i>	FCC/SE, CFP/-	Wide-ranging in coastal California; often near water.	<b>Not Expected:</b> Nests on MMWD land at Kent Lake. Observed foraging in project area but has not been documented nesting at Alpine Lake or nearby areas.
Loggerhead shrike <i>Lanius ludovicianus</i>	FCC/CSC/-	Semi-open country with lookout posts, wires, trees, scrub. Nests in dense tree or shrub foliage.	<b>Potential:</b> Some suitable nesting habitat present. Nests on MMWD lands, though decreasing in recent decades.
Osprey <i>Pandion haliaetus</i>	-/WL/-	Uses snags and large trees for nesting. Forages mainly in lakes and the ocean.	<b>Potential:</b> Some suitable nesting habitat present. Nests on MMWD lands at Kent Lake.

Common Name Scientific Name	Federal/State Status <sup>1</sup> / Other	Habitat	Potential to Occur on Project Site
"Marin" Chestnut-backed Chickadee <i>Parus rufescens neglectus</i>	SOLI (3)/-	Oak woodlands and riparian corridors.	<b>Potential:</b> Some suitable nesting habitat present.
Purple martin <i>Progne subis</i>	-/CSC/-	Nests in large standing snags with cavities near open foraging areas.	<b>Potential:</b> The species has been documented nesting the project vicinity at Pine Point and potential nesting habitat is present on and near the project site.
Allen's hummingbird <i>Selasphorus sasin</i>	FCC/-/-	Semi-open habitats including open oak woods, streamside groves, and parks. Nests in trees and shrubs.	<b>Potential:</b> Some suitable nesting habitat present.
Northern spotted owl <i>Strix occidentalis caurina</i>	FT/CSC/-	In Marin Co. resides in second growth conifer, mixed conifer-hardwood, and evergreen hardwood forests.	<b>Not Expected:</b> Typical nesting habitat does not occur within 0.25 mile of the project site, and no activity centers documented within 0.5 mile of the site (see Figure 3A).
<b>MAMMALS</b>			
Pallid bat <i>Antrozous pallidus</i>	--/CSC/WBWH	Variety of habitats; prefer open dry lands with rocky areas for roosting.	<b>Potential:</b> Any onsite trees with suitable cavities provide potential roosting habitat.
Point Reyes mountain beaver <i>Aplodontia rufa phaea</i>	-/CSC/-	Friable soil in densely vegetated conifer forests	<b>Not Expected:</b> Project site is outside of the expected range of the species. Occurs on Point Reyes Peninsula; possible along portions of Lagunitas Creek.
Townsend's big-eared bat <i>Corynorhinus townsendii</i>	-/CSC/ WBWH	Variety of woodland and forest habitats, but prefers conifers. Roosts primarily in caves, mines, tunnels, and sometimes in buildings, bridges, or other human made structures.	<b>Not Expected:</b> Suitable roost structures not present on the project site.

Common Name Scientific Name	Federal/State Status <sup>1</sup> / Other	Habitat	Potential to Occur on Project Site
Western red bat <i>Lasiurus blossevillii</i>	FS/CSC/WBVG H	Edges of open to moderately dense deciduous foothill woodlands along streams. Roosts in moderately dense foliage.	<b>Potential:</b> Trees on the project site provide potential roosting habitat.
Hoary bat <i>Lasiurus cinereus</i>	-/SOLI (2)/WBVG M	Forested habitat	<b>Potential:</b> Trees on the project site provide potential roosting habitat.
Long-eared myotis <i>Myotis evotis</i>	--/-/WBVG M	Variety of woodland and forest habitats, but prefers conifers. Roosts in crevices, buildings, snags, and under bark.	<b>Potential:</b> Any onsite trees with suitable cavities provide potential roosting habitat.
Fringed myotis <i>Myotis thysanodes</i>	--/-/WBVG H	Roosts in mines, caves, trees and buildings.	<b>Potential:</b> Any onsite trees with suitable cavities provide potential roosting habitat.
Long-legged myotis <i>Myotis volans</i>	-/-/WBVG H	Montane conifer forests, pinyon-juniper woodland, and Joshua tree woodland. Roosts in hollow trees, rock crevices and buildings.	<b>Potential:</b> Any onsite trees with suitable cavities provide potential roosting habitat.
Yuma myotis <i>Myotis yumanensis</i>	-/-/WBVG LM	Woodland and open forest with freshwater sources over which to feed.	<b>Potential:</b> Any onsite trees with suitable cavities provide potential roosting habitat.
American badger <i>Taxidea taxus</i>	-/CSC/-	Suitable habitat is characterized by herbaceous, shrub, and open stages of most habitats with dry, friable soils.	<b>Potential:</b> Suitable habitat present and known from the areas. Documented on District lands and burrows have been noted on grassy slopes above Kent and Bon Tempe Lakes.

Notes: 1. FE = federally listed Endangered, FT = federally listed Threatened, FCC = Federal Bird of Conservation Concern, SE = state listed Endangered, ST = state listed Threatened, SPT = state Proposed Threatened, CSC = California Species of Concern, CFP = Fully protected, SA = Included on CDFW Special Animals List, SOLI = Tomales Bay Watershed Species of Local Interest. WBVG = Western Bat Working Group; H = High Priority, M = Medium Priority, ML = Medium/Low Priority.

As indicated above in **Table 3**, the following special-status wildlife species have some potential to occur on the project site:

- **Invertebrates** – Marin blind harvestman, Robust walker, Ubick’s gnaphosid spider, a leaf-cutter bee, and Marin hesperian.
- **Amphibians** – California red-legged frog and foothill yellow-legged frog.
- **Reptiles** – Western pond turtle
- **Birds** – Cooper’s hawk, grasshopper sparrow, Bell’s sage sparrow, great blue heron, oak titmouse, olive-sided flycatcher, yellow warbler, white-tailed kite, California horned lark, San Francisco common yellowthroat, loggerhead shrike, osprey, “marin” chestnut-backed chickadee, purple martin, and Allen’s hummingbird.
- **Mammals** – Pallid bat, western red bat, hoary bat, river otter, long-eared myotis, fringed myotis, long-legged myotis, yuma myotis, and American badger.

The potential of these species to occur on the project site, and potential project-related impacts to these species, are further discussed below.

### **Federally and/or State Listed Species**

**California red-legged frog** (*Rana draytonii*) is a federally Threatened species and a California Species of Special Concern. The species occurs from sea level to elevations of 1,500 meters (5,200 feet). Breeding occurs in streams, deep pools, backwaters within streams, ponds, marshes, sag ponds, dune ponds, lagoons, and stock ponds. Breeding adults are often associated with deep (greater than 0.7 meter [2 feet]) still or slow moving water and dense, shrubby riparian or emergent vegetation (Hayes and Jennings 1988), but frogs have been observed in shallow sections of streams and ponds that are devoid of vegetative cover. The species also utilizes non-aquatic habitats for refuge and dispersal. 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 also been documented dispersing through areas with sparse vegetative cover and dispersal patterns are considered to be dependent on habitat availability and environmental conditions (N. Scott and G. Rathbun *in lit.* 1998).

There has been only one documented occurrence of California red-legged frog in the Mt. Tamalpais watershed, from a location at the northwest boundary of the watershed. This observation of a single frog (CNDDDB Occurrence #892) was documented in 2006 at the outflow from Kent Lake, just upstream from the confluence of Lagunitas Creek. The species has not

been documented breeding in the Mt. Tamalpais watershed or at any other locations in the watershed. Protocol surveys of the Mt. Tamalpais watershed did not detect this species (GANDA 2003), and the species has also not been documented within the watershed at locations other than the Kent Lake outfall by District staff or others. Individual red-legged frogs have infrequently been observed in Lagunitas Creek (outside of the Mt. Tamalpais watershed).

Alpine Lake and Bon Tempe Creek both provide potentially suitable habitat for California red-legged frogs, but California red-legged frogs have not been documented at these locations. Based on the CNDDDB, California red-legged frogs have not been documented within 4 miles of the project site or from a location where the species could disperse onto the project site. The fact that the species has not been documented breeding in the Mt. Tamalpais watershed, and that the species has not been documented near the project site, limit the potential of the species to occur, but do not eliminate the possibility. Therefore, this species is considered to have a low potential to occur on the project site.

The proposed project does not include any activities within Alpine Lake, Bon Tempe Creek, or other areas containing long-lasting standing water. However, the proposed project includes the construction of a bridge over Bon Tempe Creek and other activities that could result in impacts to California red-legged frog, in the unlikely event that the species occurs in the area. Therefore, conservatively, the following avoidance measures are recommended:

**Measures Required by the Mt. Tamalpais Watershed Road and Trail Management Plan EIR**

No measures are required by the *Mt. Tamalpais Watershed Road and Trail Management Plan* EIR to protect California red-legged frog during construction activities because the species is not known to occur in the watershed.

**Additional Recommended Avoidance and Mitigation Measures**

BIO-2: While it is unlikely that California red-legged frog occurs in the study area, the following measures are recommended to further ensure that the species is not harmed by the proposed project:

- Before any construction activities begin on the site, a qualified biologist shall conduct a training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the measures that are being implemented to conserve the species as they relate to the project, the boundaries within which the project may be accomplished, and instructions that construction

activities must be halted if a California red-legged frog is observed in the construction area and the biologist must be immediately notified.

- A qualified biologist shall survey the work sites within 500 feet of Bon Tempe Creek or Alpine Lake within 48 hours of the onset of construction activities for California red-legged frog. If California red-legged frogs are found, construction activities will be delayed until the USFWS is notified and guidance is provided on how to proceed.

### **Other Special-Status Species**

#### *Invertebrates*

As discussed in **Table 3**, several invertebrates which could potentially be considered of special-status have some potential to occur in the study area, including **Marin blind harvestman**, **Robust walker**, **Ubick's gnaphosid spider**, **a leaf-cutter bee**, and **Marin hesperian**. These invertebrates are included on the CDFW Special Animal List, but do not otherwise have any formal state or federal rarity status. Little is known about these species and Marin blind harvestman, robust walker, and Ubick's gnaphosid spider have not been documented on District lands or within approximately 11 miles of the project site. The leaf-cutter bee has not been documented on District lands since 1962, Marin Hesperian has not been documented on District lands since 1991, and neither species has been documented in the study area. However, given the presence of suitable habitat, Marin blind harvestman and Ubick's gnaphosid spider have some potential to occur in the onsite serpentine habitats, robust walker and Marin hesperian have some potential to occur in onsite wetlands/seeps, while the habitat associations of the leaf-cutter bee are not known.

Many of the proposed activities would have minimal impacts on habitats potentially occupied by these species, as project components such as decommissioning trails would improve habitat quality in the long-term, and making changes/improvements to existing trails would involve minimal disturbance to undisturbed habitats. New construction (i.e., "reroutes") would occur in a relatively small area, much of which is outside of mapped serpentine habitat (which provides potential habitat for Marin blind harvestman and Ubick's gnaphosid spider). Additionally, construction within seeps/wetlands would be limited to the placement of approximately 15 CY of rock in a seep (Site 42) and 25 CY of rock in another seep (Site 45); the seeps are currently within existing trails and the rock would facilitate crossing the seeps with less disturbance. These seeps provide potential habitat for robust walker and Marin Hesperian, and the rock/crossing improvements would serve to limit ongoing disturbance of the seeps. Given the



limited extent of new construction in serpentine habitat, that new construction in seeps/wetlands would be limited to placing a small amount of rock to facilitate improved crossing of the features, the low sensitivity status of these potentially occurring invertebrates, and that none of these invertebrates have recently (and in some cases never) been observed on District lands, potential impacts to these species would not rise to a level of significance under CEQA.

#### **Measures Required by the Mt. Tamalpais Watershed Road and Trail Management Plan EIR**

No measures are required by the *Mt. Tamalpais Watershed Road and Trail Management Plan* EIR to protect these low-sensitivity status invertebrates.

#### **Additional Recommended Avoidance and Mitigation Measures**

No measures are recommended.

##### *Amphibians*

**Foothill yellow-legged frog** (*Rana boylei*) is California Species of Special Concern and is currently proposed for listing as Threatened under the California Endangered Species Act (CESA). The species is characteristically found close to water in association with perennial streams and ephemeral streams that retain perennial pools through the end of summer. Adults preferentially utilize shallow edgewater areas with low water velocities for breeding and egg laying, usually characterized by gravel, cobble, and boulder substrate. Juvenile and non-breeding adult frogs may be found adjacent to riffles, cascades, main channel pools, and plunge-pools that provide escape cover.

This species occurs in the Mt. Tamalpais watershed and has been documented breeding in Big Carson and Little Carson Creeks. These areas are approximately 2 miles west of Bon Tempe Creek, which is the only portion of the project that provides potentially suitable habitat for foothill yellow-legged frog.

The proposed project does not include any activities within Bon Tempe Creek or other areas providing potentially suitable habitat for foothill yellow-legged frog. However, the proposed project includes the construction of a bridge over Bon Tempe Creek which could result in impacts to foothill yellow-legged frog, should the species occur in the area. Therefore, the following avoidance measures are recommended:

#### **Measures Required by the Mt. Tamalpais Watershed Road and Trail Management Plan EIR**

No measures are required by the *Mt. Tamalpais Watershed Road and Trail Management Plan* EIR to protect foothill yellow-legged frog in the study area (including Bon Tempe Creek) because known populations of the species do not occur in the area.

### **Additional Recommended Avoidance and Mitigation Measures**

BIO-3: While it is unlikely that foothill yellow-legged frog occurs in the study area, the following measures are recommended to further ensure that the species is not harmed by the proposed project:

- The biological training session to be provided to construction personnel (see Avoidance Measure BIO-2) shall also address the potential presence of foothill yellow-legged frog. At a minimum, the training shall include a description of the foothill yellow-legged frog and its habitat, the measures that are being implemented to conserve the species as they relate to the project, the boundaries within which the project may be accomplished, and instructions that construction activities must be halted if a foothill yellow-legged frog is observed in the construction area and the biologist must be immediately notified.
- A qualified biologist shall survey the work sites within 25 feet of Bon Tempe Creek within 48 hours of the onset of construction activities for foothill yellow-legged frog. If foothill yellow-legged frogs are found, construction activities will be delayed until the frog leaves the construction zone on its own or until a biologist in possession all required permits moves the frog(s) to an area outside of the construction zone. Temporary exclusionary fencing (designed to prevent frogs from entering the work area) will then be installed under the guidance of a qualified biologist to prevent the relocated frog(s) from reentering the work site.

### *Reptiles*

**Western pond turtle** (*Actinemys marmorata*) is a California Species of Special Concern. This turtle primarily inhabits aquatic habitats, including ponds, slow moving streams, lakes, marshes, and canals. The species frequently basks on logs or other objects out of the water. Western pond turtles also require upland oviposition (i.e., egg laying) sites in the vicinity (typically within 200 meters, but as far as 400 meters) of the aquatic site. Mating typically occurs in late April or early

May and most oviposition occurs during May and June, although some individuals may deposit eggs as early as late April and as late as early August (Rathbun et al. 1993).

Western pond turtle is known to occur in Alpine Lake and in Bon Tempe Creek and may move from these areas to nest in nearby grassland habitats. The proposed project includes the construction of a new trail near the shoreline (where an informal trail currently exists), but the trail would be built to the design standards of the *Mt. Tamalpais Watershed Road and Trail Management Plan* and would not create a barrier to pond turtle movement between aquatic and nesting habitats. Alpine Lake and Bon Tempe Creek would not be directly disturbed by the proposed project activities. However, the species could move onto nearby construction areas and access roads. Should this occur, project activities could result in the loss or harm of individual pond turtles. Therefore, impacts to this species are potentially significant.

#### **Measures Required by the *Mt. Tamalpais Watershed Road and Trail Management Plan* EIR**

No measures are required by the *Mt. Tamalpais Watershed Road and Trail Management Plan* EIR to protect western pond turtle.

#### **Additional Recommended Avoidance and Mitigation Measures**

BIO-4: The following measures are recommended to protect western pond turtle during construction activities:

- The biological training session to be provided to construction personnel (see Avoidance Measure BIO-2) shall also address the potential presence of western pond turtle. At a minimum, the training shall include a description of western pond turtle and its habitat, the measures that are being implemented to conserve the species as they relate to the project, the boundaries within which the project may be accomplished, and instructions that construction activities must be halted if a pond turtle is observed in the construction area and the biologist must be immediately notified.
- A qualified biologist shall survey work sites within construction areas where suitable western pond turtle nesting or aquatic habitat exists within 48 hours of the onset of construction activities. If western pond turtle are found, the turtle will be relocated to a suitable location outside of the construction zone by a qualified biologist.
- Prior to the start of construction, construction fencing shall be placed between the lake or Bon Tempe Creek and the construction area or access

routes where suitable western pond turtle habitat exists, at the direction of the qualified biologist. The fencing shall be placed at the edge of the construction area or access routes to maximize areas for turtle movement or nesting. Large-mesh construction fencing shall be used to allow hatchlings, but not adults of the species, to pass through the fencing. Additionally, prior to the start of construction each day, a designated biological monitor (who has received training from a qualified biologist) shall inspect the fence and construction area. Any pond turtles found on the upland side of the construction fencing shall be relocated to the lake-side of the construction fencing by a qualified biologist or the trained, designated biological monitor.

### *Birds*

As discussed in **Table 3**, the following special-status bird species have potential to nest on or near the project site: Cooper's hawk, grasshopper sparrow, Bell's sage sparrow, great blue heron, oak titmouse, olive-sided flycatcher, yellow warbler, white-tailed kite, California horned lark, San Francisco common yellowthroat, loggerhead shrike, osprey, "Marin" chestnut-backed chickadee, purple martin, and Allen's hummingbird. While none of these species are state or federally listed, they may otherwise be considered to be of special-status under CEQA. Additionally, numerous common bird species could nest on the project site. The active nests of most common bird species are protected by the Migratory Bird Treaty Act (16 U.S.C. 704) and the California Fish and Game Code (Section 3503). Construction activities (i.e., tree and vegetation removal, grading, resurfacing) could result in the direct loss of a nest of a special-status or common bird species. Additionally, construction related noise has the potential to disturb nesting occurring in surrounding areas and to result in the abandonment of an active nest. Therefore, the direct loss or noise-related disturbance of an active nest of a special-status or otherwise protected bird species is a potentially significant impact.

### **Measures Required by the *Mt. Tamalpais Watershed Road and Trail Management Plan EIR***

The following measures are required by the *Mt. Tamalpais Watershed Road and Trail Management Plan EIR* to protect nesting birds:

- 3.3-C.1 If shrubs or trees would need to be removed to construct a specific project, MMWD should remove those trees and shrubs prior to the onset of the nesting season (i.e., after late July and before mid-March of any year) so birds will not nest in trees or shrubs on the construction site. However, trees known to be used for northern spotted owl and golden eagle nesting shall not be removed.

- 3.3-C.2 For projects that would remove trees or shrubs (that were not removed per Mitigation Measure 3.3-C.1) and projects that would use heavy equipment in forested areas or areas of chaparral during the primary bird breeding season (mid-March through the end of July), a qualified wildlife biologist shall examine the project site and surrounding area to determine the presence of nests of any Special Status Species of birds. If said nests are found in trees or shrubs planned for removal and/or if the wildlife biologist determines that the proximity of nearby nests to the site where heavy equipment would be operating would or could result in the adult birds abandoning the nest, work at the site will be scheduled to occur after the breeding season.

#### **Additional Recommended Avoidance and Mitigation Measure**

Additional measures to those required by the *Mt. Tamalpais Watershed Road and Trail Management Plan* EIR are recommended to protect nesting birds for the entire nesting season, for birds that may nest in grasslands or on the ground in other habitats, and for noise-related disturbance to nesting birds. These measures are:

- BIO-5:** If construction activities would commence anytime during the nesting/breeding season of native bird species potentially nesting on the project site (typically February through August in the project region), a pre-construction survey for nesting birds shall be conducted by a qualified biologist within one week of the commencement of construction activities.

If active nests are found in areas that could be directly affected, or that are within 300 feet of construction and would be subject to prolonged construction-related noise, then an appropriate no-disturbance buffer zone shall be created around active nests during the breeding season or until a qualified biologist determines that all young have fledged. The size of the buffer zone and types of construction activities restricted within will be determined by a qualified biologist taking into account factors such as the following:

- Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity;
- Distance and amount of vegetation or other screening between the construction site and the nest; and

- Sensitivity of individual nesting species and behaviors of the nesting birds.

To minimize the potential for a construction-related delay due to the presence of an active bird nest, any required tree and vegetation removal may be conducted outside of the nesting season.

### *Mammals*

As discussed in **Table 3**, **pallid bat**, **western red bat**, **hoary bat**, **long-eared myotis**, **fringed myotis**, **long-legged myotis**, and **Yuma myotis** have potential to roost in the onsite trees. Collectively, these species may use cavities, crevices, foliage, and exfoliating bark for roosting, but the presence of large maternity colonies would be restricted to trees with large cavities. The proposed project would require the removal of approximately 21 trees. Only one tree is over 20-inches in diameter (a mature Douglas fir that may not need to be removed depending on final route alignment), the rest are all 10-inches or smaller in diameter and are therefore unlikely to support a large maternity colony. Therefore, while only one tree could potentially support a large maternity colony, should an active maternity or hibernation roost be present, the proposed removal of trees could result in harm to roosting bats.

### **Measures Required by the Mt. Tamalpais Watershed Road and Trail Management Plan EIR**

The following measures are required by the *Mt. Tamalpais Watershed Road and Trail Management Plan EIR* to protect roosting bats:

- 3.3-D.2 Tree removal larger than 24 inches (dbh) shall occur during one of two time windows: a) after the bat maternity season, when young bats are volant (i.e., flying) (September 1), and before the hibernation period (October 30), or b) after hibernation (March 1), and before birth of young (April 15). Trees smaller than 24-inches dbh not immediately adjacent (within 15 feet) to large trees (>24-inches dbh) may be removed at any time.
- 3.3-D.3 Smaller trees (<24-inches dbh) that are adjacent to larger trees (>24-inches dbh) shall be removed first, one day (24 hours) before removal of adjacent large trees. This will provide an indirect disturbance that should be sufficient to cause bats roosting in adjacent larger trees to vacate the roost, without providing enough time for re-colonization of the roost.
- 3.3-D.4 Snags shall not be removed without first being surveyed by a qualified bat biologist, 2-4 weeks prior to planned tree removal to determine whether bats are roosting inside the trees. If no roosting is observed, the snag shall be removed

within one week following surveys. If bat roosting activity is observed, limbs not containing cavities, as identified by the bat biologist, shall be removed first, and the remainder of the tree removed the following day. The disturbance caused by limb removal, followed by a one night interval, will allow bats to abandon the roost.

### **Additional Recommended Avoidance and Mitigation Measures**

The measures required by the *Mt. Tamalpais Watershed Road and Trail Management Plan* EIR to protect roosting bats do not provide a mechanism for removing large trees during the breeding or hibernation period, even if the tree in question does not provide suitable roosting habitat (e.g., it does not contain deep cavities). Therefore, BIO-6, see below, is recommended to supplement Measures 3.3-D.3, 3.3-D.4, and 3.3-D.5:

BIO-6: Prior to any tree removal during the maternity roosting period (April 15 to August 31) or hibernation period (October 15 to February 28), a focused tree habitat assessment can be conducted by a qualified bat biologist of all trees that will be removed or impacted by construction activities. Trees containing suitable potential bat roost habitat features would then be clearly marked. The habitat assessments should be conducted enough in advance to allow preparation of a report with specific recommendations, and to ensure tree removal can be scheduled during seasonal periods of bat activity if required. If it is determined that day roosting bats are unlikely to occur, the tree may be removed as described below. If the absence of roosting bats cannot be confirmed, then the removal of trees providing suitable maternity or hibernation roosting habitat should only be conducted during seasonal periods of bat activity, including:

- 1) Between March 1 (or after evening temperatures rise above 45F and/or no more than 1/2" of rainfall within 24 hours occurs) and April 15; or
- 2) Between September 1 and about October 15 (or before evening temperatures fall below 45F and/or more than 1/2" of rainfall within 24 hours occurs).

Appropriate methods will be used to minimize the potential of harm to bats during tree removal. Such methods may include using a two-step tree removal process. This method is conducted over two consecutive days, and works by creating noise and vibration by cutting non-habitat branches and limbs from habitat trees using chainsaws only (no excavators or other heavy machinery) on Day 1. The noise and vibration disturbance, together with the visible alteration

of the tree, is very effective in causing bats that emerge nightly to feed, to not return to the roost that night. The remainder of the tree is removed on Day 2. A bat biologist qualified in two-step tree removal is required on Day 1 to supervise and instruct the tree-cutters who will be on the site conducting the work, but only for a sufficient length of time to train all tree cutters who will conduct two-step removal of habitat trees. The bat biologist is generally not required on Day 2, unless a very large cavity is present and a large colony is suspected.

**American Badger** (*Taxidea taxus*) is a California Species of Special Concern. American badgers range throughout California but are most abundant in drier, open stages of shrub, forest, and herbaceous habitats with friable soils where they can dig burrows. No badger dens have been documented on the project site, but the species is known from the project area. Should a badger den be present in a work area, individual badgers could be harmed and related impacts would be significant.

**Measures Required by the *Mt. Tamalpais Watershed Road and Trail Management Plan EIR***

The following measures are required by the *Mt. Tamalpais Watershed Road and Trail Management Plan EIR* to American badgers:

- 3.3-D.1 Prior to construction of any project, the site will be surveyed for the presence of badger dens or burrows. If such sites are identified, work shall not start at that site until a qualified wildlife biologist has determined that the den is not active or, if active, until the young have left the site and are capable of surviving away from the site.

**Additional Recommended Avoidance and Mitigation Measures**

No additional measures are required.



## 7.0 JURISDICTIONAL RESOURCES

Wetlands, streams, and permanent and intermittent drainages are subject to the jurisdiction of the U.S. Army Corps of Engineers (ACOE) under Section 404 of the Federal Clean Water Act (CWA). The CDFW also generally has jurisdiction over these resources, 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. The Regional Water Quality Control Board also generally has jurisdiction over streams and wetlands.

A jurisdictional delineation of potential jurisdictional waters was completed for the project by VNLC in February 2017. The results of the delineation are summarized below while more detailed discussions of potential jurisdictional resources may be found the jurisdictional delineation report (VNLC 2017). The delineation identified a total of 0.351 acre of potentially jurisdictional Waters within the 15.5-acre study are. **Table 4**, below, provides a summary of the delineation results and the locations of these features are shown in **Appendix E**.

**TABLE 4. Summary of Delineation Results**

Habitat Type	Number of Features	Total Acreage
Wetland	5	0.104
Other Waters (Bon Tempe Creek)	1	0.031
Other Waters (ephemeral and seasonal channels)*	28	0.134
Swale	7	0.020
Seep**	3	0.057
Eroded Channel (severely eroded channel along trail)	1	0.006

\* Includes 0.019 acre of tentative other Waters. \*\*Only mapped as polygons along Liberty Gulch Road

Wetlands within the study area are all associated with drainages and/or with springs that augment the drainages. The onsite other Waters consist entirely of drainages that lack wetland vegetation (or are un-vegetated) and/or lack hydric soils. All of the drainages in the area flow into Alpine Lake, either on an ephemeral, seasonal, or semi-perennial timeframe. The drainages include Bon Tempe Creek, a semi-perennial stream (i.e., flows during most of the year and features perennial pools), as well as a large number of ephemeral to seasonal channels ranging from two to fifteen feet in width and featuring subtle to clearly defined bed and bank topography. Additionally, there are a number of seeps and swales that conduct surface water during (and typically for at least several days following) rain events, as observed during field surveys. Several seeps near the northwestern edge of the study area flow onto Azalea Hill Trail and, where the trail is

relatively steep and straight, the flow has eroded a gully that conducts water for at least several days following rain. There are smaller rill features throughout the site, but these were not mapped because they are relatively shallow and conduct water only during rain events.

In addition to the potential jurisdictional Waters, the delineation identified 0.074 acre of riparian habitat in the study area, which is present along Bon Tempe Creek. The mapped area represents the outer edge of the dripline of riparian tree species or the tops of the stream channel banks, whichever is farther from the channel centerline. The riparian tree species along Bon Tempe Creek consist of Oregon ash and arroyo willow.

The proposed project includes constructing or improving 25 stream crossing sites, mostly using clear span bridges, puncheons, and/or armored wet crossings. In total, 308 linear feet of stream channels will be impacted and 665 square feet of fill will be placed in channels (consisting primarily of new rock armor). The stream crossing sites are generally unvegetated and the stream crossing improvements would serve to remedy existing erosion problems and prevent future erosion problems. Therefore, in the long term, the proposed stream crossing improvements would serve to reduce erosion and to protect habitats. The project also includes rerouting trails to avoid seeps and springs, including several wetlands as well as decommissioning trails that traverse potential Waters of the United States and/or State of California. Trails will be re-routed around springs and seeps along the southern portion of the study area, and numerous potential other Waters, mostly in the form of unvegetated channels, will be avoided by the decommissioning of trails throughout the hillslopes of Azalea Hill.

At two sites which include springs, a combination of armored rock crossings and four-foot-wide causeways (set back from the fill slope) would be constructed. Construction within seeps/wetlands would be limited to these two locations and would include the placement of approximately 15 CY of rock in a seep (Site 42) and 25 CY of rock in another seep (Site 45); the seeps are currently within existing trails and the rock would facilitate crossing the seeps with less disturbance. The proposed bridge over Bon Tempe Creek would clear span the stream and no construction is proposed within the bed or banks of the stream, but the removal of some riparian vegetation may be required.

The small project-related impact to wetlands would be largely offset because the seeps are currently within existing trails and the rock would facilitate crossing the seeps with less disturbance; this would limit or eliminate ongoing disturbance to the seeps. Additionally, trails will be re-routed around springs and seeps along the southern portion of the study area, and numerous potential other Waters, mostly in the form of unvegetated channels, will be avoided by

the decommissioning of trails throughout the hillslopes of Azalea Hill. While the project's impacts to seep, wetlands, and streams would self-mitigate, permits from the ACOE, RWQCB, and CDFW would be required. Additionally, the relevant measures for the RTMP EIR would be implemented to protect wetlands and streams during construction activities.

**Measures Required by the *Mt. Tamalpais Watershed Road and Trail Management Plan EIR***

The *Mt. Tamalpais Watershed Road and Trail Management Plan EIR* includes numerous measures to protect hydrology and water quality, including streams, wetlands, and reservoirs. The District would be required to comply with all of the related measures contained in the *Mt. Tamalpais Watershed Road and Trail Management Plan EIR* (Measures 3.1-B through 3.1-G). The measures directly relevant to protecting resources under the jurisdiction of the Corps, RWQCB, and/or CDFW are listed below:

- 3.1-B.4 Sufficient erosion control will be in place during and after work to insure that sediment does not enter the stream channel and that there is no increase in stream turbidity levels resulting from construction. Disturbance of streamside vegetation will be the minimum necessary to complete operations. Other restrictions may be applied for specific sites.
  
- 3.1-B.8 To prevent construction debris from entering the creek, appropriate best management practices set forth in the California Storm Water Best Management Practice Handbooks will be employed. In upland work areas, barriers will be placed between the construction area and the creek to prevent construction debris or surface runoff from entering the creek. The District will install temporary erosion control measures, such as silt fences, erosion control matting, wattles or hay bales, to prevent transport of sediment and other wastes off the project, storage or staging areas that could possibly enter a creek or reservoir. Erosion control will be in place by October 30. Furthermore, the District will control dust at the project, storage or staging areas to prevent the transport of such material into a creek or reservoir. Imported wattle, hay bales, and matting used for erosion control should be certified "weed free."  
  
Mulches, jute netting, and/or native plant materials will be used wherever bare ground can erode into a creek or reservoir. This includes all excavated fillslopes above these waterbodies and all excavated stream crossings. Weed free straw (3,000 to 5,000 lbs/acre) is one of the most common products used for mulch,

but there are other products available as well. On steep slopes or in windy areas, mulch will be tacked, punched or secured to the ground. Imported mulch should be certified weed free. Mulched sites will be mapped and monitored for nascent weed populations. Rather than random scattering of debris, vegetative material will be collected and concentrated on slopes adjacent to live streams and other locations where fine sediment may be mobilized and enter the stream system. If there is not enough on-site vegetative debris to achieve the desired level of ground cover, excess vegetation from nearby restoration sites may be utilized or additional materials may be imported to the site. Materials will be selected to comply with MMWD requirements to minimize introduction of exotics and interference with re-establishment of native forest species. The Contractor will be required to assist in the transport of such materials from their point of delivery to the actual job site where they will be used. Site-specific conditions both on the finished slope and within the buffer will affect the amount of ground cover actually needed to achieve the goals of reducing downstream turbidity and suspended sediment. Where particularly vulnerable species or habitat are located immediately downstream, or where highly erodible soils are found, the guidelines shall be adjusted to favor more complete surface erosion control. Conversely, some areas may allow relaxing of guidelines, for example where buffer zones have atypically high sediment trapping efficiency due to topographic benches or particularly dense understory and litter accumulations or where excavated materials contain large coarse fragment content that would readily form an erosion pavement. These guidelines will be used and adapted as needed to actual field conditions to insure that fine sediment is prevented from entering the stream systems as much as is reasonably possible.

- 3.1-B.11 All work activities will be timed to avoid, or minimize, the environmental impacts of those work activities. Work in a stream crossing will be done during the dry season to help protect water quality and fisheries. Work around streams will be confined to the period of April 15 through October 15 or the first rainfall. In-water work will cease on or before October 15 of any year.
- 3.1-B.12 Any disturbed banks shall be fully restored upon completion of construction. Revegetation shall be done using native species. Planting techniques can include seed casting, hydroseeding, or live planting methods using the techniques in the latest version of the California Salmonid Stream Habitat Restoration Manual.

- 3.2-H.1 Prior to designing or finalizing construction documents/plans for each project, a field survey of the project site shall be conducted by a qualified wetland expert. This expert shall identify all Army Corps jurisdictional wetlands and wetlands subject to RWQCB oversight. These wetland delineations and identifications shall be submitted to the Army Corps, California Department of Fish and Game, and the RWQCB when submitting the annual list of projects to be carried out the following year.
- 3.2-H.2 All wetlands created by springs shall be maintained to the maximum degree feasible. If the drainage of the spring must be altered to allow proper road or trail drainage, the District shall strive to create a drainage pattern that provides an equal or greater amount of wetland habitat in the area of the spring.
- 3.2-H.3 Any roadside ditch wetlands will be assessed by the District to determine whether they can be retained. Unless displacement of these wetlands is critical to reducing a substantial erosion problem, these wetlands will be retained.
- 3.2-H.4 When removing culverts for replacement, the minimum amount of vegetation shall be removed. No equipment should be allowed within any wetland.
- 3.2-H.5 Culverts draining upslope wetlands shall be placed so that the inlet is set at the same elevation as the existing culvert to maintain the upslope hydrologic regime.
- 3.2-H.6 When decommissioning roads and trails, all wetlands should be retained unless their retention would cause substantial future erosion.
- 3.2-H.7 All ditches supporting wetlands shall be clearly identified so that ongoing road and trail maintenance avoids grading or cleaning these ditches except where needed to restore ditch function.
- 3.2-H.8 Where wetland plants must be removed or wetland habitat is created, the District shall collect seed from wetland plants in the area and reseed the area once construction is complete. Suitable live plants can also be planted. Planting techniques can include seed casting, hydroseeding, or live planting methods using the techniques in the latest version of the California Salmonid Stream Habitat Restoration Manual.

- 3.2-H.9 The District shall abide by any additional permit conditions required by the Army Corps, California Department of Fish and Game (Wildlife), and the RWQCB.
- 3.2-H.10 To ensure there is no net loss of wetlands due to the project, the District is committed to creating approximately 290 feet of new creek as the result of the road and trail decommissioning called for in the Draft Plan. The unavoidable impact of loss of isolated wetlands in in-board ditches due to road re-contouring (subject to Mitigation Measures 3.2-H.1 and 3.2-H.3) shall be assessed, quantified, and calculated for size, condition, function, and value of the ditch wetlands. The loss of isolated, in-board ditch wetlands shall not exceed the 290 feet of new creek that will be created. Once the threshold is reached, no additional wetlands shall be displaced or impacted without further environmental analysis and mitigation. NOTE: The 290 feet of new creeks has been created, and this biological resources report provides analysis of wetland impacts associated with the currently proposed project.

### **Additional Recommended Avoidance and Mitigation Measures**

No additional measures are required.

## **8.0 SENSITIVE PLANT COMMUNITIES**

Sensitive plant communities are communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects. These communities may or may not contain special-status species or their habitat. The most current version of the CDFW's *List of California Terrestrial Natural Communities* as well as the MCV indicate which natural communities are of special-status given the current state of the California classification.

The study area encompasses a number of sensitive plant communities. There are three plant communities that are designated as Rare and Threatened by the CDFW: Serpentine Bunchgrass, Purple Needle Grass Grassland, and Mt. Tamalpais Manzanita Chaparral. The study area also encompasses riparian habitats, wetlands, and other waters subject to the jurisdiction and legal protection of environmental regulatory agencies; these habitats are discussed above (see **7.0 Jurisdictional Resources**).

The proposed project would remove (i.e., decommission) approximately 4.4-miles of non-system roads and trails and restore those routes to natural conditions to improve habitat. Many of the

non-system trails traverse serpentine habitats that support sensitive plant communities. The unauthorized use of these trails degrades habitat quality within sensitive plant communities. Therefore, in the long term, the proposed closing and restoration of non-system trails would benefit sensitive plant communities by eliminating trails that provide access to over one acre of habitat, including large areas of sensitive serpentine habitats on Azalea Hill.

New construction would generally be limited to the proposed trail reroutes. Some of the proposed trail reroutes would occur within small areas mapped as upland serpentine grassland. However, these reroutes do not include rerouting an existing trail from a common plant community into a sensitive plant community. Therefore, the restoration of the existing trail would offset impacts to sensitive plant communities associated with the rerouted trail.

The other project components include actions that would occur where a trail or road already exists, such as adopting and improving existing trails and converting an existing road to a trail (or vice-versa). These activities would primarily occur within the footprint of the existing road or trail and related habitat disturbances would be small and adjacent to existing trails.

As required by the Mt. Tamalpais Road and Trail Management Plan (Mitigation Measure 3.2-D.3), the Azalea Hill Trail reroute has been rerouted to avoid the stand of serpentine chaparral and the non-system trail that proceeds south of the Azalea Hill Trail will be decommissioned. The initial project design was also modified to avoid large stands of serpentine chaparral.

Given the above, project-related impacts to sensitive plant communities would largely be self-mitigating. The proposed closing and restoration of approximately 4.4 miles of non-system trails would benefit sensitive plant communities by eliminating trails that provide access to large areas of sensitive serpentine habitats on Azalea Hill. Measures would also be implemented to assist these areas revegetate with native vegetation. The proposed project does not include relocating any existing trails from a common plant community into a sensitive plant community, and other project activities would primarily occur within the footprint of the existing roads or trails and related habitat disturbances would be small and adjacent to existing trails. However, measures are still required to minimize impacts to sensitive plant communities and to restore temporarily disturbed habitats.

Potential impacts to sensitive plant communities could also occur due to the spread of weeds. It is possible that construction equipment could transport seeds of invasive plant species to the site, or that areas incidentally disturbed during construction could be colonized by invasive plant species.

### **Measures Required by the Mt. Tamalpais Watershed Road and Trail Management Plan EIR**

The *Mt. Tamalpais Watershed Road and Trail Management Plan* EIR includes the following measures to protect sensitive plant communities and prevent the spread of weeds:

- 3.1-B.8 See Jurisdictional Resources, above
- 3.2-E.1 All projects shall be designed and constructed to remove only that native vegetation needed to accomplish the erosion control objectives. MMWD shall monitor work to ensure only targeted plants are removed.
- 3.2-F.1 Decommissioned roads and trails should be covered with native mulch available in the site area. MMWD may also collect seeds of plants or live plants common to the area and revegetate the disturbed slope. Decommissioned sections should be ripped or otherwise treated to encourage the establishment of seeds or seedlings. Planting techniques can include seed casting, hydroseeding, or live planting methods using the techniques in the latest version of the California Salmonid Stream Habitat Restoration Manual.
- 3.2-I.1 Invasive exotic weed populations in and adjacent to project sites will be treated prior to any soil disturbing activities to minimize the seed dispersal of those plants. Sites where imported gravel or other fill materials are installed or stored should be mapped and monitored to prevent the introduction of new weeds.
- 3.2-I.2 MMWD shall monitor project sites and remove new exotic weeds spread into the site area by project construction.
- 3.2-I.3 Monitoring and/or treatment of these sites shall occur quarterly, or until it has been determined that there is no longer a risk of an unintentional release of an invasive, exotic species.

### **Additional Recommended Avoidance and Mitigation Measures**

See BIO-1B, which includes measures to prevent the spread of weeds during construction activities.

BIO-7A Where trails will be rerouted or where activities will occur outside of existing trails, the removal of native vegetation will be minimized to the degree practical.

BIO-7B All areas temporarily disturbed during project activities that are outside of the finished trail/road alignment will be restored to their pre-disturbance condition. The pre-disturbance condition would be documented by a botanist prior to



project implementation. A restoration plan will be implemented to restore all temporarily disturbed areas. Success criteria may include total plant cover, and non-native species cover shall not exceed pre-disturbance non-native species cover. The plan shall address acceptable thresholds for native and non-native species for each monitoring year for five years. The plan shall also define corrective actions that would be taken if the performance standards are not met and the triggers for taking corrective actions.

BIO-7C In addition to the requirements of Measure 3.2-F.1 from the *Mt. Tamalpais Watershed Road and Trail Management Plan* EIR, all decommissioned trails will be monitored by a qualified botanist annually for a period of five years. Corrective actions will be implemented if it is determined by the botanist that the trails are not revegetating with appropriate vegetation characteristic of surrounding areas on similar soils.

## **9.0 WILDLIFE MOVEMENT CORRIDORS**

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. The project site is located in an undeveloped area and is surrounded by large expanses of open space. Wildlife is expected to currently use the project site for local and regional movements. The proposed project does not include the construction of any structures that would inhibit wildlife movement. Additionally, construction activities would occur during daylight hours, when wildlife movements are less likely to occur. Therefore, the proposed project would not substantially interfere with the local or regional movement of wildlife species.

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## **Appendix A – Project Description and Figures**



## Environmental Checklist Form

1. **Project Title:** Amendment of the *Mt. Tamalpais Watershed Road and Trail Management Plan - Restoration of Azalea Hill* (MMWD Project No. R17008)
2. **Lead Agency Name and Address:** Marin Municipal Water District, 220 Nellen Ave., Corte Madera, California 94925
3. **Contact Person and Phone Number:** Dain Anderson, Environmental Services Coordinator, Marin Municipal Water District 415-945-1586
4. **Project Location:** Azalea Hill, approximately 4 miles west-southwest of the Town of Fairfax, CA (lat 37.9626, long -122.6206), APN 197-120-31 (**Figure 1**).
5. **Project Sponsor's Name and Address:** Marin Municipal Water District, 220 Nellen Ave, Corte Madera, CA 94925
6. **General Plan Designation:** Marin Countywide Plan – Open Space (OS)
7. **Zoning:** Marin County Zoning Ordinance – Open Area (OA)
8. **Description of Project:**

The Marin Municipal Water District (District or MMWD) is proposing the Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan – Restoration of Azalea Hill (Appendix A). The project would: 1) amend the *Mt. Tamalpais Watershed Road and Trail Management Plan* (RTMP) for the Azalea Hill area; 2) remove approximately 4.4-miles of non-system roads and trails and restore those routes to natural conditions to improve habitat and water quality; 3) adopt and improve an approximately 1.9-mile route as an unpaved, approximately 4-foot-wide, small vehicle, or multi-use route (comprised of the existing Liberty Gulch Road (1.2 mile) and conversion of some existing non-system trails (0.7 mi) to the wider, small vehicle route); 4) improve the existing, approximately 1.1 mile hiking and horse route over Azalea Hill to correct its erosion problems and make it more sustainable; and 5) improve the Azalea Hill parking lot to correct erosion problems and improve the visitor amenities serving Azalea Hill. Upon its completion, the project would prevent up to an estimated 219 cubic yards of sediment from entering Azalea Hill's creeks or Alpine Lake annually (or 4,377 cu.yds over 20 years), and would restore approximately one acre of habitat.

### 8.1 Background

Azalea Hill is an approximately 370-acre area of the Mt. Tamalpais watershed bordered by Bon Tempe Creek and the Sky Oaks/Bullfrog area to the east, Alpine Lake to the south, Liberty Gulch, Bolinas-Fairfax Road and the Pine Mountain area to the west, and the Meadow Club golf course to the north. Elevation ranges from 646 feet along the shore of Alpine Lake to 1,217 feet at its summit (**Figure 1**). The area is crisscrossed by a network of approximately 7 miles of roads and trails that were constructed over time as hiking trails, carriage roads, ranch roads or county vehicle roads. There are a dozen or so intermittent creeks originating on Azalea Hill, as well as several seeps and springs. The vegetation is predominately a mixture of grasslands, chaparral and hardwood forest. Of note are pockets

of serpentine soils in several areas that are highly erosive and that support many special-status plant species.<sup>1</sup>

Of the 7-miles of roads and trails, approximately 6-miles are social or “non-system” routes. “Non-system” routes, as opposed to system, or official routes, are also known as “social,” “abandoned,” “illegal” or “unofficial” routes, and they add to the burden of road and trail management. These non-system routes have a wide variety of undesirable effects on the environment ranging from water quality impacts to migration or foraging barriers for wildlife to physical removal of habitat.<sup>2</sup> (Figure 2). These routes, some of which existed before the district acquired the land (i.e. the old ranching roads), or were constructed by others over time, have persisted through repeated off-trail use.

Key to the proposed project is what is now called Liberty Gulch Road. This road was originally constructed to replace the county’s Bolinas-Fairfax carriage road which was flooded by Alpine dam and its resulting reservoir in 1919. Subsequent raising of Alpine Dam in 1924 and 1941 resulted in additional road construction or re-routes in the area. At one time Liberty Gulch Road provided the connection for all users between Bullfrog Road, a gateway to the “lakes” area, and Fairfax-Bolinas Road, a gateway to the “Pine Mountain” area. However, the dam and road construction have eliminated, for the most part, the connections at either end (the lower portion is flooded by Alpine Lake and the upper portion was buried under today’s current Bolinas-Fairfax Road alignment) (Figure 3).

Other key elements of the site are Azalea Hill Road and the Azalea Hill Trail that currently make up the RTMP recognized route over Azalea Hill. While their origin is not known (speculation has the road being built by ranchers and the trail being built by equestrians), they provide the hiking and equestrian connection over the peak of Azalea Hill between Bullfrog Road and Bolinas-Fairfax Road. The western most part of this route (Azalea Hill Road) is open to bicycles and vehicles; however, the road is badly gullied and bicycle and vehicle access ends at the top of the hill. As such, there is no bicycle or vehicle connection between Bullfrog and Bolinas-Fairfax Roads (Figure 4).

**a. Purpose and Need**

At issue on Azalea Hill are the areas with serpentine soils where many special-status plant species grow that can be easily damaged by people traveling off-trail. Serpentine soils are also very erosive, and sediment from these and other erosion sites makes its way to Alpine Lake. An assessment<sup>3</sup> of only the erosion sites done as part of the RTMP for Liberty Gulch Road and the Azalea Hill Trail estimated approximately 2,573 cubic yards of sediment would run into Alpine Lake over the next 20 years if left untreated.

Also at issue is the network of roads and trails on Azalea Hill. The one official route does not provide an adequate connection from the lakes area to the Pine Mountain area for all visitors or district patrol and response staff. Further, it is in poor condition and some

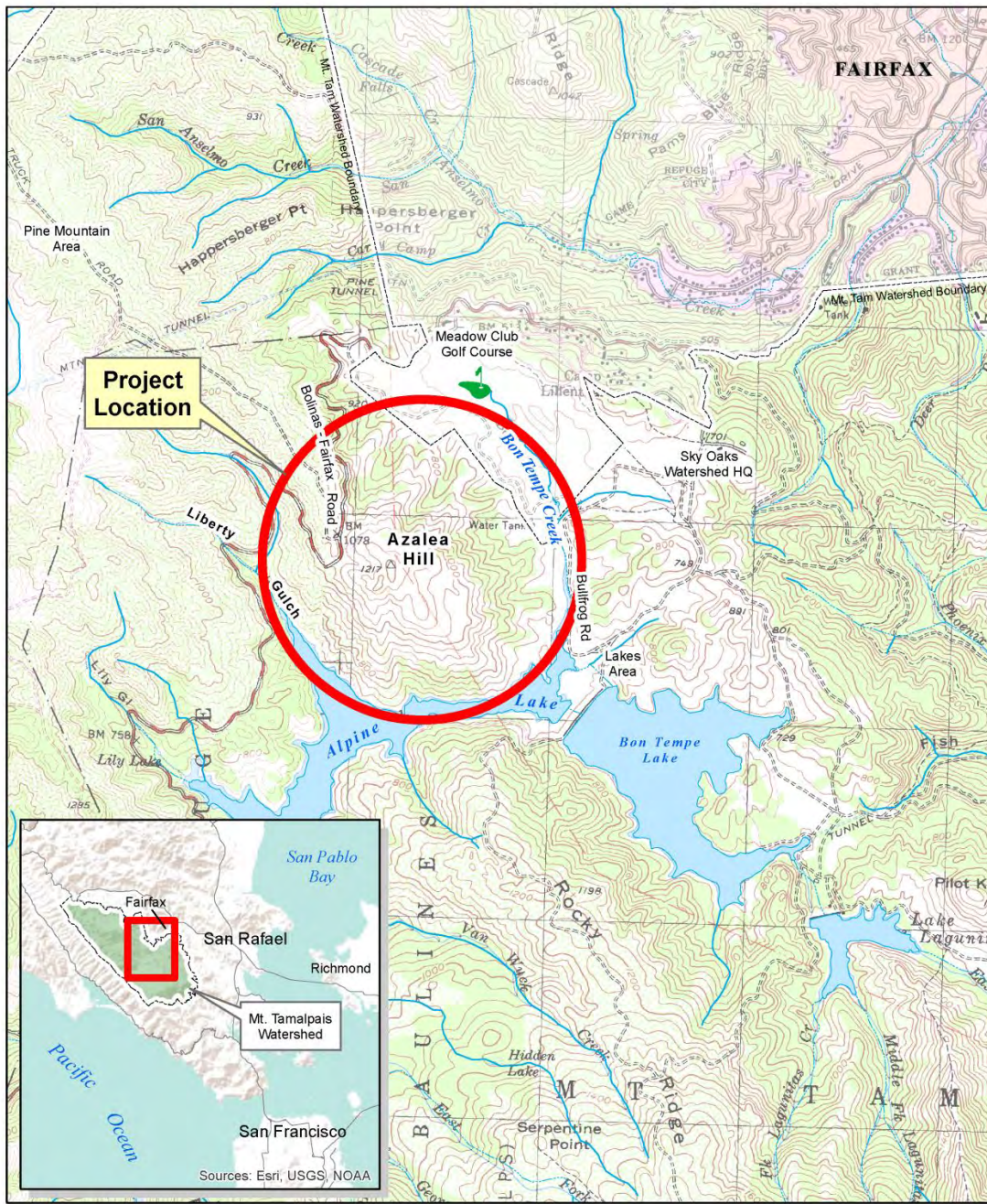
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<sup>1</sup> A list of special-status plant species observed on Azalea Hill is found in Table \_\_, Section \_\_.

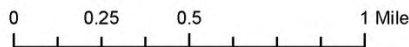
<sup>2</sup> Refer to Chapter 5 of the “Mt. Tamalpais Watershed, Road and Trail Management Plan,” prepared by MMWD, 2005.

<sup>3</sup> PWA, 2003. “Summary Report, Road and Trail Inventory and Assessment, Erosion Prevention Implementation Plan, Mt. Tamalpais Watershed, Marin Municipal Water District, Marin County, California.” Prepared for the Marin Municipal Water District by Pacific Watershed Associates, Arcata, California 95518

**Figure 1: Location Map**



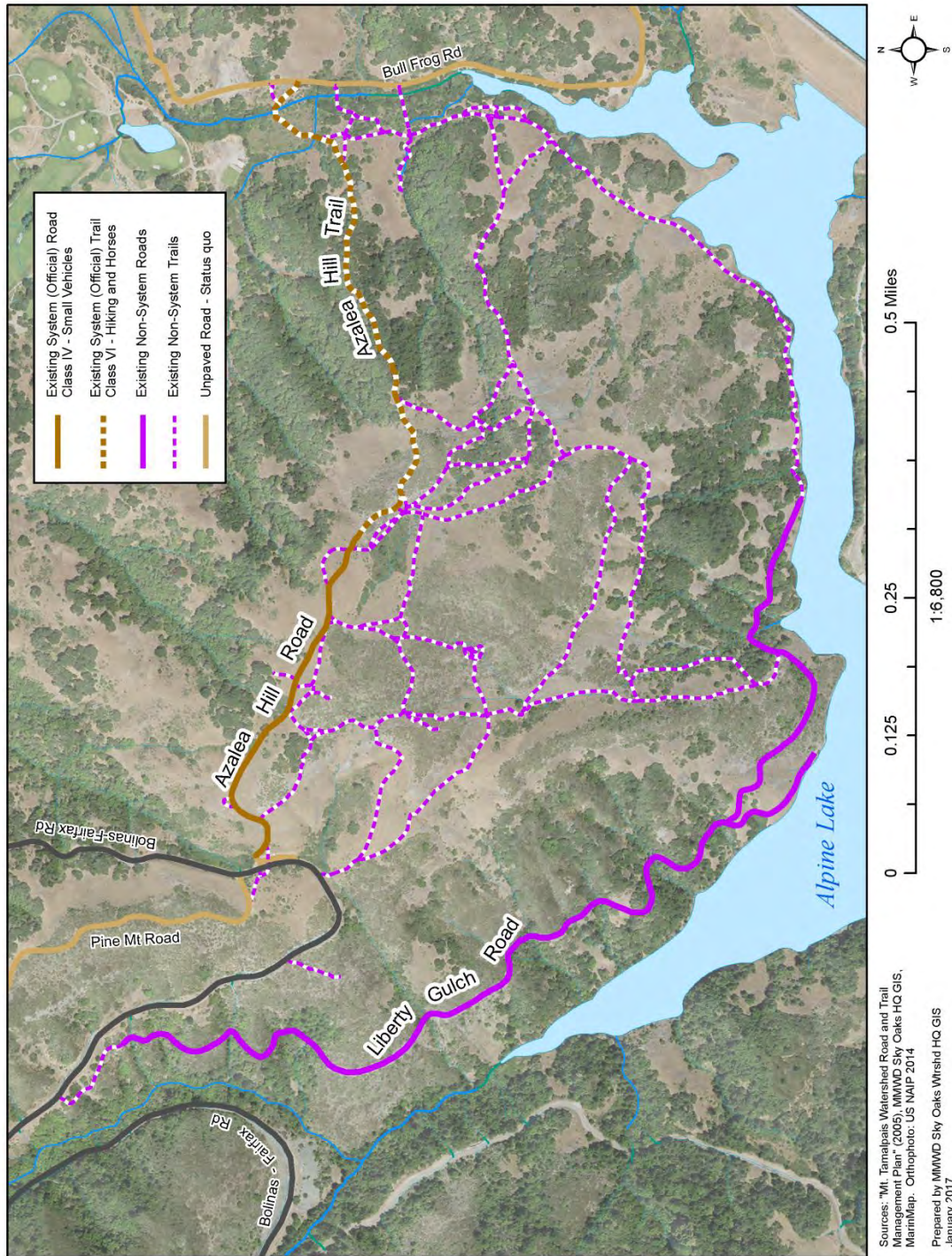
Sources: MMWD Sky Oaks HQ GIS, MarinMap and USGS Quad Maps (7.5 min.) Portions of Bolinas and San Rafael  
 Prepared by MMWD Sky Oaks Wtrshd HQ GIS January 2017



SOURCE: MMWD 2015



**Figure 2: Existing Conditions**

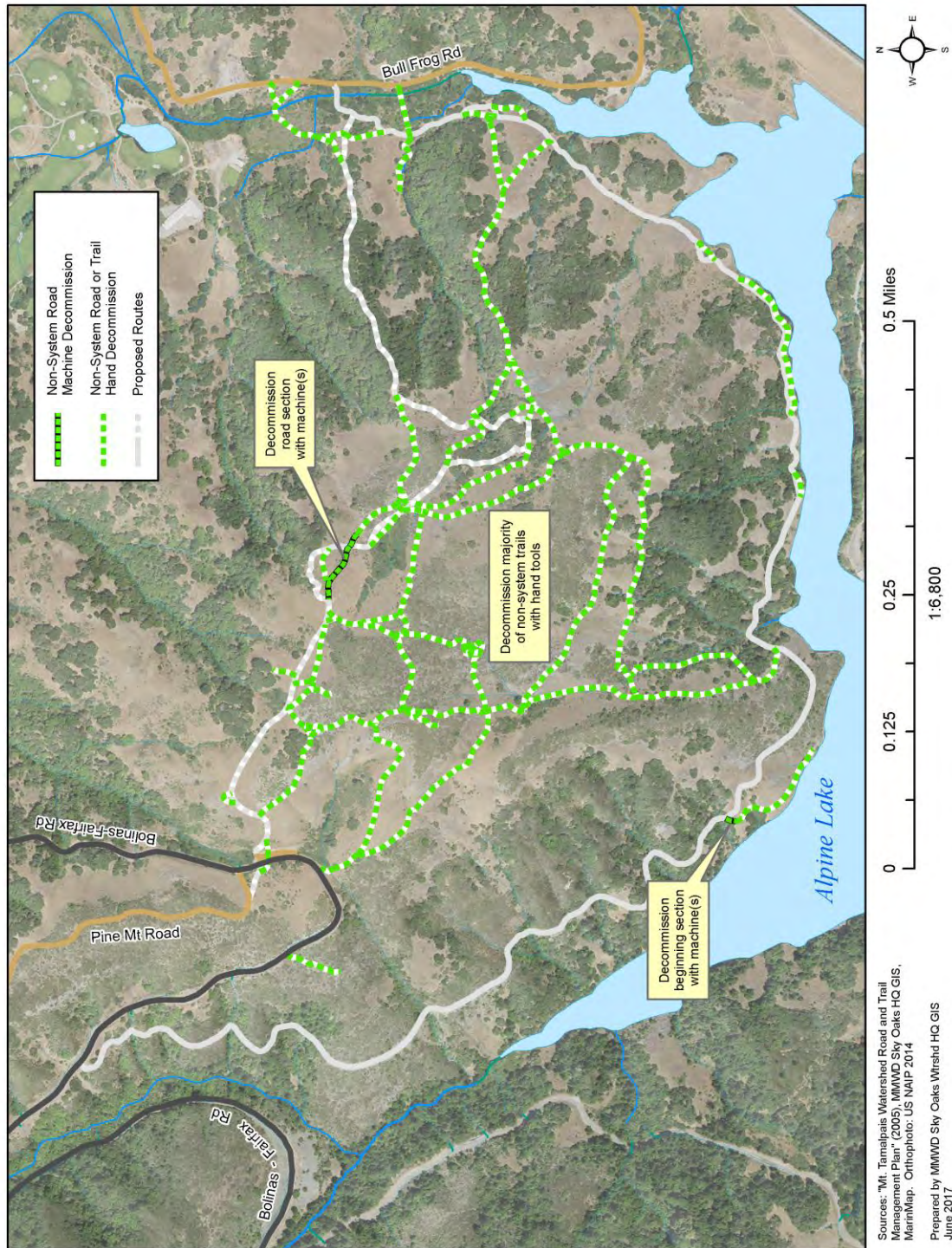


SOURCE: Marin County Assessor-Recorder-County Clerk 2017





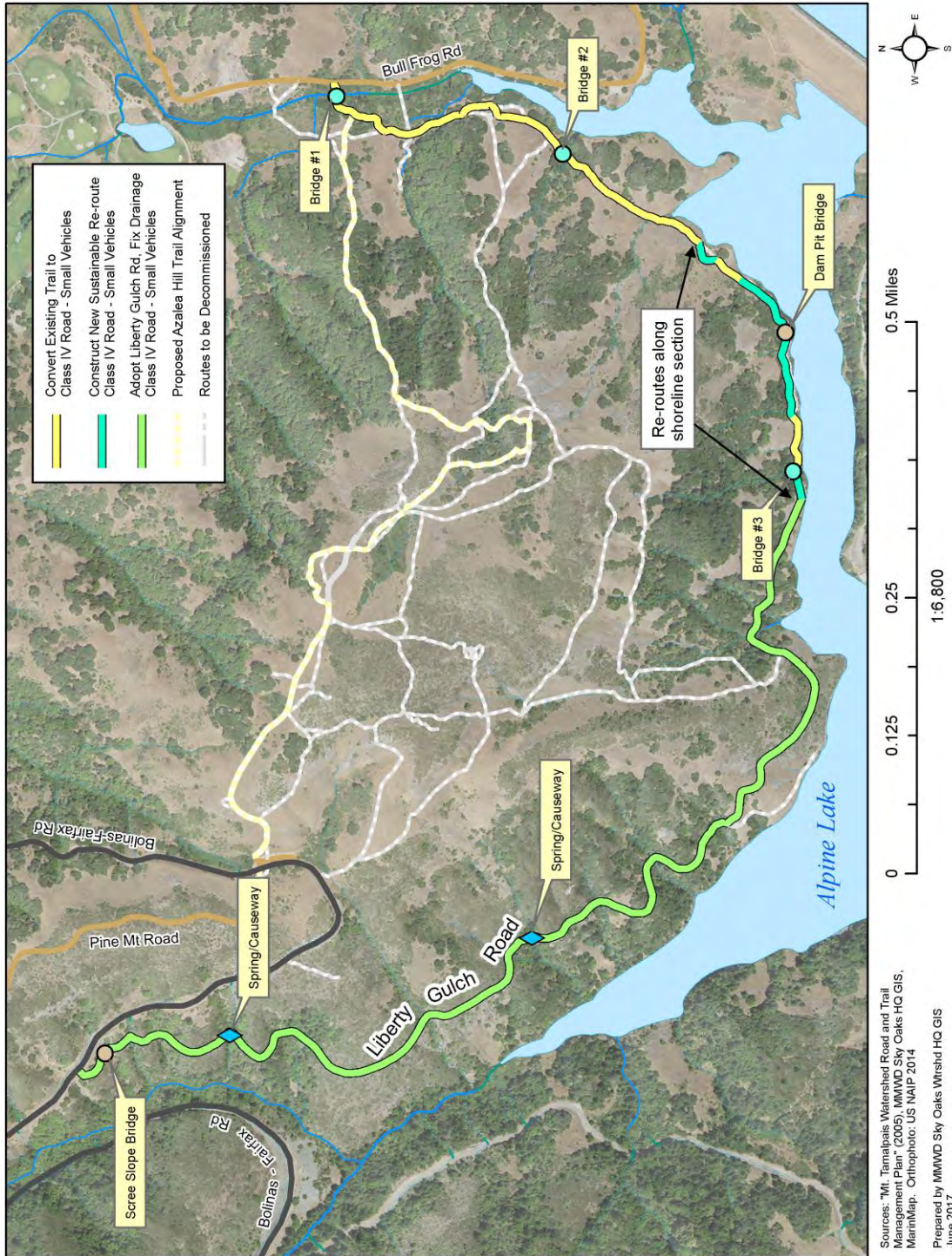
**Figure 3: Removal of Non-System Routes**



SOURCE: MMWD 2017



**Figure 4: Adopt Small Vehicle, or Multi-use Route (Liberty Gulch Road)**



SOURCE: MMWD 2017



sections are too steep to be sustainable. In addition, the network of non-system trails, some of which pass through this sensitive habitat, continue to have undesirable effects such as habitat fragmentation, disruption of wildlife, erosion and the increased risk of trail users getting lost or injured. Removal of this network of non-system trails would minimize these impacts and help restore many areas of Azalea Hill. And, adopting and improving the old, existing Liberty Gulch Road would improve the visitor experience by providing a sustainable route for bicycles, district patrol personnel and emergency response that connects closer to the Azalea Hill parking lot, via Bolinas-Fairfax Road, than currently exists. Additionally, the improvement visitor amenities at the existing Azalea Hill parking lot would further benefit the visitor experience, and educate them about the sensitive habitat in the area and the importance of keeping on designated trails.

**b. 2005 Mt. Tamalpais Watershed Road and Trail Management Plan**

The District adopted the *Mt. Tamalpais Watershed Road and Trail Management Plan* in 2005. The RTMP is a both a description of the official system of roads and trails and a detailed work plan on how to manage the roads and trails for the next quarter century. It also serves as a guide to further the protection of water quality in creeks and reservoirs, further the protection of environmentally sensitive habitats and special status species, and minimize road and trail related impacts on the Mt. Tamalpais Watershed.

The goals of the Plan are:

1. *To improve water quality and minimize sediment into the creeks and reservoirs;*
2. *To reduce the impact of the road and trail network on wetlands, riparian areas, other environmentally sensitive habitats and special status plant and animal species; and*
3. *To reduce the impact of the road and trail network on the Watershed's natural ecological functions.*

Azalea Hill is called out in Chapter Two of the plan as an area proposed for changes.<sup>4</sup> Azalea Hill Road is proposed to be converted to a trail, mainly to keep cyclists from continuing beyond the road and down onto the trail, or worse, creating new trails that damage the environment and stress limited enforcement resources. In addition to being a dead end, other undesirable effects include its steepness, the presence of special status plant species and erosive serpentine soils. Azalea Hill Trail is proposed for a re-route because it is too steep and gullied in areas, passes through erosive serpentine soils in other areas and through a wetland at the bottom of the trail (a new creek crossing would be needed to avoid the section that currently runs through the wetland).

**8.3 Project Objective and Description**

The Azalea Hill Restoration Project's goals are to:

- Restore habitat, including sensitive serpentine habitats, by removing unnecessary roads and trails;

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<sup>4</sup> Section 2.1.2 – Changes to the Old Road and trail System and Table 2.4 – Proposed Changes to the Road and Trail System on the Mt. Tamalpais Watershed.

- Provide environmentally sensitive routes (i.e. routes that avoid environmentally sensitive areas wherever possible, and minimize and mitigate their impacts when not possible) over Azalea Hill for all users (hikers, equestrians, cyclists and district patrol and response staff) to improve connectivity between the lakes area and the Pine Mountain area;
- Improve the visitor experience of these users by providing new, improved trail marker signage, informational kiosks, new trash and recycling facilities, parking lot improvements, a self-contained, serviceable convenience station (i.e. a porta potty or self-composting toilet), bicycle racks, split rail fencing and benches; and
- Ensure the routes are sustainable, and designed and managed in a manner that strictly minimizes erosion and water quality impacts (e.g. routes that meet the best management practices, design standards and environmental protection measures per Chapter 3 of the RTMP).

To achieve these goals, the project includes the following elements:

1. Amend the *Mt. Tamalpais Watershed Road and Trail Management Plan* for the Azalea Hill area. Chapter 2 already includes guidance for Azalea Hill – treat erosion sites (creek crossings and gullies), re-route it where it is too steep, and it notes the presence of serpentine habitats (and the special status plants that live there). The plan also recognizes the existing route connectivity problem. The road dead-ends at the top of the hill, so some cyclists use non-system routes or create new ones, damaging the environment or stressing limited enforcement resources to make a connection from the lakes area to the Pine Mountain area. This amendment would add language in Chapter 2 noting that Liberty Gulch Road would be adopted, including its associated re-routes and conversions, as a Class IV small vehicle road, or multi-use route, to improve connectivity between the lakes area and the Pine Mountain area. The amendment would also add Liberty Gulch Road to Table 2.4, “Non-System Routes to Become System – Adoptions,” and the maps in Figures 2.03 through 2.15, as a Class IV small vehicle road, or multi-use route. Lastly, the number of miles of roads and trails in the plan would be updated to reflect the current conditions on the Watershed. The full text of the new language and the revised maps can be found in **Appendix A**.
2. Remove approximately 4.4-miles of non-system roads and trails and restore those routes to natural conditions to improve habitat and water quality. This work would be accomplished by uncompacting the trail tread with hand tools (picks, McLeods, or shovels), then raking adjacent top soil, duff and leaf litter on top of the decommissioned tread to aid its re-vegetation. There are two sites where equipment would be used to do the restoration work, one at a spur road at its intersection with Liberty Gulch Road near the bottom of the hill, the second at the upper end of the Azalea Hill Road (**see Figure 3**). There may be locations where it is not necessary to compact the trail tread because segments have already re-vegetated or are no longer accessible. This would be determined, in part, by the type of vegetation a trail goes through. For example, tool work might be needed on a trail segment when it goes through grassland, maybe only here or there when it’s in forest lands, and not at all when in chaparral. The re-vegetation of these areas

after they are decommissioned would also minimize erosion from these areas, saving up to an estimated 85 cubic yards<sup>5</sup> annually (approximately 1,702 cubic yards over 20 years) from entering Alpine Lake or one of Azalea Hill's creeks, thereby improving water quality in addition to restoring habitat;

3. Adopt and improve an approximately 1.9-mile section of the unpaved, existing Liberty Gulch Road, including associated re-routes and conversions, as a Class IV<sup>6</sup> small vehicle road, or multi-use route (**see Figure 4**). Following the guidance in the RTMP for Class IV roads, the route would be designed for not more than small vehicles (approximately four-foot-wide), necessitating only those improvements necessary to provide access for ATV quads and bicycles. Throughout the length of the route, speed calming features (i.e. changes in elevation such as earthen speed bumps, lane narrowing, diagonal diverters using local logs or rocks, etc.) would be maintained or installed to reduce the downhill speed of bicyclists. Passing opportunities, lines of sight and horse-friendly tread surfaces would also be included throughout the design to improve user safety along the route. What follows are more specifics on this route, beginning at the bottom of the hill and working one's way to its intersection with Bolinas-Fairfax Road:
  - At Bullfrog Road, convert approximately 0.4 miles of existing non-system trail to an approximately four-foot-wide Class IV road. Two, 40-foot-long, bridges, and two puncheons would be installed along this section, all of which would be clear span construction so there would be no construction in the creeks or ephemeral drainages.
  - Adjacent to Alpine Lake, convert approximately 0.3 miles of existing, non-system, "fishing access" trail to an approximately four-foot-wide Class IV road. The re-route would be mostly re-routed several feet up the hill, further away from the lake's shoreline, to help protect water quality. The re-route would also be constructed at a sustainable grade, would avoid sensitive habitats wherever possible, and would use best management practices to minimize its impact and need for maintenance. One 20-foot-long bridge, one puncheon and two armored rock crossings would be installed to cross the four small creeks along this section. Additionally, a second, 16-foot-long bridge would be constructed over an old "dam pit," a remnant of an old dam that was never completed.
  - Once the route meets the old Liberty Gulch Road, the next approximately 1.2 miles would need little in the way of tread improvements except near the upper end. The majority of the work here would be to correct the old road's drainage issues by implementing best management practices from the RTMP (storm-proof creek crossings, critical and rolling dips, outsloping, etc.). Fifteen creek crossing sites would be upgraded along this section to

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<sup>5</sup> A typical 10-wheel dump truck holds approximately 10 cubic yards of dirt. Therefore, 85 cubic yards would be the equivalent of eight and one-half truck loads per year.

<sup>6</sup> Per Section 2.2 of the RTMP, "Road Designations," Class IV roads are defined as small vehicle, unpaved roads with a primary use of patrol and route connectivity. Some sections may only be passable with small vehicles (i.e. ATV quads or small "bobcat" sized tractors). They only have limited truck and heavy vehicle traffic, and seasonal closures may apply.

strictly minimize their erosion potential. Nine of the upgrades would be armored rock crossings, two would be puncheons, one would be a bridge and one existing culvert would be slip-lined to prolong its life. At two sites which include springs, a combination of armored rock crossings and four-foot-wide causeways (set back from the fill slope) would be constructed. Lastly, one section of gullied road would be treated with rolling dips and one landslide would be mitigated by pulling its unstable fills and de-watering the road above with outsloping and rolling dips. Near the top of the old Liberty Gulch Road a pile supported bridge or trestle would be constructed across the unstable scree slope left over from the construction of Bolinas-Fairfax Road above. Lastly, at its intersection with Bolinas-Fairfax Road, and generally within the existing alignment of the route, a new approach and landing would be graded to provide a better, more sustainable connection to Bolinas-Fairfax Road.

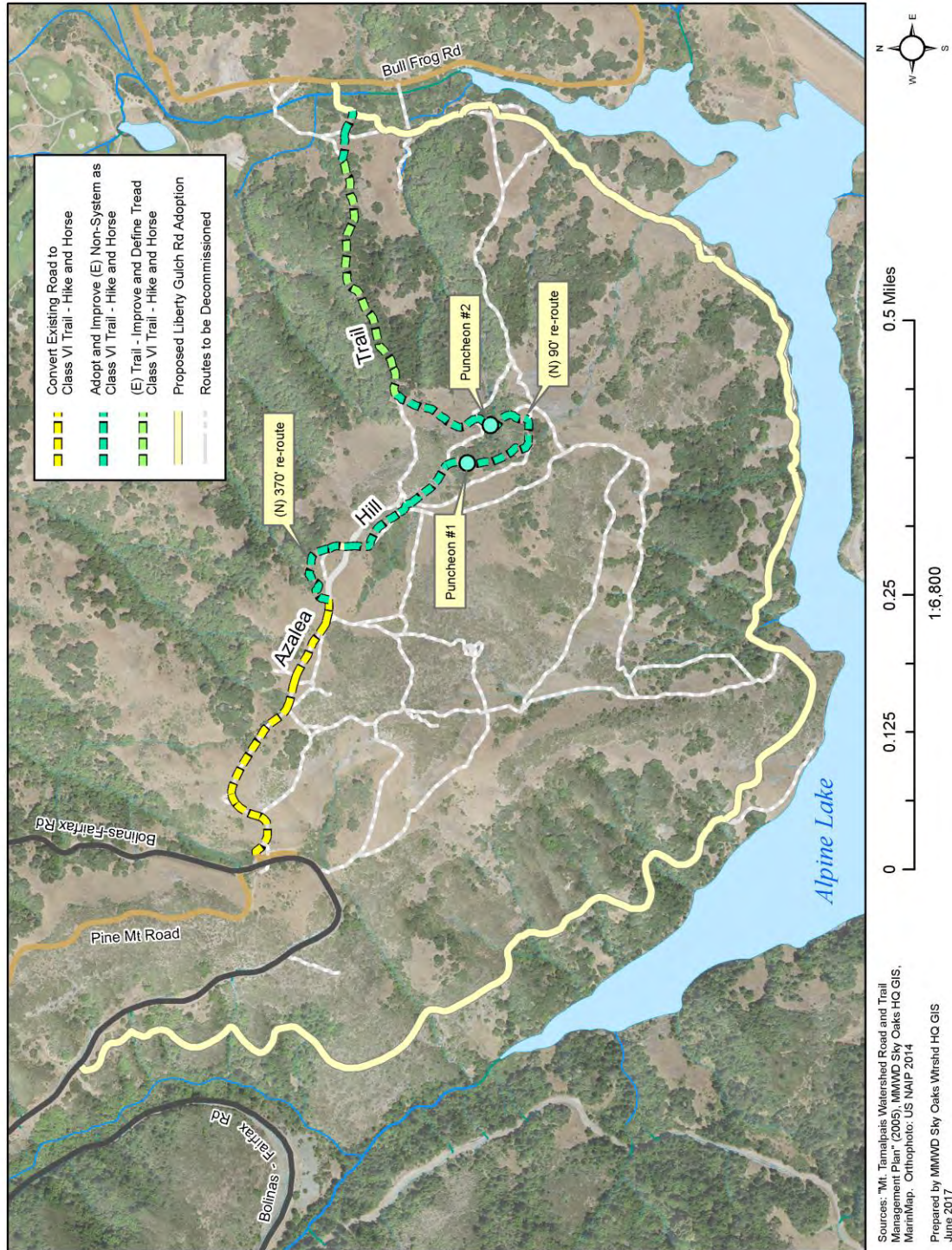
The approach used to treat the erosion problems is one of being “light on the land.” In other words, instead of trying to do full landform restoration and restore all the creek channels, the work is designed to be the minimum to make the route passable for all users, sustainable, and to correct the existing erosion issues. Nevertheless, it would be used to upgrade the creek crossings, transport locally harvested materials (i.e. rock and dirt) from one location to another, and to re-shape the road where necessary. This work is estimated to save approximately an estimated 100 cubic yards annually (approximately 2,011 cubic yards over 20 years) of sediment from entering Alpine Lake, which is the majority of the sediment risk on Azalea Hill.

4. Improve the existing, approximately 1.1 mile Class VI<sup>7</sup>, or hiking and equestrian route over Azalea Hill to correct its erosion problems and make it more sustainable following the guidance in the RTMP (see **Figure 5**). This involves three basic types of work, or improvements, as follows:
  - Convert approximately 0.3 miles of the existing Azalea Hill Road from the parking lot to the top of the hill (the west side) to a Class VI trail and correct its existing gulling and erosion. This work would involve narrowing the route, re-shaping (outsloping and rolling dips) where appropriate, and armoring the tread. Puncheons could also be used as necessary to span road-related drainage features. Small equipment, such as mini-excavators, would be used to move locally harvested rock and dirt and re-shape the route.

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<sup>7</sup> Per Section 2.3 of the RTMP, “Trail Designations,” Class VI trails are defined as equestrian trails. They can have substantial infrastructure improvements when compared to other trails to support their use. Seasonal closures may apply.

**Figure 5: Improve Existing Azalea Hill Road and Trail**



SOURCE: MMWD 2017



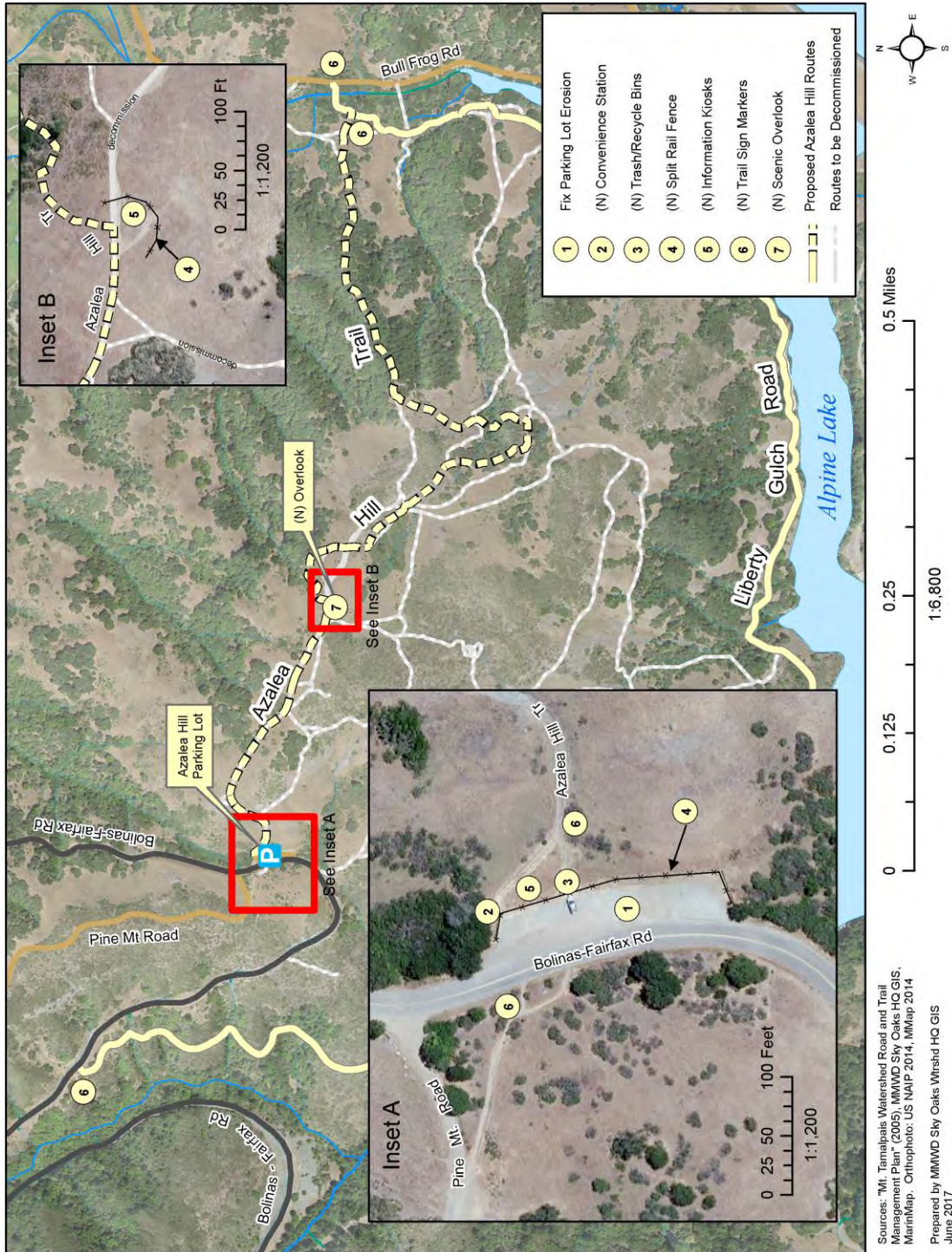
- Adopt and improve approximately 0.5 miles of existing, non-system trail as a sustainable Class VI trail. Two puncheons would be constructed to cross a small creek near the top of the hill. Hand tools (picks, McLeods, or shovels) would be adequate to perform most of the work; however, some mechanized equipment like motorized wheel barrows may be needed to transport locally harvested materials (i.e. rock and dirt) and the tools and materials needed to construct the puncheons. Chainsaws would also be used to trim vegetation to provide adequate height and width clearance for equestrians. Of note, less than 0.1 miles of this route would not actually use and improve an existing non-system trail. Instead, about 370 feet near the top of the hill and 90 feet near the south-east extreme of the trail would be a new re-route for the purposes of minimizing impacts to vegetation communities and to make the route more sustainable.
- Improve and define approximately 0.3 miles of the existing Azalea Hill Trail through the hardwood forest to the bottom of the hill by making tread improvements, outsloping the trail and constructing rolling dips where necessary and defining the trail to make this system route more obvious. Hand tools (picks, McLeods, or shovels) would be adequate to perform this work. Chainsaws could also be used to trim, lop and scatter vegetation to improve way finding. Of note, the last 250 feet of this section would follow an existing non-system trail, instead of the official trail, because it provides a better connection to the new bridge over Bon Tempe Creek that would connect to Bullfrog Road. However, the work needed on this non-system trail is similar tread work to that above and can be accomplished with the same hand tools.

The approach for work on this section of trail would also be “light on the land.” Work would stay within the existing routes as much as possible to avoid impacts to vegetation in the area, would be the minimum necessary to fix the erosion and to make the tread sustainable for the expected equestrian use. This work is estimated to save an estimated 28 cubic yards annually (approximately 562 cubic yards over 20 years) of sediment from entering Alpine Lake.

5. Treat the Azalea Hill parking lot to correct its erosion problems and improve the visitor amenities serving Azalea Hill (**see Figure 6**). The parking lot improvements would correct its drainage problems by reducing its footprint and re-surfacing it with a permeable surface (rock or pervious concrete), thereby saving an estimated 5 cubic yards annually (approximately 102 cubic yards over 20 years) of sediment from entering one of Azalea Hill’s creeks. The number of parking spaces, 19, would not change. Additional visitor amenities would be installed to: (a) protect water quality (a self-contained, serviceable convenience station (i.e. a porta potty or self-composting toilet) and trash and recycling bins) and (b) protect the area’s natural habitat by educating visitors (with informational kiosks), by delineating parking areas, installing bicycle racks and by installing barricades designed to keep visitors out of sensitive habitats and on the designated trails in the vicinity of the parking lot. Additional trail marker signs would be installed at road and trail intersections to direct visitors onto the designated trails. Finally, an existing scenic overlook area would be improved to help draw users to this site, thereby discouraging the



**Figure 6: Improved Parking Lot and New Visitor Amenities at Azalea Hill**



SOURCE: MMWD 2017



use of non-system routes by visitors who are looking for a destination near the top of the hill. Improvements would include interpretive signage (re-enforcing the importance of staying on designated routes to protect sensitive habitats), a bench or two, and split rail fencing.

Upon its completion, the project would save up to an estimated 219 cubic yards of sediment from entering Azalea Hill's creeks or Alpine Lake annually (or 4,377 cubic yards over 20 years), and would restore approximately one acre of habitat.

### **8.3.1 Earthwork**

Implementation of the project would require moving earth to decommission routes or make them sustainable so they strictly minimize erosion and sedimentation. The majority of the earth work would occur on the 1.9-mile section of the existing Liberty Gulch Road and its associated re-routes, conversions and decommissions. The Road and Trail Inventory and Assessment (PWA 2003) estimated 610 cubic yards of earthmoving would be required; primarily removal of erodible fill from creek crossings and to re-shape the road as it approaches the crossings. Additional earthwork along this section would involve constructing the new re-routes adjacent to Alpine Lake and the landing near the top. Footings or pilings would also need to be constructed for the four proposed bridges. This work would be achieved with the use of small, mechanized equipment like skid steers, mini excavators and motorized wheel barrows.

Small, mechanized equipment would also be used to convert the existing Azalea Hill Road from a small vehicle road to a hiking and equestrian trail, and decommission its eastern-most portion. This work would be limited to road re-shaping to improve its drainage (outsloping, rolling dips, critical dips and removing unstable fill or sidecast material) and to narrow its width, thereby strictly minimizing its erosion and sedimentation. This earthwork is estimated to disturb up to 350 cubic yards of material, but it would all be re-used in place to re-shape and narrow the existing road.

Larger equipment, such as skip loaders, dump trucks and rollers would likely be used to treat the existing parking lot. Up to 300 cubic yards of material could be moved to reshape the surface of the parking lot to correct its erosion problems.

In total, the project could disturb up to 1,260 cubic yards of material. However, all the material would be re-used near where it is disturbed to either re-shape the route to control drainage or to aid in the decommissioned route's re-vegetation. There would be no requirement to import or off-haul material. Additionally, since it's not likely that all the social trails would need to be "ripped," so the net total of disturbance would be less. More detail on the proposed earthwork can be found in the Geology and Soils Section.

In addition, the decommissioning of up to 4 miles of other, small social trails by scarifying the surface would disturb the earth in these areas. This work would be accomplished primarily with hand tools (picks, McLeods, or shovels), the purpose being to loosen, or scarify, compacted soil in the tread to aid re-vegetation. In areas where re-vegetation is occurring naturally, such earthwork would not be necessary. Overall, because this work is generally just loosening the soil and not necessarily moving it, the amount is considered negligible in terms of estimating cubic yards of material moved.

### 8.3.2 Tree Removal

Implementation of this project would require the removal of up to 21 trees. Eleven of these trees are Douglas fir (*Pseudotsuga menziesii*), three California bay (*Umbellularia californica*), three coast live oaks (*Quercus agrifolia*), two madrones (*Arbutus menziesii*) and two willows (*Salix* species). The average diameter of all these is about 6-inches, with one exception of a two-stem fir tree that is about 22-inches and 16-inches, respectively, in diameter. More details on the proposed tree removal can be found in the Biological Resources Section.

### 8.3.3 Construction Access

Construction access would be from Bullfrog Road and the Azalea Hill parking lot on Bolinas-Fairfax Road (**Figure 1**).

### 8.3.4 Construction Staging

All construction and material staging would occur at the Bullfrog parking lot, Bullfrog Road, the quarry site (located approximately 300 feet north of the intersection of Azalea Hill Trail and Bullfrog Road) and the Azalea Hill parking lot on Bolinas-Fairfax Road.

### 8.3.5 Construction Duration and Phasing

The proposed project's implementation is dependent on securing adequate funding. The plan is to secure environmental approvals and regulatory permits for the project, and then seek funding. The concept is that once the project is approved, or "shovel-ready," it would be more attractive both to governmental grant making sources and to philanthropic funders. The estimated construction time-frame in total is approximately four to six months; however, the construction could be done in phases over several years dependent on funding. The potential construction phases could be, in no particular order: (1) removal, or decommissioning, of all the non-system trails; (2) conversion of the existing Azalea Hill Road to a trail and improvement of the re-route to a sustainable equestrian trail; (3) construction of the parking lot and visitor amenity improvements, and (4) upgrade of the existing Liberty Gulch Road and construction of the two connectors on each end. Other than the decommissioning of the non-system trails, items (2) through (4) could be re-ordered and implemented in a variety of sequences.

9. **Surrounding Land Uses and Setting:** The project site is situated within the larger Mt. Tamalpais Watershed, which is owned and managed by the District. The watershed is an open space area utilized for the collection of rainwater for eventual treatment, distribution, and public use, as well as for recreational use and enjoyment.
10. **Other Public Agencies whose Approval is Required:** Project implementation will require permit acquisition from the California Department of Fish and Wildlife (Section 1602 Lake or Streambed Alteration Agreement), the San Francisco Bay Regional Water Quality Control Board (Section 401 Water Quality Certification), the Army Corps of Engineers (Section 404 Water Quality Certification), and the Marin County Department of Public Works (Road Right-of-Way Encroachment Permit).

## **Appendix B – Site Photographs**

**Representative Photographs of the Study Area**

**(November - December 2016)**

**Photos by Vollmar Natural Lands Consulting**



**Grassland Habitat. Central Portion of Study Area**



**Chaparral Habitat. Western Portion of Study Area.**



**Hardwood Forest Habitat. Northeastern Portion of Study Area.**



**Oak Woodland Habitat. Northeastern Portion of Study Area.**



**Unvegetated Habitat. Northwestern Portion of Study Area.**



**Shrubland Habitat. Northeastern Portion of Study Area.**





**Riparian Woodland Habitat. Northeastern Portion of Study Area.**



**Wetland Habitat. Western Portion of Study Area.**

## **Appendix C – Plant Inventory**

**APPENDIX C.**  
**Azalea Hill Restoration Project Plant Surveys.**  
**Conducted in May and June, 2016 by Marin Municipal Water District Botanist Andrea Williams.**

Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine	Re-route (Lower)	Azalea Hill Proper	Re-route (Upper)	Wetland
Yarrow	<i>Achillea millefolium</i>		X			X		
American lotus	<i>Acmispon americanus</i>		X			X	X	X
Short podded lotus	<i>Acmispon brachycarpus</i>			X		X		
Hill lotus	<i>Acmispon parviflorus</i>		X					
Chilean trefoil	<i>Acmispon wrangelianus</i>			X			X	
Chamise	<i>Adenostoma fasciculatum</i>			X	X			
California maidenhair	<i>Adiantum jordanii</i>		X			X		
Barbed goatgrass	<i>Aegilops triuncialis</i>	Cal-IPC				X		
Buckeye	<i>Aesculus californica</i>		X					
Giant mountain dandelion	<i>Agoseris grandiflora</i>		X			X	X	
Mountain dandelion	<i>Agoseris heterophylla</i>							
Woolly goat chicory	<i>Agoseris hirsuta</i>			X		X		
Hall's bentgrass	<i>Agrostis hallii</i>		X				X	
Leafy bentgrass	<i>Agrostis pallens</i>		X		X	X	X	
Silvery hairgrass	<i>Aira caryophyllea</i>	Cal-IPC	X		X	X	X	
Woodland tarweed	<i>Anisocarpus madioides</i>		X			X		
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	Cal-IPC	X					
Columbine	<i>Aquilegia formosa</i>		X					
Madrono	<i>Arbutus menziesii</i>		X		X	X		
Eastwood manzanita	<i>Arctostaphylos glandulosa ssp. glandulosa</i>		X		X			
Mt. Tamalpais manzanita	<i>Arctostaphylos montana ssp. montana</i>	CRPR 1B.3	X	X	X		X	
California pipevine	<i>Aristolochia californica</i>		X					
Lace fern	<i>Aspidotis densa</i>			X	X		X	
Loco weed	<i>Astragalus gambelianus</i>					X		
Slim oat	<i>Avena barbata</i>	Cal-IPC	X	X		X	X	X
Coyote brush	<i>Baccharis pilularis</i>		X		X	X	X	X
Purple false brome	<i>Brachypodium distachyon</i>	Cal-IPC	X	X		X	X	X
Big rattlesnake grass	<i>Briza maxima</i>	Cal-IPC	X			X	X	X
Little rattlesnake grass	<i>Briza minor</i>		X			X	X	X
Harvest brodiaea	<i>Brodiaea elegans</i>		X				X	
California brome grass	<i>Bromus carinatus</i>		X		X	X	X	

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<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>	<b>Riparian and Oak Woodlands</b>	<b>Serpentine</b>	<b>Re-route (Lower)</b>	<b>Azalea Hill Proper</b>	<b>Re-route (Upper)</b>	<b>Wetland</b>
Ripgut brome	<i>Bromus diandrus</i>	Cal-IPC	X	X		X	X	
Soft chess	<i>Bromus hordeaceus</i>	Cal-IPC	X	X			X	X
Woodland brome	<i>Bromus laevipes</i>		X	X	X	X		X
Red brome	<i>Bromus madritensis ssp. rubens</i>	Cal-IPC	X	X		X		
Serpentine reed grass	<i>Calamagrostis ophitidis</i>	CRPR 4.3	X	X	X		X	
Yellow mariposa	<i>Calochortus luteus</i>		X	X		X	X	
Oakland star-tulip	<i>Calochortus umbellatus</i>	CRPR 4.2		X	X		X	
Rosin weed	<i>Calycadenia multiglandulosa</i>			X		X	X	
Hillside morning glory	<i>Calystegia collina ssp. collina</i>			X			X	
Mt. Saint Helena morning glory	<i>Calystegia collina ssp. oxyphylla</i>	CRPR 4.2			X			
Smooth western morning glory	<i>Calystegia purpurata ssp. purpurata</i>		X	X			X	
Hill morning glory	<i>Calystegia subacaulis</i>		X			X		
Italian thistle	<i>Carduus pycnocephalus</i>	Cal-IPC	X			X		
Whiteroot sedge	<i>Carex barbarae</i>		X					
Dense-flowered sedge	<i>Carex densa</i>		X				X	X
Globe sedge	<i>Carex globosa</i>		X				X	
Slender-footed sedge	<i>Carex leptopoda</i>		X				X	
Field sedge	<i>Carex praegracilis</i>					X		
Bifid sedge	<i>Carex serratodens</i>		X					
Texas paintbrush	<i>Castilleja foliosa</i>			X				
Cream sacs	<i>Castilleja rubicundula var. lithospermoides</i>					X		
Buck brush	<i>Ceanothus cuneatus var. cuneatus</i>			X				
Musk brush	<i>Ceanothus jepsonii var. jepsonii</i>			X	X		X	
Blueblossom	<i>Ceanothus thyrsiflorus</i>		X					
Tocalote	<i>Centaurea melitensis</i>	Cal-IPC	X	X				X
Mouse-ear chickweed	<i>Cerastium glomeratum</i>		X					

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Birchleaf mountain-mahogany	<i>Cercocarpus betuloides</i>	WR	X					
Amole	<i>Chlorogalum pomeridianum</i>		X	X	X	X	X	
Western thistle	<i>Cirsium occidentale</i>		X	X				
Bullthistle	<i>Cirsium vulgare</i>		X				X	
Farewell to spring	<i>Clarkia amoena</i>		X	X				
Graceful clarkia	<i>Clarkia gracilis var. gracilis</i>		X				X	
Purple clarkia	<i>Clarkia purpurea var. quadrivulnera</i>		X	X		X		
Viridis	<i>Claytonia exigua ssp. exigua</i>				X			
Yerba buena	<i>Clinopodium douglasii</i>				X			
Coast sanicle	<i>Coast sanicle</i>		X					
Chinese houses	<i>Collinsia heterophylla</i>					X		
Poison hemlock	<i>Conium maculatum</i>	Cal-IPC				X		
Field bindweed	<i>Convolvulus arvensis</i>	Cal-IPC	X					
Hairy bird's beak	<i>Cordylanthus pilosus ssp. pilosus</i>	WR	X					
Pampas grass	<i>Cortaderia</i>	Cal-IPC		X				
Silverleaf cotoneaster	<i>Cotoneaster pannosus</i>	Cal-IPC				X		
English hawthorn	<i>Crataegus monogyna</i>	Cal-IPC	X					X
Houndstongue	<i>Cynoglossum grande</i>		X			X		
Dogtail grass	<i>Cynosurus echinatus</i>	Cal-IPC	X			X	X	X
Tall nutsedge	<i>Cyperus eragrostis</i>		X					
Orchardgrass	<i>Dactylis glomerata</i>	Cal-IPC						X
California oatgrass	<i>Danthonia californica</i>		X	X		X	X	X
Wild carrot	<i>Daucus pusillus</i>		X					
Western larkspur	<i>Delphinium hesperium</i>					X		
Clustered brodiaea	<i>Dichelostemma congesta</i>		X					
Wood fern	<i>Dryopteris arguta</i>		X		X		X	
Spreading wood fern	<i>Dryopteris expansa</i>		X					
Rock lettuce	<i>Dudleya cymosa</i>		X					
Spikerush	<i>Eleocharis</i>		X					
Blue wildrye	<i>Elymus glaucus ssp. glaucus</i>		X		X	X	X	X

**APPENDIX C.**

**Azalea Hill Restoration Project Plant Surveys.**

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Virginia wildrye	<i>Elymus glaucus</i> ssp. <i>virescens</i>	WR	X					
Big squirreltail grass	<i>Elymus multisetus</i>		X	X		X		
Dense-flower willow herb	<i>Epilobium densiflorum</i>	WR					X	
Minute willowherb	<i>Epilobium minutum</i>			X	X	X		
Stream orchid	<i>Epipactis gigantea</i>	WR		X				
Common horsetail	<i>Equisetum arvense</i>		X					X
Giant horsetail	<i>Equisetum telmateia</i> ssp. <i>braunii</i>		X					
Golden fleece	<i>Ericameria arborescens</i>				X			
Yerba santa	<i>Eriodictyon californicum</i>			X	X	X	X	
Tiburon buckwheat	<i>Eriogonum luteolum</i> var. <i>caninum</i>	CRPR 1B.2		X		X		
Naked buckwheat	<i>Eriogonum nudum</i>		X			X		
Yellow yarrow	<i>Eriophyllum confertiflorum</i>			X			X	
Big heron bill	<i>Erodium botrys</i>					X		
Whitestem fillaree	<i>Erodium brachycarpum</i>	Cal-IPC				X	X	
Coastal heron's bill	<i>Erodium cicutarium</i>	Cal-IPC	X					
California poppy	<i>Eschscholzia californica</i>		X	X		X		
Roughleaf aster	<i>Eurybia radulina</i>						X	
Tall fescue	<i>Festuca arundinacea</i>	Cal-IPC	X					X
Brome fescue	<i>Festuca bromoides</i>		X			X	X	
California fescue	<i>Festuca californica</i>		X	X	X		X	
Blue fescue	<i>Festuca idahoensis</i>		X			X	X	
Small fescue	<i>Festuca microstachys</i>		X	X	X	X		
Rattail fescue	<i>Festuca myuros</i>	Cal-IPC				X	X	
Italian rye grass	<i>Festuca perennis</i>		X	X		X	X	X
Red fescue	<i>Festuca rubra</i>		X			X	X	
Wild strawberry	<i>Fragaria vesca</i>		X				X	
California coffeeberry	<i>Frangula californica</i>				X		X	X
Oregon ash	<i>Fraxinus latifolia</i>		X					X
Cleavers	<i>Galium aparine</i>		X			X		
California bedstraw	<i>Galium californicum</i>		X		X		X	
Climbing bedstraw	<i>Galium nuttallii</i>		X					

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Wall bedstraw	<i>Galium parisiense</i>		X					X
Climbing bedstraw	<i>Galium porrigens</i>		X		X			
Fragrant bedstraw	<i>Galium triflorum</i>						X	
Coast silk tassel	<i>Garrya elliptica</i>			X			X	
Nit grass	<i>Gastridium phleoides</i>			X		X	X	X
French broom	<i>Genista monspessulana</i>	Cal-IPC	X			X		
Wild geranium	<i>Geranium dissectum</i>	Cal-IPC						X
Crane's bill geranium	<i>Geranium molle</i>	Cal-IPC						
Herb Robert	<i>Geranium purpureum</i>		X					
Blue field gilia	<i>Gilia capitata ssp. capitata</i>					X	X	
Purple spot gilia	<i>Gilia clivorum</i>					X		
Gumweed	<i>Grindelia camporum</i>					X		
Sneezeweed	<i>Helenium puberulum</i>		X					
Bristly oxtongue	<i>Helminthotheca echioides</i>	Cal-IPC						X
Hayfield tarweed	<i>Hemizonia congesta ssp. lutescens</i>		X	X		X	X	X
Few flowered evax	<i>Hesperovax sparsiflora var. sparsiflora</i>			X		X		
Marin western flax	<i>Hesperolinon congestum</i>	Endangered				X		
Small flower western flax	<i>Hesperolinon micranthum</i>				X	X	X	
Toyon	<i>Heteromeles arbutifolia</i>		X	X	X		X	
White-flowered hawkweed	<i>Hieracium albiflorum</i>					X		
California hemp	<i>Hoita macrostachya</i>					X		
Creeping leather root	<i>Hoita orbicularis</i>	WR	X					
Velvet grass	<i>Holcus lanatus</i>	Cal-IPC	X			X		
Oceanspray	<i>Holodiscus discolor</i>		X					
Barley	<i>Hordeum marinum</i>	Cal-IPC				X	X	
Foxtail barley	<i>Hordeum murinum</i>	Cal-IPC		X				
Smooth cats ear	<i>Hypochaeris glabra</i>	Cal-IPC	X				X	
Hairy cats ear	<i>Hypochaeris radicata</i>	Cal-IPC	X			X	X	X
Douglas iris	<i>Iris douglasiana var. major</i>		X	X	X	X	X	
Ground iris	<i>Iris macrosiphon</i>		X	X				X
Common toad rush	<i>Juncus bufonius</i>		X			X		
Common bog rush	<i>Juncus effusus</i>		X				X	

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Slender juncus	<i>Juncus occidentalis</i>		X			X	X	X
Brown-headed rush	<i>Juncus phaeocephalus</i>		X				X	X
June grass	<i>Koeleria macrantha</i>						X	
Willow lettuce	<i>Lactuca saligna</i>		X			X		
Goldfields	<i>Lasthenia californica</i>							
Angled peavine	<i>Lathyrus angulatus</i>		X		X	X	X	X
Common pacific pea	<i>Lathyrus vestitus</i>		X					
Variable linanthus	<i>Leptosiphon parviflorus</i>			X		X		
Little glandular lessingia	<i>Lessingia micradenia ssp. micradenia</i>	CRPR 1B.2	X	X	X	X		
Flax	<i>Linum bienne</i>		X			X		X
California cottonrose	<i>Logfia filaginoides</i>		X					
Narrowleaf cottonrose	<i>Logfia gallica</i>		X			X		
Lace parsnip	<i>Lomatium dasycarpum</i>		X	X		X	X	
Large fruited lomatium	<i>Lomatium macrocarpum</i>		X	X				
Pink honeysuckle	<i>Lonicera hispidula</i>		X		X	X	X	
Narrow-leaf bird's-foot trefoil	<i>Lotus tenuis</i>							X
Silver lupine	<i>Lupinus albifrons var. collinus</i>		X					
Miniature annual lupine	<i>Lupinus bicolor</i>		X			X		
Valley sky lupine	<i>Lupinus nanus</i>					X		
Hairy wood rush	<i>Luzula comosa</i>		X					
Scarlet pimpernel	<i>Lysimachia arvensis</i>		X	X	X	X	X	X
Pacific starflower	<i>Lysimachia latifolia</i>				X			
Hyssop loosestrife	<i>Lythrum hyssopifolia</i>							X
Elegant tarweed	<i>Madia elegans</i>		X					
Small tarweed	<i>Madia exigua</i>						X	
Gumweed	<i>Madia gracilis</i>		X	X	X		X	
Starry false lily of the valley	<i>Maianthemum stellatum</i>				X			
Oregon manroot	<i>Marah oregana</i>		X					
California burclover	<i>Medicago polymorpha</i>	Cal-IPC	X					
Alaska melic	<i>Melica subulata</i>					X		
Torrey's melica	<i>Melica torreyana</i>		X	X	X		X	
Yellow sweetclover	<i>Melilotus indicus</i>		X					



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Pennyroyal	<i>Mentha pulegium</i>	Cal-IPC						X
Q tips	<i>Micropus californicus</i>		X	X		X		
Douglas' microseris	<i>Microseris douglasii</i>		X	X		X		
Sticky monkeyflower	<i>Mimulus aurantiacus</i>		X		X	X	X	
Yellow monkey flower	<i>Mimulus guttatus</i>		X	X				X
Douglas' sandwort	<i>Minuartia douglasii</i>		X	X		X		
Siskiyou monardella	<i>Monardella purpurea</i>		X	X	X		X	
Coyote mint	<i>Monardella villosa</i> var. <i>villosa</i>		X				X	
California wax myrtle	<i>Morella californica</i>		X	X				
Broadleaf forget-me-not	<i>Myosotis latifolia</i>	Cal-IPC	X					
Marin county navarretia	<i>Navarretia rosulata</i>	CRPR 1B.2		X	X	X	X	
Skunkweed	<i>Navarretia squarrosa</i>		X			X		X
Tanoak	<i>Notholithocarpus densiflorus</i> var. <i>densiflorus</i>				X			
Clustered broomrape	<i>Orobanche fasciculata</i>				X			
Sweet cicely	<i>Osmorhiza berteroi</i>		X			X		
Dallis grass	<i>Paspalum dilatatum</i>		X					
Indian warrior	<i>Pedicularis densiflora</i>		X					
Coffee fern	<i>Pellaea andromedifolia</i>		X					
Bird's foot fern	<i>Pellaea mucronata</i>		X					
Gold back fern	<i>Pentagramma triangularis</i>		X		X	X	X	
Yampah	<i>Perideridia kelloggii</i>		X			X	X	
Grass pink	<i>Petrorhagia</i>		X	X				
Harding grass	<i>Phalaris aquatica</i>	Cal-IPC						X
Canarygrass	<i>Phalaris californica</i>						X	
Oak mistletoe	<i>Phoradendron leucarpum</i> ssp. <i>tomentosum</i>					X		
Turkey tangle fogfruit	<i>Phyla nodiflora</i>		X					
Chaparral pea	<i>Pickeringia montana</i>			X				
California plantain	<i>Plantago erecta</i>		X	X	X			
Lanceleaf plantain	<i>Plantago lanceolata</i>	Cal-IPC	X			X	X	X
Kentucky bluegrass	<i>Poa pratensis</i>							X
Milkwort	<i>Polygala californica</i>		X	X	X		X	

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Water pepper	<i>Polygonum hydropiperoides</i>		X					
California polypody	<i>Polypodium californicum</i>					X		
Licorice fern	<i>Polypodium calirhiza</i>		X			X		
Annual beardgrass	<i>Polypogon monspeliensis</i>		X			X		
Water beardgrass	<i>Polypogon viridis</i>		X	X				
Western sword fern	<i>Polystichum munitum</i>		X			X		
Cherry plum	<i>Prunus cerasifera</i>	Cal-IPC	X				X	X
Cudweed	<i>Pseudognaphalium beneolens</i>		X			X		
Ladies' tobacco	<i>Pseudognaphalium californicum</i>						X	
Douglas-fir	<i>Pseudotsuga menziesii</i>		X		X	X	X	
Slender woolly heads	<i>Psilocarphus tenellus</i>					X		
Western bracken fern	<i>Pteridium aquilinum var. pubescens</i>		X		X	X		
Firethorn	<i>Pyracantha angustifolia</i>	Cal-IPC	X					
Coast live oak	<i>Quercus agrifolia</i>		X	X		X	X	X
Blue oak	<i>Quercus douglasii</i>	WR	X					
Leather oak	<i>Quercus durata</i>			X	X		X	
Oregon white oak	<i>Quercus garryana</i>					X		
California black oak	<i>Quercus kelloggii</i>		X			X		
Valley oak	<i>Quercus lobata</i>		X					
Shreve oak	<i>Quercus parvula var. shreve</i>		X		X		X	
Interior live oak, chapparal oak	<i>Quercus wislizeni</i>		X		X			
Oracle oak	<i>Quercus xmorehus</i>		X	X				
Hybrid white oak	<i>Quercus xsubconvexa</i>			X				
Common buttercup	<i>Ranunculus californicus</i>		X			X	X	
Redberry	<i>Rhamnus crocea</i>				X		X	
Western azalea	<i>Rhododendron occidentale</i>					X		
Wood rose	<i>Rosa gymnocarpa</i>				X			
Sweetbrier rose	<i>Rosa rubiginosa</i>		X			X		X
Thimbleberry	<i>Rubus parviflorus</i>		X					
California blackberry	<i>Rubus ursinus</i>		X					
Sheep sorrel	<i>Rumex acetosella</i>	Cal-IPC	X			X		

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Curly dock	<i>Rumex crispus</i>	Cal-IPC				X		X
Western pearlwort	<i>Sagina decumbens ssp. occidentalis</i>	WR				X		
Blue elderberry	<i>Sambucus nigra ssp. caerulea</i>						X	
Purple sanicle	<i>Sanicula bipinnatifida</i>		X			X		
Pacific sanicle	<i>Sanicula crassicaulis</i>		X			X		
Smallflower bullrush	<i>Scirpus microcarpus</i>		X	X				
Wild hollyhock	<i>Sidalcea malviflora var. laciniata</i>		X			X		
Common catchfly	<i>Silene gallica</i>		X	X				
California indian pink	<i>Silene laciniata ssp. californica</i>							
Blue eyed grass	<i>Sisyrinchium bellum</i>		X	X	X	X		
California goldenrod	<i>Solidago velutina ssp. californica</i>						X	
Spiny sow thistle	<i>Sonchus asper</i>		X					
Sow thistle	<i>Sonchus oleraceus</i>		X					X
Spanish broom	<i>Spartium junceum</i>	Cal-IPC	X			X		
Purple sand spurry	<i>Spergularia rubra</i>			X		X		
Western ladies tresses	<i>Spiranthes porrifolia</i>						X	
Short spike hedge nettle	<i>Stachys pycnantha</i>		X					
Rough hedgenettle	<i>Stachys rigida var. quercetorum</i>		X		X		X	
Mouseear chickweed	<i>Stellaria media</i>					X		
Foothill needle grass	<i>Stipa lepida</i>			X		X		
Purple needle grass	<i>Stipa pulchra</i>		X	X		X	X	X
Tamalpais bristly jewelflower	<i>Streptanthus glandulosus ssp. pulchellus</i>	CRPR 1B.2		X				
One sided jewelflower	<i>Streptanthus glandulosus ssp. secundus</i>		X			X		
Trailing snowberry	<i>Symphoricarpus mollis</i>		X		X			
Pacific aster	<i>Symphyotrichum chilense</i>						X	X
Common dandelion	<i>Taraxacum officinale</i>		X					

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Sun cup	<i>Taraxia ovata</i>							
Kellogg's tauschia	<i>Tauschia kelloggii</i>				X			
California goldenbanner	<i>Thermopsis californica</i>						X	
Field hedge parsley	<i>Torilis arvensis</i>	Cal-IPC	X				X	
Wild parsley	<i>Torilis nodosa</i>		X			X		
Poison-oak	<i>Toxicodendron diversilobum</i>		X	X	X	X	X	X
Fremont's star lily	<i>Toxicoscordion fremontii</i>		X		X			
Salsify	<i>Tragopogon porrifolius</i>							X
Narrow leaved clover	<i>Trifolium angustifolium</i>							X
Bearded clover	<i>Trifolium barbigerum</i>		X					
Notch leaf clover	<i>Trifolium bifidum var. decipiens</i>		X			X		X
Shamrock	<i>Trifolium dubium</i>		X					
Bull clover	<i>Trifolium fucatum</i>		X			X		
Rose clover	<i>Trifolium hirtum</i>	Cal-IPC	X					
Small head clover	<i>Trifolium microcephalum</i>		X					
Valparaiso clover	<i>Trifolium microdon</i>		X					
Clammy clover	<i>Trifolium obtusiflorum</i>		X					
Tall trisetum	<i>Trisetum canescens</i>		X		X			
Wild hyacinth	<i>Triteleia hyacinthina</i>		X				X	
Ithuriel's spear	<i>Triteleia laxa</i>		X	X	X	X		
California bay	<i>Umbellularia californica</i>		X	X	X	X		
Silver puffs	<i>Uropappus lindleyi</i>			X		X		
American vetch	<i>Vicia americana</i>		X		X	X	X	
Smaller common vetch	<i>Vicia sativa ssp. nigra</i>		X			X		X
Smooth vetch	<i>Vicia tetrasperma</i>		X					
Smooth vetch	<i>Vicia villosa ssp. varia</i>					X		
Western modesty	<i>Whipplea modesta</i>				X			
Giant chain fern	<i>Woodwardia fimbriata</i>		X					
Narrow leaved mule ears	<i>Wyethia angustifolia</i>					X	X	
Centaury	<i>Zeltnera</i>		X	X		X		

Note: Approximately 100 meters of Liberty Gulch Road at the northwestern edge of the study area was not included in the 2016 survey by MMWD because it was originally to be decommissioned

## Appendix D – Special-Status Plant Table

**APPENDIX D. Special-Status Vascular Plant Taxa Documented on or in the Vicinity of the Azalea Hill Restoration Project Study Area, Marin County, California. Compiled by Vollmar Natural Lands Consulting, February 2017. \***

<i>Scientific Name</i> (Common Name)	Status Federal/State/ CNPS Listing**	Preferred Habitat; Elevation Range	Bloom Period	Habitat Suitability/ Occurrence on Site
<i>Amorpha californica</i> var. <i>napensis</i> (Napa false indigo)	--/--/1B.2	Broadleafed upland forest(openings), Chaparral, Cismontane woodland; 120-2000 meters	Apr-Jul	Suitable habitat present but not observed in the study area during 2016 surveys.
<i>Amsinckia lunaris</i> (bent-flowered fiddleneck)	--/--/1B.2	Coastal bluff scrub, Cismontane woodland, Valley and foothill grassland; 3-500 meters	Mar-Jun	Suitable habitat present but not observed in the study area during 2016 surveys.
<b><i>Arctostaphylos montana</i> ssp. <i>montana</i></b> (Mt. Tamalpais manzanita)	--/--/1B.3	<b>Chaparral, Valley and foothill grassland/serpentinite, rocky; 160-760 meters</b>	<b>Feb-Apr</b>	<b>Observed in the study area during 2016 surveys.</b>
<i>Arctostaphylos virgata</i> (Marin manzanita)	--/--/1B.2	Broadleafed upland forest, Closed-cone coniferous forest, Chaparral, North Coast coniferous forest/sandstone or granitic; 60-700 meters	Jan-Mar	Suitable habitat present but not observed in the study area during 2016 surveys.
<i>Castilleja affinis</i> ssp. <i>neglecta</i> (Tiburon paintbrush)	E/T/1B.2	Valley and foothill grassland(serpentinite); 60-400 meters	Apr-Jun	Suitable habitat present but not known from general vicinity and not observed during 2016 surveys.
<i>Chloropyron maritimum</i> ssp. <i>palustre</i> (Point Reyes bird's-beak)	--/--/1B.2	Marshes and swamps(coastal salt); 0-10 meters	June-Oct	No suitable habitat present. No marshes or swamp.
<i>Chorizanthe cuspidata</i> var. <i>cuspidata</i> (San Francisco Bay spineflower)	--/--/1B.2	Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub/sandy; 3-215 meters	Apr-Jul	Marginal habitat present. Not sandy. Not known from general vicinity.
<b><i>Cirsium hydrophilum</i> var. <i>vaseyi</i></b> (Mt. Tamalpais thistle)	--/--/1B.2	<b>Broadleafed upland forest, Chaparral, Meadows and seeps/serpentinite seeps; 240-620 meters</b>	<b>May-Aug</b>	<b>Documented in study area, but not observed during 2016 surveys because location of occurrences was in an area originally to be decommissioned.</b>
<i>Dirca occidentalis</i> (western leatherwood)	--/--/1B.2	Broadleafed upland forest, Closed-cone coniferous forest, Chaparral, Cismontane woodland, North Coast coniferous forest, Riparian forest, Riparian woodland/mesic; 50-395 meters	Jan- Mar(Apr)	Suitable habitat present but not observed during 2016 surveys.
<b><i>Eriogonum luteolum</i> var. <i>caninum</i></b> (Tiburon buckwheat)	--/--/1B.2	<b>Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland/serpentinite, sandy to gravelly; 0-700 meters</b>	<b>May-Sep</b>	<b>Observed in the study area during 2016 surveys.</b>
<i>Fritillaria lanceolata</i> var. <i>tristulis</i> (Marin checker lily)	--/--/1B.1	Coastal bluff scrub, Coastal prairie, Coastal scrub; 15-150 meters	Feb-May	Suitable habitat present but not observed during 2016 surveys.

<i>Scientific Name</i> (Common Name)	Status Federal/State/ CNPS Listing**	Preferred Habitat; Elevation Range	Bloom Period	Habitat Suitability/ Occurrence on Site
<i>Fritillaria liliacea</i> (fragrant fritillary)	--/--/1B.2	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland/often serpentinite; 3-410 meters	Feb-Apr	Suitable habitat present but not known from general vicinity and not observed during 2016 surveys.
<i>Gilia capitata</i> ssp. <i>chamissonis</i> (blue coast gilia)	--/--/1B.1	Coastal dunes, Coastal scrub; 2-200 meters	Apr-Jul	Marginal habitat present. Occurs mostly below elevation range of study area and in more coastal habitats.
<i>Gilia capitata</i> ssp. <i>tomentosa</i> (woolly-headed gilia)	--/--/1B.1	Coastal bluff scrub(rocky, outcrops); 15-155 meters	May-Jul	No suitable habitat present. No coastal bluff scrub.
<i>Grindelia hirsutula</i> var. <i>maritima</i> (San Francisco gumplant)	--/--/1B.2	Coastal bluff scrub, Coastal scrub, Valley and foothill grassland/sandy or serpentinite; 15-400 meters	Jun-Sep	Marginal habitat present. No sand.
<i>Helianthella castanea</i> (Diablo Helianthella)	--/--/1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland; 60-1,300 meters	Mar- June	Suitable habitat present but not observed during 2016 surveys.
<i>Hemizonia congesta</i> ssp. <i>congesta</i> (pale yellow hayfield tarplant)	--/--/1B.2	Valley and foothill grassland/sometimes roadsides; 20-560 meters	Apr-Nov	Suitable habitat present but not observed during 2016 surveys.
<b><i>Hesperolinon congestum</i></b> (Marin western flax)	<b>T/T/1B.1</b>	<b>Chaparral, Valley and foothill grassland/serpentinite; 5-370 meters</b>	<b>Apr-Jul</b>	<b>Documented in the study area during 2016 surveys.</b>
<i>Horkelia tenuiloba</i> (thin-lobed horkelia)	--/--/1B.2	Broadleafed upland forest, Chaparral, Valley and foothill grassland/mesic openings, sandy; 50-500 meters	May-July	Marginal habitat present. Not mesic, not sandy.
<i>Kopsiopsis hookeri</i> (small groundcone)	--/--/2.3	North Coast coniferous forest; 90-885 meters	Apr-Aug	No suitable habitat present. No North Coast coniferous forest.
<i>Lessingia hololeuca</i> (woolly-headed lessingia)	--/--/3	Broadleafed upland forest, Coastal scrub, Lower montane coniferous forest, Valley and foothill grassland/clay, serpentinite; 15-305 meters	Jun-Oct	Marginal habitat present. No clay.
<b><i>Lessingia micradenia</i> var. <i>micradenia</i></b> (Tamalpais lessingia)	<b>--/--/1B.2</b>	<b>Chaparral, Valley and foothill grassland/usually serpentinite, often roadsides; 100-500 meters</b>	<b>(Jun)Jul- Oct</b>	<b>Observed in the study area during 2016 surveys.</b>
<i>Micropus amphibolus</i> (Mt. Diablo cottonweed)	--/--/3.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Valley and foothill grassland/rocky; 45-825 meters	Mar-May	Suitable habitat present but not observed during 2016 surveys.
<i>Microseris paludosa</i> (marsh microseris)	--/--/1B.2	Closed-cone coniferous forest, Cismontane woodland, Coastal scrub, Valley and foothill grassland; 5-300 meters	Apr-Jun (Jul)	Suitable habitat present but not observed during 2016 surveys.

Scientific Name (Common Name)	Status Federal/State/ CNPS Listing**	Preferred Habitat; Elevation Range	Bloom Period	Habitat Suitability/ Occurrence on Site
<i>Navarretia leucocephala</i> ssp. <i>bakeri</i> (Baker's navarretia)	--/--/1B.1	Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools/Mesic; 5-1,740 meters	Apr-Jul	Marginal habitat present. No vernal pools or swales.
<i>Navarretia rosulata</i> (Marin County navarretia)	--/--/1B.2	Closed-cone coniferous forest, Chaparral/serpentine, rocky; 200-635 meters	May-Jul	<b>Observed in the study area during 2016 surveys.</b>
<i>Pleuropogon hooverianus</i> (North Coast semaphore grass)	--/T/1B.1	Broadleafed upland forest, Meadows and seeps, North Coast coniferous forest/open areas, mesic; 10-670 meters	Apr-Jun	Suitable habitat present but not observed during 2016 surveys.
<i>Streptanthus batrachopus</i> (Tamalpais jewel-flower)	--/--/1B.3	Closed-cone coniferous forest, Chaparral/serpentine; 305-650 meters	Apr-Jul	Suitable habitat present but not observed during 2016 surveys.
<i>Streptanthus glandulosus</i> ssp. <i>pulchellus</i> (Mount Tamalpais bristly jewel-flower)	--/--/1B.2	<b>Chaparral, Valley and foothill grassland/serpentine; 150-800 meters</b>	<b>May-Jul(Aug)</b>	<b>Observed in the project vicinity but not the study area during 2016 surveys.</b>

\* Taxa with higher potential to occur in the project vicinity, based on presence of habitat, are shaded in gray. Bold font taxa are present within or adjacent to the study area

Note: Bloom Periods in Parentheses indicate that the species *occasionally* blooms during that period.

Surveys conducted within the study area by the Marin Municipal Water District in May and June, 2016.

#### **\*\*Rarity Status Codes:**

E = Federally or State listed as Endangered

T = Federally or State listed as Threatened

R = State listed as Rare

#### **CNPS Codes**

1A = CNPS List 1A: Plants presumed extinct in California.

1B.1 = CNPS List 1B.1: Plants rare, threatened or endangered in California and elsewhere; plant seriously threatened in California.

1B.2 = CNPS List 1B.2: Plants rare, threatened or endangered in California and elsewhere; plant fairly threatened in California.

1B.3 = CNPS List 1B.3: Plants rare, threatened or endangered in California and elsewhere; plant not very threatened in California.

2.1 = CNPS List 2.1: Plants rare, threatened or endangered in California, more common elsewhere; plant seriously threatened in California.

2.2 = CNPS List 2.2: Plants rare, threatened or endangered in California, more common elsewhere; plant fairly threatened in California.

2.3 = CNPS List 2.3: Plants rare, threatened or endangered in California, more common elsewhere; plant not very threatened in California.

3 = CNPS List 3: Plants in California which need more information-a review list.

3.1 = CNPS List 3.1: Plants in California which need more information-a review list; plant seriously threatened in California.

3.2 = CNPS List 3.2: Plants about which we need more information – a review list; plant fairly threatened in California.

Excludes List 4 plants - Plants of limited distribution – a watch list; plant fairly threatened in California (not included in CNPS quad searches).

#### **Habitat Modifiers**

"(descriptor)" pertains only to the habitat type immediately preceding

"/ descriptor" pertains to *all* habitat



## **Appendix E – Jurisdictional Delineation Maps**

**FIGURE 3**  
**Potential Jurisdictional Waters**  
**Project Overview Map**  
 Azalea Hill Restoration Project  
 Marin County, California



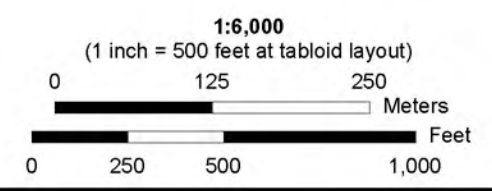
**Legend**

- Delineation Data Point
- Spring or Seep<sup>1</sup>
- Project Area Road
- Project Area Trail
- Other Road
- Trail Section to be Decommissioned by Hand<sup>2</sup>
- Previously Mapped Drainage
- Project Boundary (roads and trails buffer)<sup>2</sup>
- Water Body
- Soil Unit Boundary

**Potential Jurisdictional Waters<sup>3</sup>**

- Wetland
- Other Waters (channel)
- Swale (no bed/bank topography)
- Seep
- Gully Channel

1. All springs support wetlands and thus are mapped as wetland polygons as well. Seeps mapped as polygons only along Liberty Gulch Road, where primary project disturbance areas will occur.  
 2. Roads are buffered by 25 feet and trails are buffered by 10 feet.  
 3. See also Appendix A (large-scale maps) and Table 1



Data Sources: Vollmar Natural Lands Consulting, 2016  
 USDA, 2012 (photo) | MMWD, 2017  
 SFEI BAARI Streams Database, 2012  
 GIS/Cartography by: Jake Schweitzer, Aug. 2017  
 Map File: Locus\_233-15\_B-L\_2017-0824.mxd



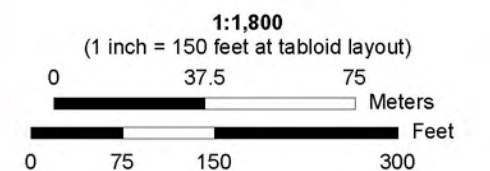
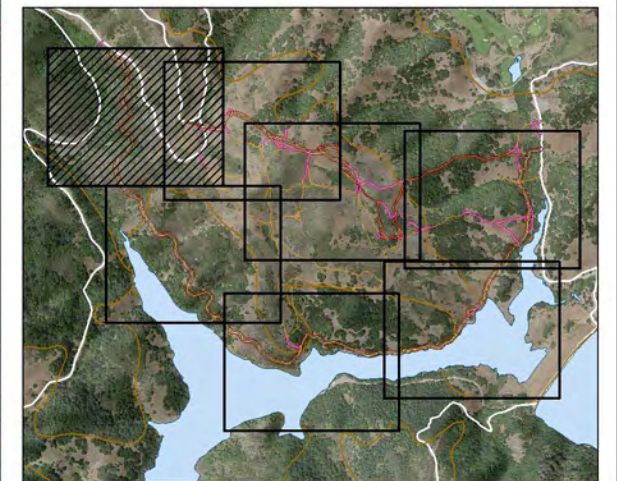
# APPENDIX A-1 Potential Jurisdictional Waters

Azalea Hill Restoration Project  
Marin County, California

## Legend

- Delineation Data Point
  - ⊙ Spring or Seep
  - ▬ Project Area Road
  - ▬ Project Area Trail
  - ▬ Other Road
  - ▬ Trail Section to be Decommissioned by Hand<sup>1</sup>
  - ▬ Previously Mapped Drainage
  - ▭ Project Boundary (roads and trails buffer)<sup>2</sup>
  - ▭ Soil Unit Boundary
- Potential Jurisdictional Waters<sup>3</sup>**
- Wetland
  - Other Waters (channel)
  - Swale (no bed/bank topography)
  - Seep
  - Gully Channel

1. Not surveyed during delineation due to minimal project impacts  
 2. Roads are buffered by 25 feet and trails are buffered by 10 feet  
 3. See also Figure 3 (overview map) and Table 1



Data Sources: Vollmar Natural Lands Consulting, 2016  
 USDA, 2012 (photo) | MMWD, 2017  
 SFEI BAARI Streams Database, 2012  
 GIS/Cartography by: Jake Schweitzer, Jan. 2017  
 Map File: WD\_233-15\_B-L\_2017-0824.mxd

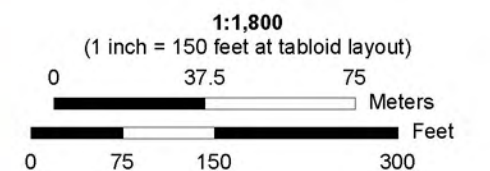
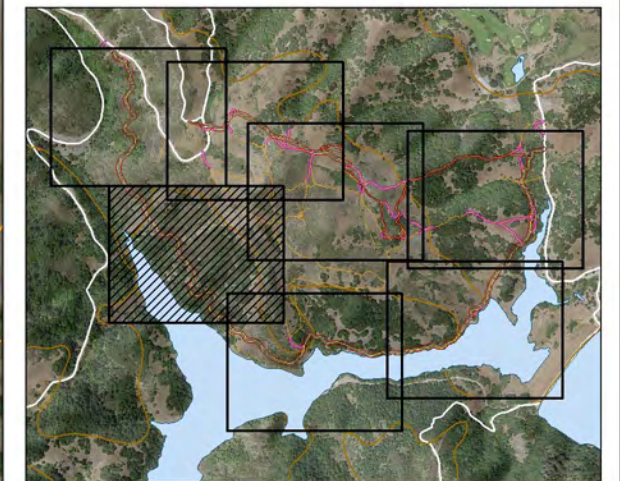


**APPENDIX A-2**  
**Potential Jurisdictional Waters**  
 Azalea Hill Restoration Project  
 Marin County, California

**Legend**

- Delineation Data Point
  - ⊕ Spring or Seep
  - ▬ Project Area Road
  - ▬ Project Area Trail
  - ▬ Other Road
  - ▬ Trail Section to be Decommissioned by Hand<sup>1</sup>
  - ▬ Previously Mapped Drainage
  - ▭ Project Boundary (roads and trails buffer)<sup>2</sup>
  - ▭ Soil Unit Boundary
- Potential Jurisdictional Waters<sup>3</sup>**
- Wetland
  - Other Waters (channel)
  - Swale (no bed/bank topography)
  - Seep
  - Gully Channel

1. Not surveyed during delineation due to minimal project impacts  
 2. Roads are buffered by 25 feet and trails are buffered by 10 feet  
 3. See also Figure 3 (overview map) and Table 1



Data Sources: Vollmar Natural Lands Consulting, 2016  
 USDA, 2012 (photo) | MMWD, 2017  
 SFEI BAARI Streams Database, 2012  
 GIS/Cartography by: Jake Schweitzer, Jan. 2017  
 Map File: WD\_233-15\_B-L\_2017-0824.mxd



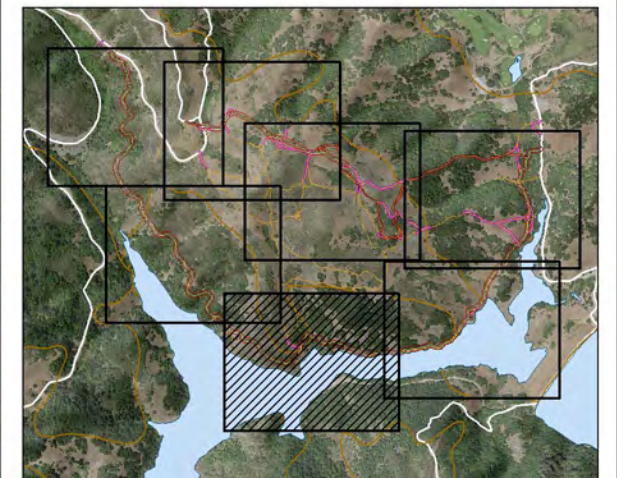
# APPENDIX A-3 Potential Jurisdictional Waters

Azalea Hill Restoration Project  
Marin County, California

## Legend

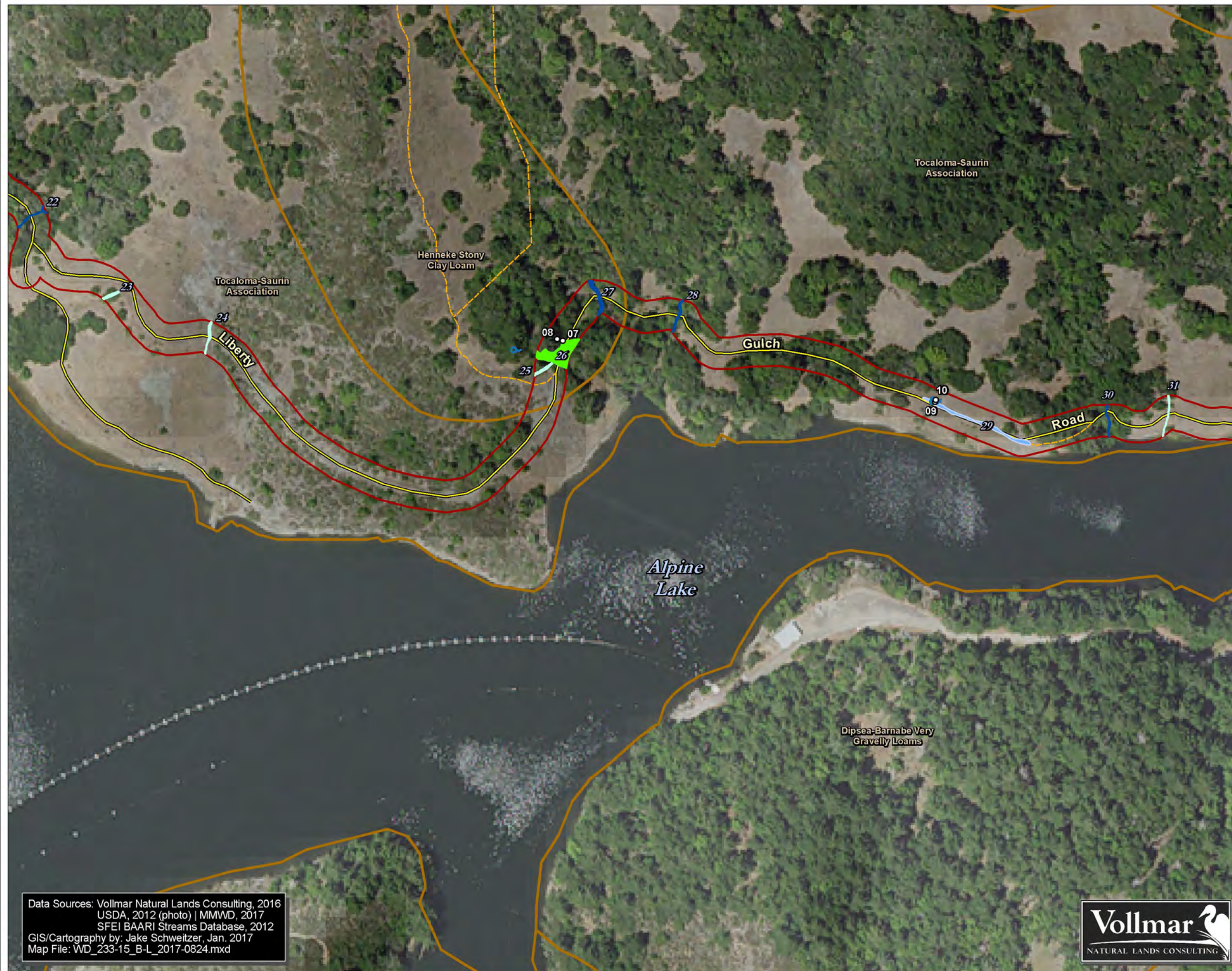
- Delineation Data Point
- ⊙ Spring or Seep
- Project Area Road
- Project Area Trail
- Other Road
- Trail Section to be Decommissioned by Hand<sup>1</sup>
- Previously Mapped Drainage
- ▭ Project Boundary (roads and trails buffer)<sup>2</sup>
- ▭ Soil Unit Boundary
- Potential Jurisdictional Waters<sup>3</sup>**
- Wetland
- Other Waters (channel)
- Swale (no bed/bank topography)
- Seep
- Gully Channel

1. Not surveyed during delineation due to minimal project impacts  
 2. Roads are buffered by 25 feet and trails are buffered by 10 feet  
 3. See also Figure 3 (overview map) and Table 1



1:1,800

(1 inch = 150 feet at tabloid layout)



Data Sources: Vollmar Natural Lands Consulting, 2016  
 USDA, 2012 (photo) | MMWD, 2017  
 SFEI BAARI Streams Database, 2012  
 GIS/Cartography by: Jake Schweitzer, Jan. 2017  
 Map File: WD\_233-15\_B-L\_2017-0824.mxd

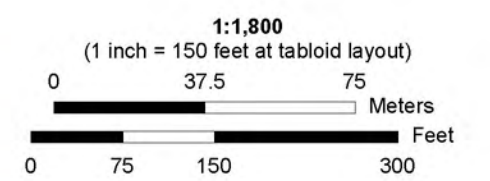


**APPENDIX A-4**  
**Potential Jurisdictional Waters**  
 Azalea Hill Restoration Project  
 Marin County, California

**Legend**

- Delineation Data Point
- ⊕ Spring or Seep
- Project Area Road
- Project Area Trail
- Other Road
- Trail Section to be Decommissioned by Hand<sup>1</sup>
- Previously Mapped Drainage
- Project Boundary (roads and trails buffer)<sup>2</sup>
- Soil Unit Boundary
- Potential Jurisdictional Waters<sup>3</sup>**
- Wetland
- Other Waters (channel)
- Swale (no bed/bank topography)
- Seep
- Gully Channel

1. Not surveyed during delineation due to minimal project impacts  
 2. Roads are buffered by 25 feet and trails are buffered by 10 feet  
 3. See also Figure 3 (overview map) and Table 1



Data Sources: Vollmar Natural Lands Consulting, 2016  
 USDA, 2012 (photo) | MMVD, 2017  
 SFEI BAARI Streams Database, 2012  
 GIS/Cartography by: Jake Schweitzer, Jan. 2017  
 Map File: WD\_233-15\_B-L\_2017-0824.mxd

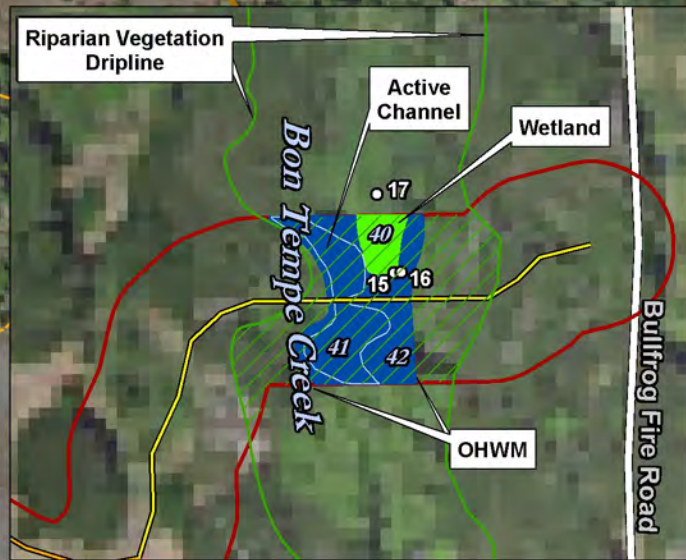
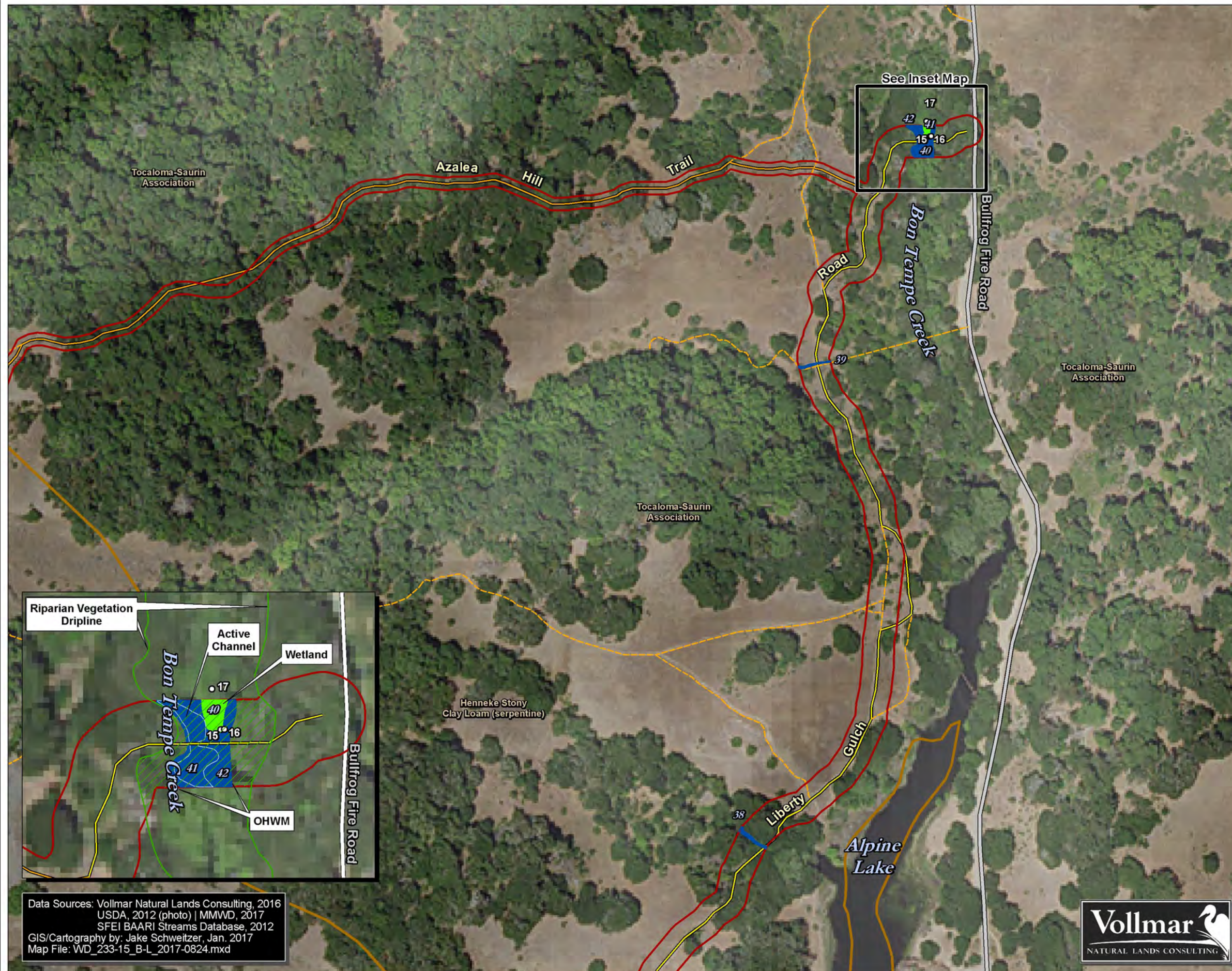
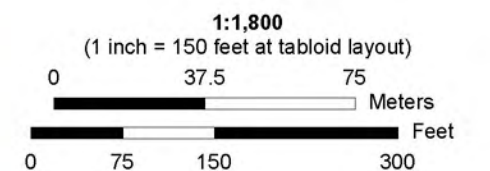
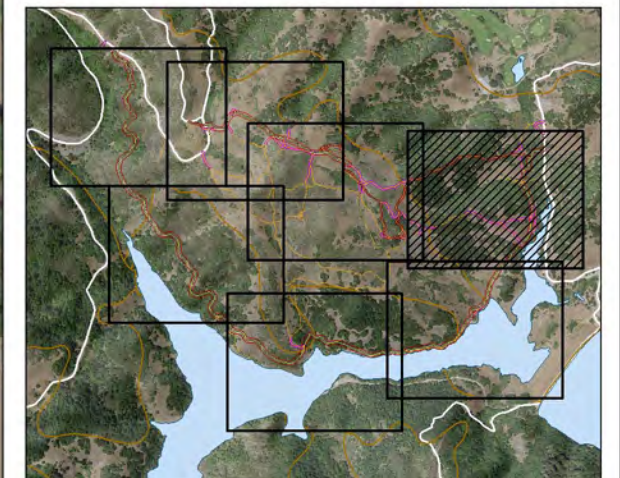


**APPENDIX A-5**  
**Potential Jurisdictional Waters**  
 Azalea Hill Restoration Project  
 Marin County, California

**Legend**

- Delineation Data Point
  - Spring or Seep
  - Project Area Road
  - Project Area Trail
  - Other Road
  - Trail Section to be Decommissioned by Hand<sup>1</sup>
  - Previously Mapped Drainage
  - Project Boundary (roads and trails buffer)<sup>2</sup>
  - Soil Unit Boundary
- Potential Jurisdictional Waters<sup>3</sup>**
- Wetland
  - Other Waters (channel)
  - Swale (no bed/bank topography)
  - Seep
  - Gully Channel

1. Not surveyed during delineation due to minimal project impacts  
 2. Roads are buffered by 25 feet and trails are buffered by 10 feet  
 3. See also Figure 3 (overview map) and Table 1



Data Sources: Vollmar Natural Lands Consulting, 2016  
 USDA, 2012 (photo) | MMWD, 2017  
 SFEI BAARI Streams Database, 2012  
 GIS/Cartography by: Jake Schweitzer, Jan. 2017  
 Map File: WD\_233-15\_B-L\_2017-0824.mxd

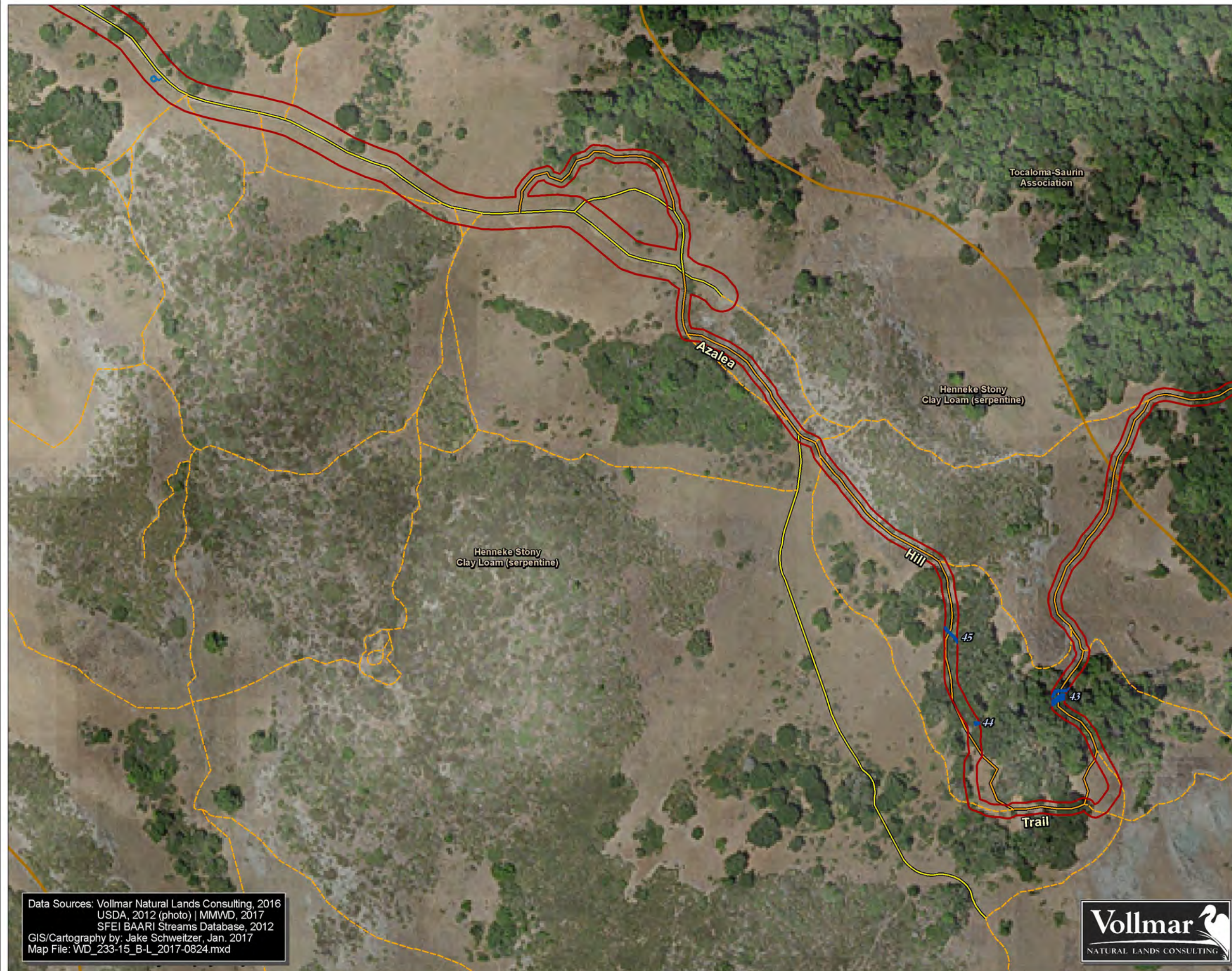
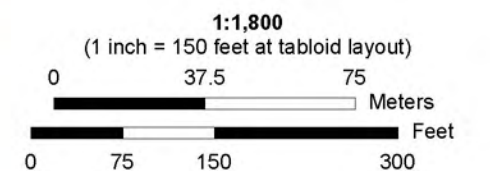
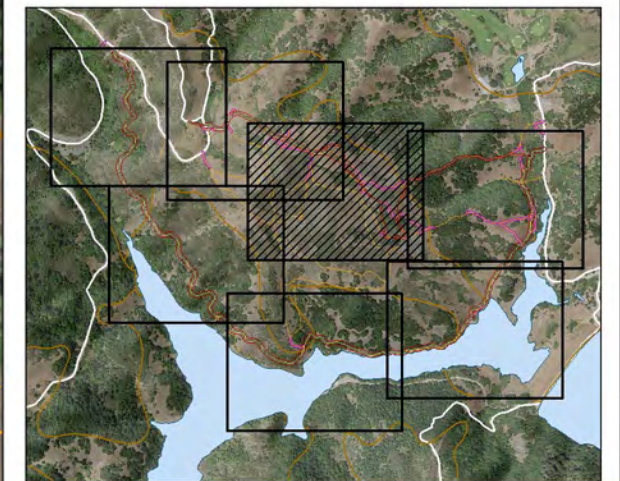


**APPENDIX A-6**  
**Potential Jurisdictional Waters**  
 Azalea Hill Restoration Project  
 Marin County, California

**Legend**

- Delineation Data Point
  - ⊙ Spring or Seep
  - Project Area Road
  - Project Area Trail
  - Other Road
  - Trail Section to be Decommissioned by Hand<sup>1</sup>
  - Previously Mapped Drainage
  - Project Boundary (roads and trails buffer)<sup>2</sup>
  - Soil Unit Boundary
- Potential Jurisdictional Waters<sup>3</sup>**
- Wetland
  - Other Waters (channel)
  - Swale (no bed/bank topography)
  - Seep
  - Gully Channel

1. Not surveyed during delineation due to minimal project impacts  
 2. Roads are buffered by 25 feet and trails are buffered by 10 feet  
 3. See also Figure 3 (overview map) and Table 1



Data Sources: Vollmar Natural Lands Consulting, 2016  
 USDA, 2012 (photo) | MMWD, 2017  
 SFEI BAARI Streams Database, 2012  
 GIS/Cartography by: Jake Schweitzer, Jan. 2017  
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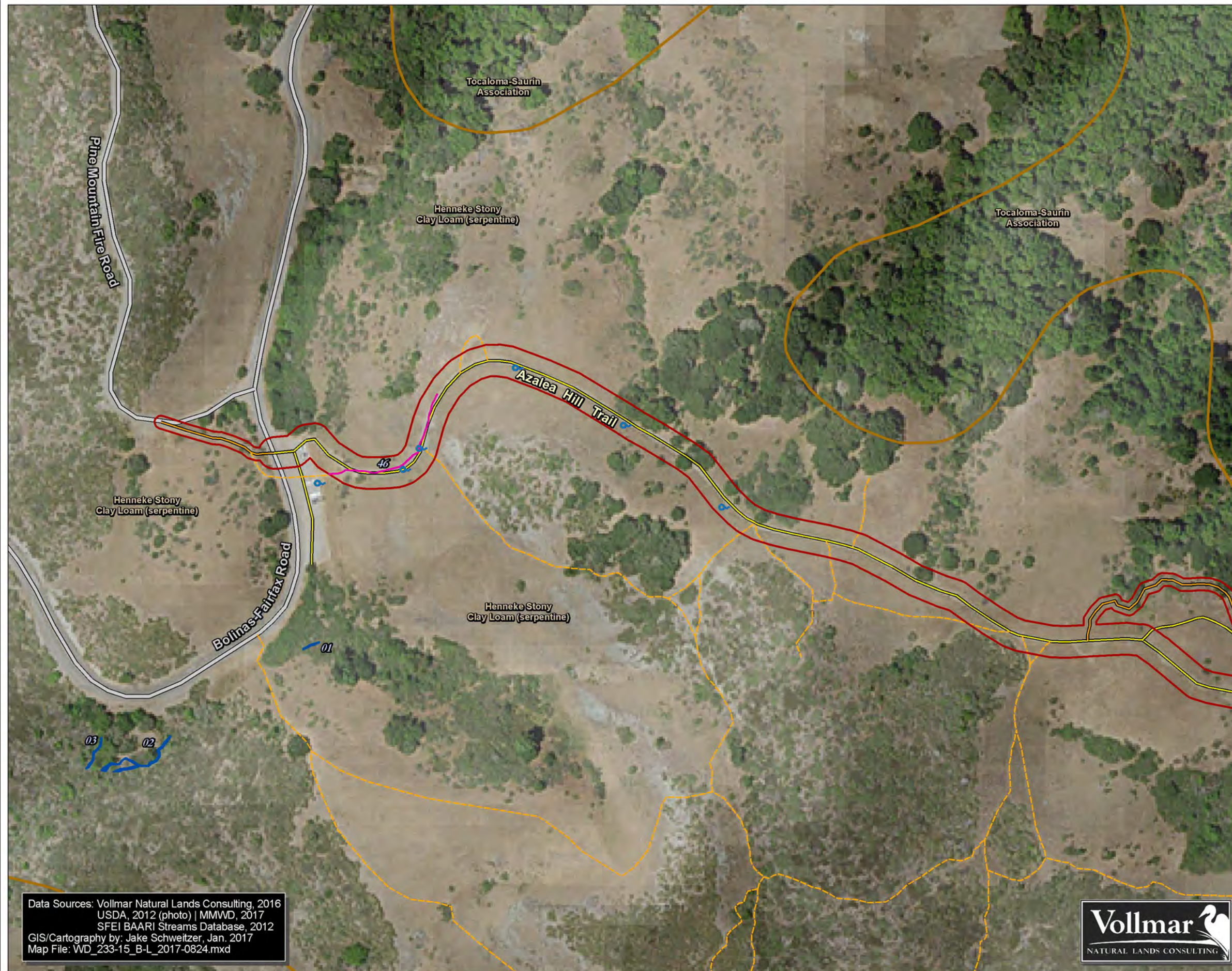
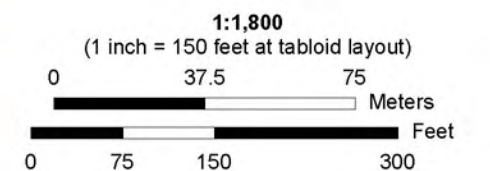


**APPENDIX A-7**  
**Potential Jurisdictional Waters**  
 Azalea Hill Restoration Project  
 Marin County, California

**Legend**

- Delineation Data Point
- ⊙ Spring or Seep
- Project Area Road
- Project Area Trail
- Other Road
- Trail Section to be Decommissioned by Hand<sup>1</sup>
- Previously Mapped Drainage
- Project Boundary (roads and trails buffer)<sup>2</sup>
- Soil Unit Boundary
- Potential Jurisdictional Waters<sup>3</sup>**
- Wetland
- Other Waters (channel)
- Swale (no bed/bank topography)
- Seep
- Gully Channel

1. Not surveyed during delineation due to minimal project impacts  
 2. Roads are buffered by 25 feet and trails are buffered by 10 feet  
 3. See also Figure 3 (overview map) and Table 1



Data Sources: Vollmar Natural Lands Consulting, 2016  
 USDA, 2012 (photo) | MMWD, 2017  
 SFEI BAARI Streams Database, 2012  
 GIS/Cartography by: Jake Schweitzer, Jan. 2017  
 Map File: WD\_233-15\_B-L\_2017-0824.mxd



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# **Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan – Restoration of Azalea Hill**

**MMWD Mt. Tamalpais Watershed, Unincorporated Marin County**

**Initial Study/Mitigated Negative Declaration – Appendix C**

**Cultural Resources Inventory and Evaluation Report**

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The Cultural Resources Inventory and Evaluation Report for the Marin Municipal Water District *Mt. Tamalpais Watershed Road and Trail Management Plan – Restoration of Azalea Hill* identifies the locations of cultural resources, which are confidential. As nonrenewable resources, archaeological sites can be significantly impacted by disturbances that can affect their cultural, scientific, and artistic values. Disclosure of this information to the public may be in violation of both federal and state laws. To discourage damage resulting from vandalism and artifact looting, cultural resources locations are kept confidential and the report's distribution restricted. Applicable U.S. laws include, but are not be limited to, Section 304 of the National Historic Preservation Act (16 USC 470w-3) and California state laws that apply include, but are not be limited to, Government Code Sections 6250 et seq. and 6254 et seq.

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# **Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan – Restoration of Azalea Hill**

**MMWD Mt. Tamalpais Watershed, Unincorporated Marin County**

**Initial Study/Mitigated Negative Declaration – Appendix D**

**2018 Azalea Hill Rare Plant Surveys**

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## APPENDIX: SITE SPECIES LIST

# MMWD MEMORANDUM

**DATE:** June 11, 2018

**TO:** Mike Swezy, Dain Anderson

**FROM:** Andrea Williams

**SUBJECT:** Vegetation Survey Results: Azalea Hill Restoration (R17008)

According to guidelines set forth by the Department of Fish & Game (2009), I have completed rare plant surveys within the area of Azalea Hill that would involve vegetation disturbance as the project is currently proposed. I surveyed the sites on May 21, 22, 25, 31, and June 1, 2018 based on the project footprint as identified by Carl Sanders in May 2018. The purpose of these surveys was to determine whether the site supports populations of special-status plant species and communities, and to identify avoidance measures to reduce impacts to these resources.

### RARE PLANT SURVEY METHODS

I compiled and reviewed information concerning threatened, endangered, or other special-status species that may occur within the proposed project alignments from a variety of sources. These sources included in-house sensitive species maps (Williams 2018; unpublished data), the California Department of Fish and Game's Natural Diversity Data Base (CNDDDB 2009), the *Inventory of Rare and Endangered Vascular Plants of California, Seventh Edition* (California Native Plant Society 2009), Calflora (Calflora 2018), as well as my previous surveys of the area.

I conducted field surveys within and adjacent to the project footprint. The survey method consisted of walking the area to allow for observation of all habitat types within the area of potential impact. Please note that because decommission locations have not all been identified, some non-system trails have not been surveyed.

**Results:** Approximately 106 special status and/or otherwise sensitive species are known to occur within Marin County. The majority of these species are restricted to the Point Reyes or Tiburon Peninsulas. Of the special-status plant species known to occur in Marin County, 11 species (Table 1) are reported in the CNDDDB or internal maps from the vicinity (within ¼ mile) of the site under consideration, and all except two were found within the project footprint. I conducted surveys at the project sites in May and June, when most species likely to be seen were readily identifiable.

Additionally, several special-status plant communities were encountered, although none were large enough to meet the minimum mapping standard (0.3 acres); route adjustments are suggested in the map (Figure 1) where appropriate. Locally rare species narrowleaf milkweed (*Asclepias fascicularis*), blue oak (*Quercus douglasii*), and stream orchid (*Epipactis gigantea*) were also encountered along the proposed route; near the orchid was an unknown in the tarweed tribe that should be identified and protected if necessary before construction.

## APPENDIX: SITE SPECIES LIST

Table 1. Rare species known from or potentially within the project area.

Scientific Name	Common Name	Seen?	Notes
<i>Arctostaphylos montana</i> ssp. <i>montana</i>	Mt. Tamalpais manzanita	Y	
<i>Arctostaphylos virgata</i>	Marin manzanita	N	Population outside area, extirpated
<i>Calamagrostis ophiditis</i>	serpentine reedgrass	Y	
<i>Calochortus umbellatus</i>	Oakland star-tulip	Y	
<i>Cirsium hydrophilum</i> var. <i>vaseyi</i>	Mt. Tamalpais thistle	Y	Planted
<i>Eriogonum luteolum</i> var. <i>caninum</i>	Tiburon buckwheat	Y	
<i>Hesperolinon congestum</i>	Marin dwarf flax	Y	
<i>Hosackia gracilis</i>	harlequin lotus	N	Population outside area in Sky Oaks Meadow
<i>Lessingia micradenia</i> var. <i>micradenia</i>	Mt. Tamalpais lessingia	Y	
<i>Navarretia rosulata</i>	Marin County navarretia	Y	
<i>Streptanthus glandulosus</i> ssp. <i>pulchellus</i>	Mount Tamalpais bristly jewel-flower	N	

The project as proposed may temporarily impact the rare species in the area. Impacts to species and avoidance measures fall into three groups: common perennial rare plants (Figure 2), common annual rare plants (Figure 3), and truly rare plants (Figure 4).

**Common perennial rare plants** (Figure 2) include Mt. Tamalpais manzanita, serpentine reedgrass, and Oakland star-tulip. Mt. Tamalpais manzanita grows primarily on serpentine, but several individuals were found trailside on non-serpentine soils. Where possible, widening and adoption of the proposed route should be altered to avoid destruction of individual plants, but the large population (tens of thousands of plants) in the area can sustain the loss of some plants. Serpentine reedgrass is found on serpentine, generally at the edge of serpentine chaparral. The population is large, and generally away from existing and proposed routes, except the proposed re-route of the Azalea Hill Trail (hiking portion). The initial downslope “oxbow” cuts below a stand of serpentine reedgrass and trail work in this area may have negative effects on this population. Oakland star-tulip grows on serpentine, often in chaparral interstices but also in grasslands and barrens. While perennial, this geophyte does not emerge every year so surveys may not identify all potentially impacted individuals. However much of this area was mapped in 2017 which was a good year for Oakland star-tulip. Only one patch was seen within the proposed trailbuilding route, near the “Rare species seep” in Figure 1, and it is at the edge of a population estimated to contain several thousand individuals.

Figure 1: Surveyed Areas

Azalea Hill Surveyed Areas

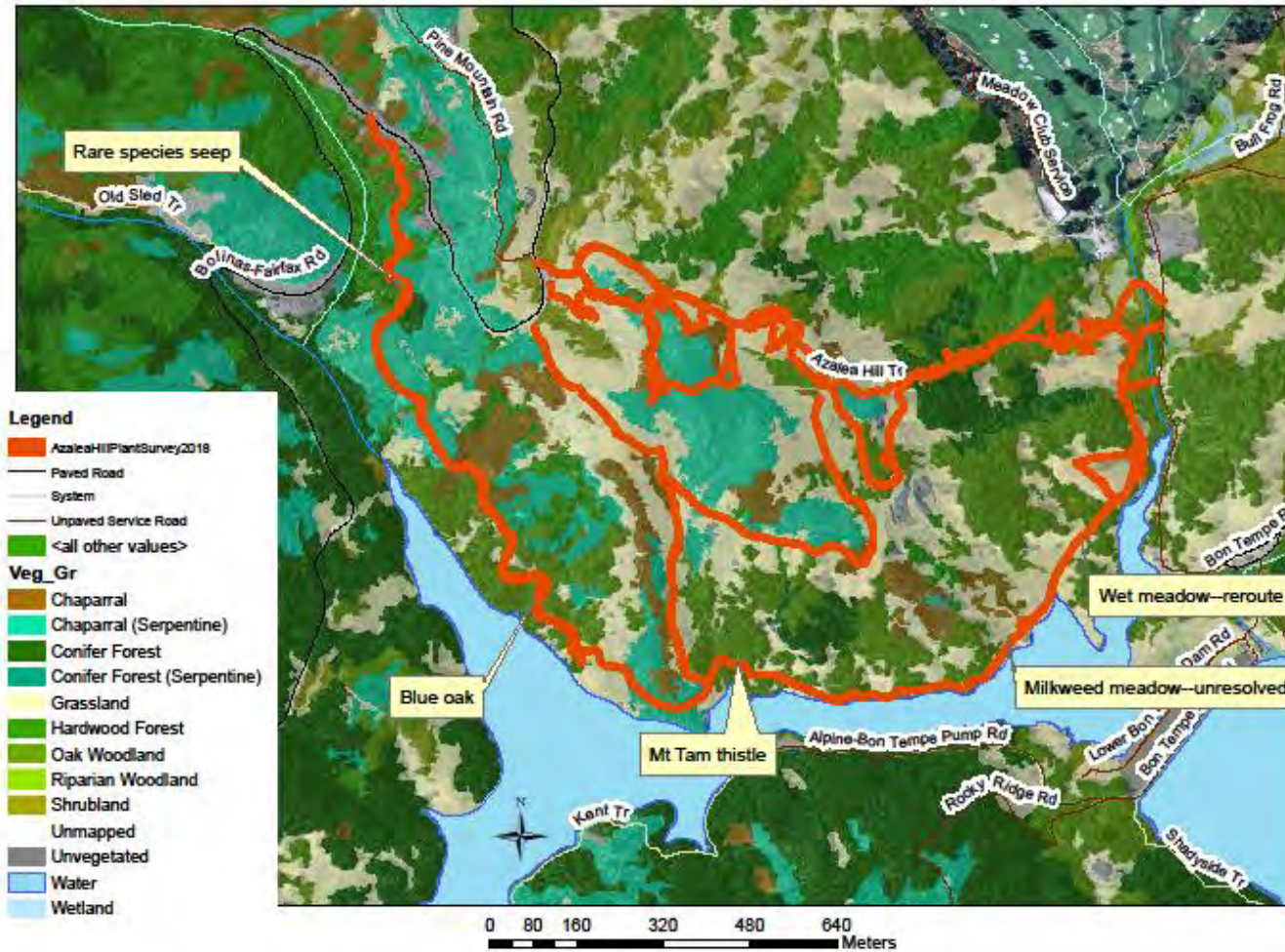


Figure 2: Common Perennial Rare Plants

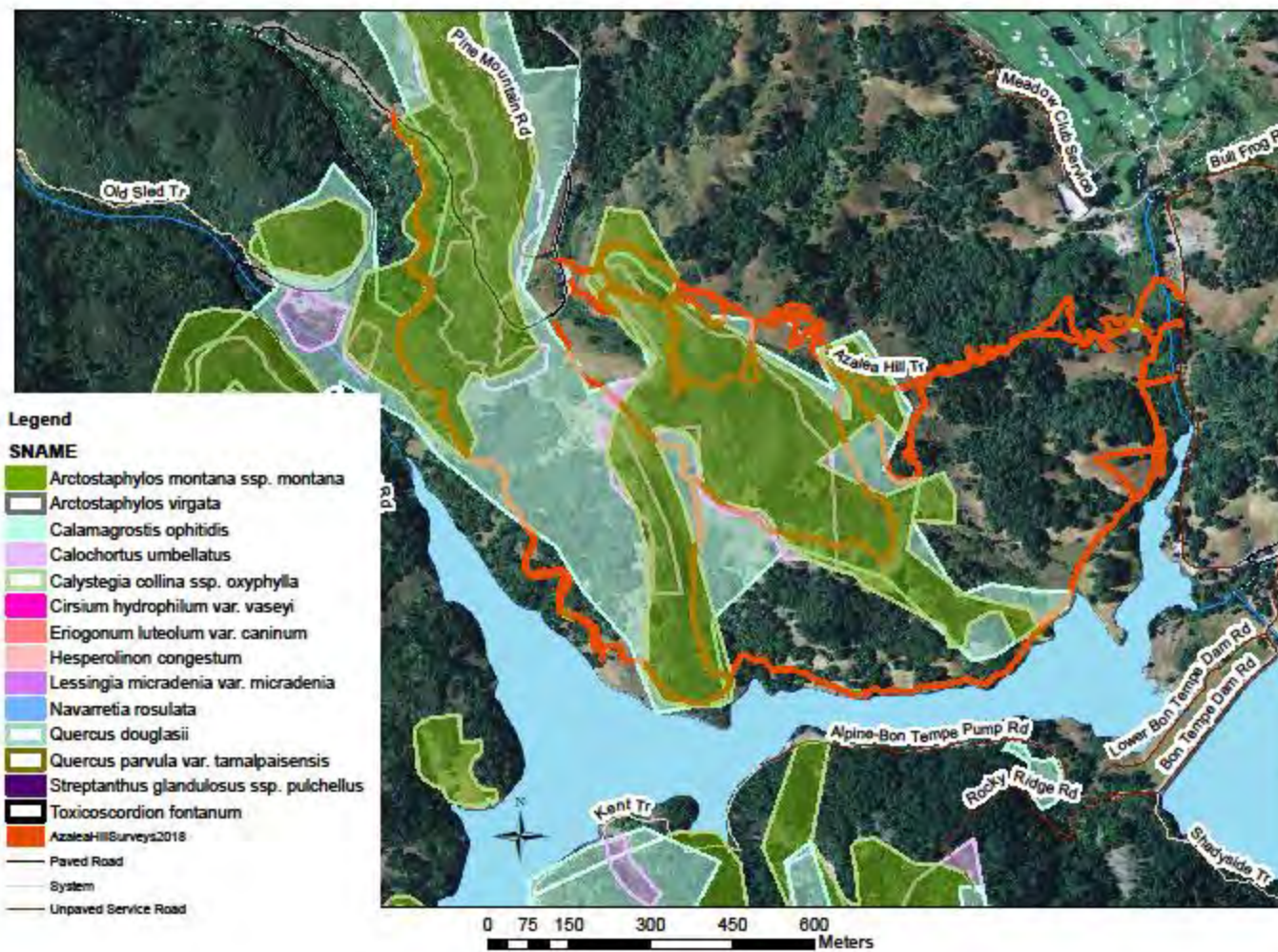


Figure 3: Common Annual Rare Plants

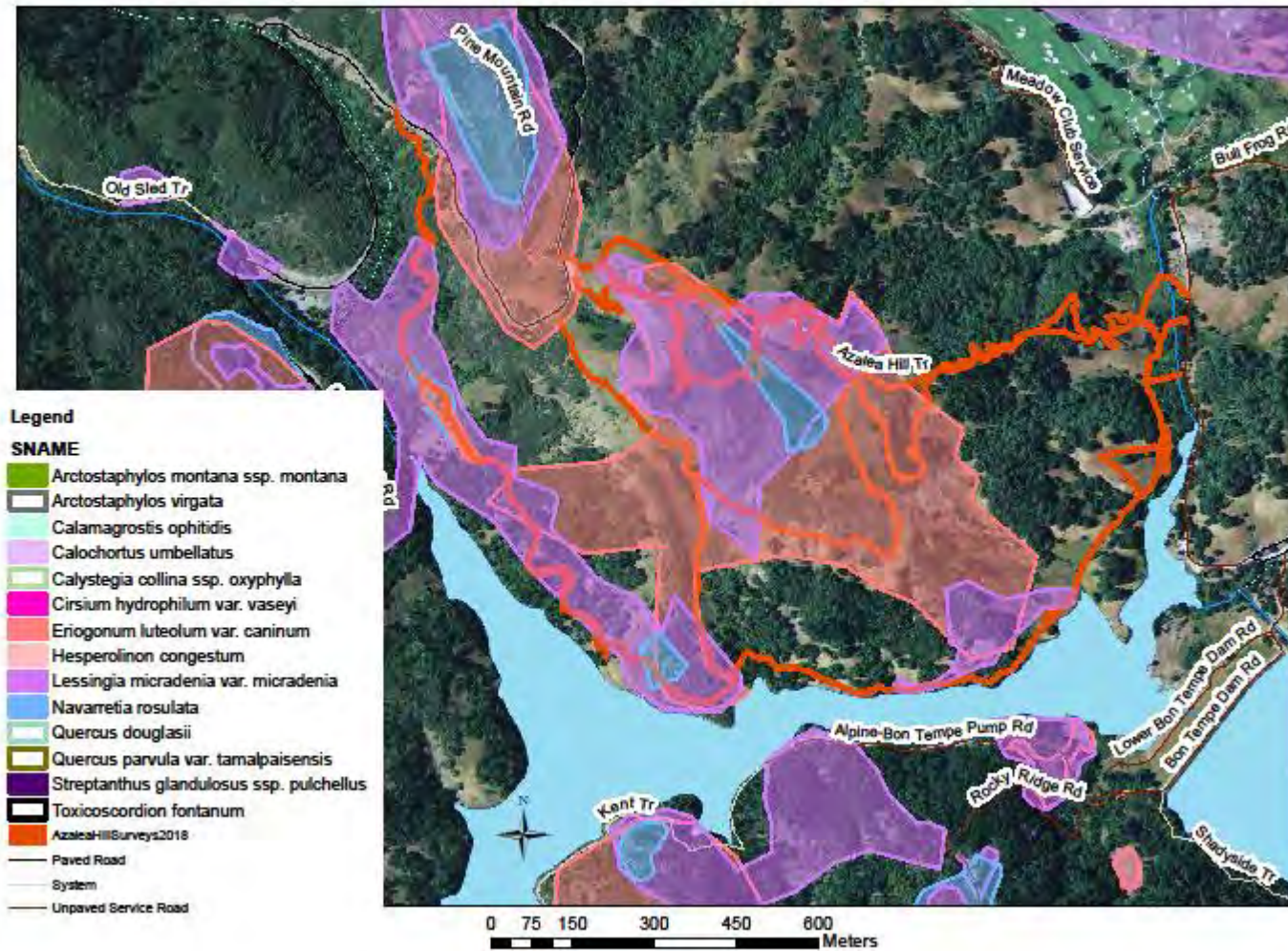
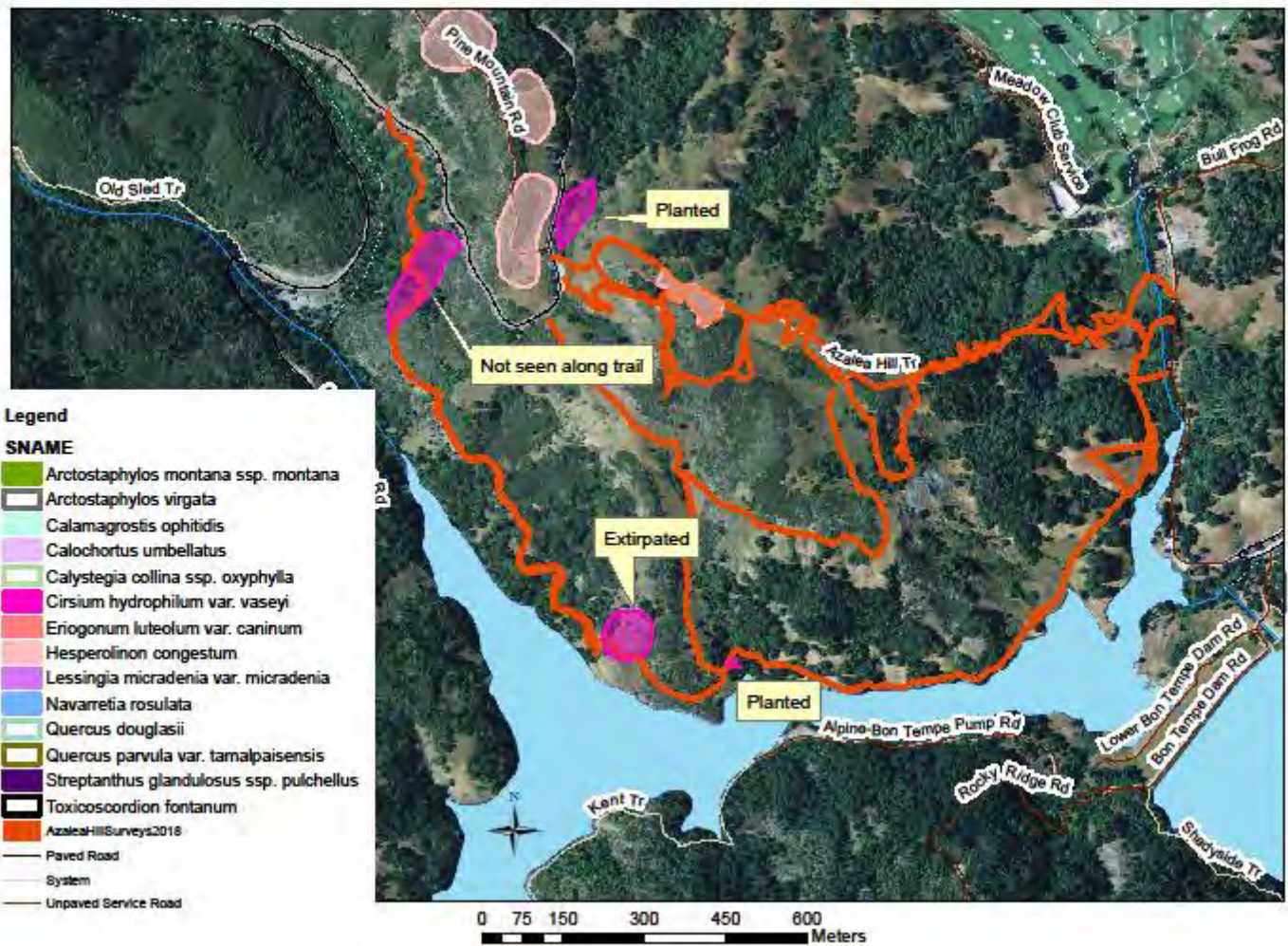


Figure 4: Mt. Tamalpais Thistle and Marin Dwarf Flax



**Common annual rare plants** (Figure 3) include Mt. Tamalpais lessingia, Tiburon buckwheat, and Marin County navarretia. Mt. Tamalpais lessingia grows primarily on serpentine, but several individuals were found on non-serpentine soils. This population is extensive, and having a good year in 2018, growing in nearly the entirety of the Liberty Gulch Road section, as well as serpentine portions of the existing Azalea Hill Trail and proposed sections. Tiburon buckwheat is also a serpentine endemic, and while past years have seen it in the thousands over much of Azalea Hill, fewer than 100 aboveground plants were seen in 2018, mostly in serpentine sections of the Liberty Gulch Road, as well as serpentine portions of the existing Azalea Hill Trail and proposed new sections. Marin County navarretia was not broadly seen, and is similarly variable in aboveground emergence in its serpentine habitat. Three populations—two in serpentine sections of the Liberty Gulch Road, and one around social trails near the summit—were seen, numbering a few dozen plants each. While several populations of one-sided jewelflower (*Streptanthus glandulosus* ssp. *secundus*) were seen, no Mount Tamalpais bristly jewel-flower was found. Avoidance and mitigation for these rare annuals are the same: avoid grading in serpentine areas, but if any grading is done stockpile and re-dress the site with topsoil from the area. Potential long-term harm may be done to these populations if the Liberty Gulch Road sees regular use, as plants could be trampled out of existence in the open serpentine as evidenced by the few rare plants seen in the bed of the existing Azalea Hill Trail, adjacent Pine Mountain Road, and heavily trafficked social trails around the Azalea Hill Summit.



Mt. Tamalpais thistle and Marin dwarf flax (Figure 4) have few populations on MMWD lands and in general. One wild population of Mt. Tamalpais thistle is known from the Liberty Gulch Road and was seen as recently as 2013 (Figure 5) in the “Rare species seep” with stream orchid, but was not noted on this survey. It is possible that Douglas-fir shading and/or competition with short-spike hedge nettle (*Stachys pycnantha*) have caused the demise of this population. An additional population was planted in a seep below the proposed route; it is persisting and the crossing should be constructed to avoid altering the hydrology at this site and the orchid seep. Another population was planted outside of the project area northwest of the Azalea Hill Trail, and an additional population along Liberty Gulch is extirpated and suitable habitat no longer present due to altered hydrology.

**Figure 5. Mt. Tamalpais thistle at Liberty Gulch in 2013**

The current Azalea Hill Trail routes through the middle of the mapped population of the endangered Marin dwarf flax population; plants are no longer present below the trail, but above the trail several hundred plants remain. Several non-system trails pass through the extant population, and appear to be negatively affecting this patch (Figure 6). Particular care should be given to rehabilitation of the trails through this area, and soils and woody material

import should be prohibited. My recommendation would be to decommission the current route and build a new trail through the annual grassland to the southwest, but that is outside the scope of this project. Avoiding work when Marin dwarf flax is aboveground (late May-July), adding signage or fencing (which does not appear effective; see Figure 6) around the population, and considering a seasonal docent program are other possible mitigations. Creating other populations in nearby serpentine grasslands would help the long-term health of the population and prevent its extirpation from district lands; this would require permits from the USFWS.



**Figure 6. Marin dwarf flax (pale dots) with non-system trail and existing fencing**

Habitat types at the proposed project site were of four main types, reflected by the species list in the appendix and the map in Figure 1: oak woodland, annual grassland, and riparian areas; serpentine grasslands and chaparral; serpentine barrens; and hardwood forest with chaparral incursions. A small wetland at the current Bullfrog crossing is also present; submerged aquatics in Bullfrog Creek were not surveyed.

Oak woodlands and annual grasslands, with riparian areas near drainages, comprise the primary vegetation communities of the southeast portion of Azalea Hill, but are also found north of and occasionally split by the current Azalea Hill Trail. Dominant species were coast live oak (*Quercus agrifolia* var. *agrifolia*), Douglas-fir (*Pseudotsuga menziesii* var. *menziesii*), coyote bush (*Baccharis pilularis* ssp. *consanguinea*), Pacific poison-oak (*Toxicodendron diversilobum*),



with mixed native and non-native grasses in the herbaceous layer (*Avena*, *Stipa*, *Brachypodium*, *Danthonia*). Serpentine grasslands and chaparral can be found over most of Azalea Hill, with barrens along portions of Liberty Gulch Road and near the summit of Azalea Hill. Woody species were primarily Mt. Tam manzanita (*Arctostaphylos montana* ssp. *montana*), chamise (*Adenostoma fasciculatum*), and yerba santa (*Eriodictyon californicum*); grasslands consist of Idaho fescue (*Festuca idahoensis*), purple needlegrass (*Stipa pulchra*), and California oatgrass (*Danthonia californica*) with interstitial babystars (*Leptosiphon androsaceus* and *L. parviflorus*) and hayfield tarweed (*Hemizonia congesta* ssp. *lutescens*). Barrens, though sparsely vegetated, had fair cover of Mt. Tamalpais lessingia (*Lessingia micradenia* var. *micradenia*) and dot-seed plantain (*Plantago erecta*).

The far northern portion of Liberty Gulch Road, at the northwestern edge of the project, is live oak forest with occasional chaparral incursions. Sharing dominance in the overstory were coast live oak and Shreve's oak (*Quercus parvula* var. *shrevei*); chaparral was largely downslope of the road with birchleaf mountain-mahogany (*Cercocarpus betuloides* var. *betuloides*), redberry (*Rhamnus crocea*), coast silk tassel (*Garrya elliptica*), and chamise.

Nomenclature follows The Jepson Manual, Second Edition (Baldwin et al. 2012). A full species list is attached as an appendix.

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## Appendix: Species List

Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
Yarrow	<i>Achillea millefolium</i>		X		X	X	
American lotus	<i>Acmispon americanus</i>		X	X		X	
Short podded lotus	<i>Acmispon brachycarpus</i>		X	X	X	X	
Hill lotus	<i>Acmispon parviflorus</i>		X	X	X	X	
Chilean trefoil	<i>Acmispon wrangelianus</i>			X	X	X	
Chamise	<i>Adenostoma fasciculatum</i>				X	X	
California maidenhair	<i>Adiantum jordanii</i>					X	
Barbed goatgrass	<i>Aegilops triuncialis</i>	Cal-IPC	X		X		
Buckeye	<i>Aesculus californica</i>		X			X	
Giant mountain dandelion	<i>Agoseris grandiflora</i>		X	X	X	X	
Mountain dandelion	<i>Agoseris heterophylla</i>		X				
Bentgrass	<i>Agrostis exarata</i>		X*				
Hall's bentgrass	<i>Agrostis hallii</i>		X*	X	X*	X	
Leafy bentgrass	<i>Agrostis pallens</i>					X	
Silvery hairgrass	<i>Aira caryophyllea</i>	Cal-IPC	X	X	X	X	
Narrowleaf onion	<i>Allium amplexans</i>			X			
Woodland tarweed	<i>Anisocarpus madioides</i>		X			X	
Sweet vernal grass	<i>Anthoxanthum odoratum</i>	Cal-IPC	X				
Lady's mantle	<i>Aphanes occidentalis</i>		X		X		
Columbine	<i>Aquilegia formosa</i>					X*	
Madrono	<i>Arbutus menziesii</i>		X		X	X	
Eastwood manzanita	<i>Arctostaphylos glandulosa</i> ssp. <i>glandulosa</i>		X		X	X	
Mt. Tamalpais manzanita	<i>Arctostaphylos montana</i> ssp. <i>montana</i>	1B	X	X	X	X	

\*Uncertainty in ID

## Appendix: Species List

Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
California pipevine	<i>Aristolochia californica</i>		X				
Whorled milkweed	<i>Asclepias fascicularis</i>		X				X
Lace fern	<i>Aspidotis densa</i>			X	X		
Loco weed	<i>Astragalus gambelianus</i>			X	X		
Slim oat	<i>Avena barbata</i>	Cal-IPC	X	X	X	X	
Wild oat	<i>Avena fatua</i>	Cal-IPC	X			X	
Coyote brush	<i>Baccharis pilularis</i> ssp. <i>consanguinea</i>		X		X	X	
Purple false brome	<i>Brachypodium distachyon</i>	Cal-IPC	X	X	X	X	
Big rattlesnake grass	<i>Briza maxima</i>	Cal-IPC	X		X	X	
Little rattlesnake grass	<i>Briza minor</i>		X		X	X	X
Harvest brodiaea	<i>Brodiaea elegans</i>		X		X		
White brodiaea	<i>Brodiaea hyacinthina</i>				X		
California brome	<i>Bromus carinatus</i>		X	X	X	X	
Ripgut brome	<i>Bromus diandrus</i>	Cal-IPC	X	X	X	X	
Soft chess	<i>Bromus hordeaceus</i>	Cal-IPC	X	X	X	X	X
Woodland brome	<i>Bromus laevipes</i>		X	X		X	
Red brome	<i>Bromus madritensis</i> ssp. <i>rubens</i>	Cal-IPC		X	X		
Sterile brome	<i>Bromus sterilis</i>		X				
Serpentine reed grass	<i>Calamagrostis ophitidis</i>	4.3		X	X		
Redmaids	<i>Calandrinia menziesii</i>				X		
Yellow mariposa	<i>Calochortus luteus</i>		X	X	X		
Oakland star-tulip	<i>Calochortus umbellatus</i>	4.2		X	X	X	

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Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
Rosin weed	<i>Calycadenia multiglandulosa</i>			X	X	X	
Hillside morning glory	<i>Calystegia collina</i> ssp. <i>collina</i>			X			
Smooth western morning glory	<i>Calystegia purpurata</i> ssp. <i>purpurata</i>		X	X			
Hill morning glory	<i>Calystegia subacaulis</i> ssp. <i>subacaulis</i>		X	X	X		
Milkmaids	<i>Cardamine californica</i>		X				
Italian thistle	<i>Carduus pycnocephalus</i>	Cal-IPC	X		X		
Dense-flowered sedge	<i>Carex densa</i>		X			X	X
Globe sedge	<i>Carex globosa</i>		X			X	
Slender-footed sedge	<i>Carex leptopoda</i>		X			X	
Mendocino sedge	<i>Carex mendocinensis</i>						X
Field sedge	<i>Carex praegracilis</i>		X				X
Bifid sedge	<i>Carex serratodens</i>						X
Denseflower owl's-clover	<i>Castilleja densiflora</i> ssp. <i>densiflora</i>				X		
Texas paintbrush	<i>Castilleja foliosa</i>			X			
Cream sacs	<i>Castilleja rubicundula</i> var. <i>lithospermoides</i>				X		
Buck brush	<i>Ceanothus cuneatus</i> var. <i>cuneatus</i>					X	
Musk brush	<i>Ceanothus jepsonii</i> var. <i>jepsonii</i>			X	X		

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Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
Jimbrush	<i>Ceanothus oliganthus</i> var. <i>sorediatus</i>					X	
Tocalote	<i>Centaurea melitensis</i>	Cal-IPC	X		X	X	X
Birchleaf mountain-mahogany	<i>Cercocarpus betuloides</i> var. <i>betuloides</i>	WR				X	
Amole	<i>Chlorogalum pomeridianum</i> var. <i>pomeridianum</i>		X	X	X	X	
Mt. Tamaplais thistle	<i>Cirsium hydrophilum</i> var. <i>vaseyi</i>	1B.2					X
Western thistle	<i>Cirsium occidentale</i>		X			X	
Bullthistle	<i>Cirsium vulgare</i>		X			X	
Farewell to spring	<i>Clarkia amoena</i>					X	
Graceful clarkia	<i>Clarkia gracilis</i> var. <i>gracilis</i>			X		X	
Purple clarkia	<i>Clarkia purpurea</i> var. <i>quadrivulnera</i>		X	X	X	X	
Viridis	<i>Claytonia exigua</i> ssp. <i>exigua</i>				X		
Yerba buena	<i>Clinopodium douglasii</i>		X			X	
Poison hemlock	<i>Conium maculatum</i>	Cal-IPC					X
Field bindweed	<i>Convolvulus arvensis</i>	Cal-IPC	X				
Hairy bird's beak	<i>Cordylanthus pilosus</i> ssp. <i>pilosus</i>	WR	X				
Silverleaf cotoneaster	<i>Cotoneaster pannosus</i>	Cal-IPC	X				
Aquatic pygmyweed	<i>Crassula aquatica</i>		X				
English hawthorn	<i>Crataegus monogyna</i>	Cal-IPC	X				

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Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
Turkey mullein	<i>Croton setiger</i>		X				
Houndstongue	<i>Cynoglossum grande</i>		X			X	
Dogtail grass	<i>Cynosurus echinatus</i>	Cal-IPC	X		X	X	
Tall nutsedge	<i>Cyperus eragrostis</i>		X				
Orchardgrass	<i>Dactylis glomerata</i>	Cal-IPC	X				
California oatgrass	<i>Danthonia californica</i>		X	X	X	X	X
Wild carrot	<i>Daucus pusillus</i>		X	X	X	X	
Western larkspur	<i>Delphinium hesperium</i> ssp. <i>hesperium</i>				X		
Zigzag larkspur	<i>Delphinium patens</i> ssp. <i>patens</i>		X		X		
Blue dicks	<i>Dichelostemma capitatum</i> ssp. <i>capitatum</i>		X			X	
Fork-toothed ookow	<i>Dichelostemma congestum</i>		X				
Wood fern	<i>Dryopteris arguta</i>		X			X	
Rock lettuce	<i>Dudleya cymosa</i> ssp. <i>cymosa</i>		X		X		
Spikerush	<i>Eleocharis</i>						X
Blue wildrye	<i>Elymus glaucus</i> ssp. <i>glaucus</i>		X		X	X	
Virginia wildrye	<i>Elymus glaucus</i> ssp. <i>virescens</i>	WR		X	X		
Big squirreltail grass	<i>Elymus multisetus</i>		X	X	X		
Hybrid wildrye	<i>Elymus xhansenii</i>				X		

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Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
Minute willowherb	<i>Epilobium minutum</i>		X	X			
Stream orchid	<i>Epipactis gigantea</i>	WR					X
Common horsetail	<i>Equisetum arvense</i>						X
Giant horsetail	<i>Equisetum telmateia</i> ssp. <i>braunii</i>		X				X
Leafy fleabane	<i>Erigeron foliosus</i> var. <i>foliosus</i>				X		
Yerba santa	<i>Eriodictyon californicum</i>			X	X		
Tiburon buckwheat	<i>Eriogonum luteolum</i> var. <i>caninum</i>	1B.2		X			
Naked buckwheat	<i>Eriogonum nudum</i>			X	X		
Yellow yarrow	<i>Eriophyllum confertiflorum</i>			X	X		
Big heron bill	<i>Erodium botrys</i>		X		X		
Coastal heron's bill	<i>Erodium cicutarium</i>	Cal-IPC	X		X		
California poppy	<i>Eschscholzia californica</i>		X	X	X	X	
Roughleaf aster	<i>Eurybia radulina</i>		X				
Tall fescue	<i>Festuca arundinacea</i>	Cal-IPC	X				X
Brome fescue	<i>Festuca bromoides</i>		X				
California fescue	<i>Festuca californica</i>		X	X		X	
Blue fescue	<i>Festuca idahoensis</i>			X	X	X	
Small fescue	<i>Festuca microstachys</i>			X	X		
Rattail fescue	<i>Festuca myuros</i>	Cal-IPC	X		X	X	
Italian rye grass	<i>Festuca perennis</i>		X	X	X	X	X
Wild strawberry	<i>Fragaria vesca</i>		X			X	

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Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
California coffeeberry	<i>Frangula californica</i> ssp. <i>californica</i>		X		X		X
Oregon ash	<i>Fraxinus latifolia</i>		X				X
Checker lily	<i>Fritillaria affinis</i> var. <i>affinis</i>		X				
Cleavers	<i>Galium aparine</i>		X			X	
California bedstraw	<i>Galium californicum</i> ssp. <i>californicum</i>		X		X	X	
Climbing bedstraw	<i>Galium nuttallii</i>		X				
Wall bedstraw	<i>Galium parisiense</i>		X		X	X	X
Climbing bedstraw	<i>Galium porrigens</i> var. <i>porrigens</i>		X		X	X	
Featherweed	<i>Gamochaeta ustulata</i>		X				
Coast silk tassel	<i>Garrya elliptica</i>			X		X	
Nit grass	<i>Gastridium phleoides</i>			X	X	X	X
French broom	<i>Genista monspessulana</i>	Cal-IPC	X			X	
Wild geranium	<i>Geranium dissectum</i>	Cal-IPC	X				
Crane's bill geranium	<i>Geranium molle</i>	Cal-IPC				X	
Herb Robert	<i>Geranium purpureum</i>		X				
Blue field gilia	<i>Gilia capitata</i> ssp. <i>capitata</i>				X		
Blue field gilia	<i>Gilia capitata</i> ssp. <i>multicaulis</i>		X	X	X		
Purple spot gilia	<i>Gilia clivorum</i>				X		
Mannagrass	<i>Glyceria</i>		X*				X
Gumweed	<i>Grindelia camporum</i>				X		

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Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
Bisbee Peak rushrose	<i>Helianthemum scoparium</i>					X	
Sneezeweed	<i>Helenium puberulum</i>		X				X
Bristly oxtongue	<i>Helminthotheca echioides</i>	Cal-IPC					X
Hayfield tarweed	<i>Hemizonia congesta</i> ssp. <i>lutescens</i>		X	X	X		
Few flowered evax	<i>Hesperovax sparsiflora</i> var. <i>sparsiflora</i>		X	X	X		
Marin western flax	<i>Hesperolinon congestum</i>	Endangered			X		
Small flower western flax	<i>Hesperolinon micranthum</i>			X	X	X	
Toyon	<i>Heteromeles arbutifolia</i>		X		X	X	
California hemp	<i>Hoita macrostachya</i>						X
Creeping leather root	<i>Hoita orbicularis</i>	WR			X		X
Velvet grass	<i>Holcus lanatus</i>	Cal-IPC	X				X
Oceanspray	<i>Holodiscus discolor</i>		X				
Barley	<i>Hordeum marinum</i>	Cal-IPC	X		X		
Foxtail barley	<i>Hordeum murinum</i>	Cal-IPC	X		X	X	
Goldwire	<i>Hypericum concinnum</i>			X			
Smooth cats ear	<i>Hypochaeris glabra</i>	Cal-IPC	X		X		
Hairy cats ear	<i>Hypochaeris radicata</i>	Cal-IPC	X		X	X	
Douglas iris	<i>Iris douglasiana</i> var. <i>major</i>		X	X	X	X	
Ground iris	<i>Iris macrosiphon</i>		X		X		
Common toad rush	<i>Juncus bufonius</i>		X		X		
Common bog rush	<i>Juncus effusus</i>		X			X	X
Slender juncus	<i>Juncus occidentalis</i>		X		X		X
Spreading rush	<i>Juncus patens</i>		X			X	X

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Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
Brown-headed rush	<i>Juncus phaeocephalus</i>						X
Iris-leaf rush	<i>Juncus xiphioides</i>		X				X
June grass	<i>Koeleria macrantha</i>				X	X	
Goldfields	<i>Lasthenia californica</i>			X	X		
Angled peavine	<i>Lathyrus angulatus</i>		X		X		X
Common pacific pea	<i>Lathyrus vestitus</i>		X			X	
Lesser hawkbit	<i>Leontodon taraxacoides</i>		X		X		
False babystars	<i>Leptosiphon androsaceus</i>			X	X		
Variable linanthus	<i>Leptosiphon parviflorus</i>			X		X	
Little glandular lessingia	<i>Lessingia micradenia</i> ssp. <i>micradenia</i>	1B.2	X	X	X	X	
Leopard lily	<i>Lilium pardalinum</i> ssp. <i>pardalinum</i>					X	X
Flax	<i>Linum bienne</i>		X		X		
California cottonrose	<i>Logfia filaginoides</i>						
Narrowleaf cottonrose	<i>Logfia gallica</i>		X		X	X	
California lomatium	<i>Lomatium californicum</i>					X*	
Lace parsnip	<i>Lomatium dasycarpum</i>		X	X	X		
Large fruited lomatium	<i>Lomatium macrocarpum</i>						
Common lomatium	<i>Lomatium utriculatum</i>			X			
Pink honeysuckle	<i>Lonicera hispidula</i>		X	X	X	X	
Narrow-leaf bird's-foot trefoil	<i>Lotus tenuis</i>						X
Silver lupine	<i>Lupinus albifrons</i> var. <i>collinus</i>		X				
Miniature annual lupine	<i>Lupinus bicolor</i>		X		X	X	

\*Uncertainty in ID

## Appendix: Species List

Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
Valley sky lupine	Lupinus nanus		X		X		
Hairy wood rush	Luzula comosa		X		X	X	
Scarlet pimpernel	Lysimachia arvensis		X	X	X	X	X
Hyssop loosestrife	Lythrum hyssopifolia		X				X
Unknown Madioidae	Madioidae					X	X
Small tarweed	Madia exigua		X	X	X		
Gumweed	Madia gracilis		X		X	X	
California manroot	Marah fabaceus					X	
California burclover	Medicago polymorpha	Cal-IPC	X				
California melic	Melica californica		X	X	X		
Geyer's melic	Melica geyeri		X*				
Alaska melic	Melica subulata		X				
Torrey's melica	Melica torreyana		X	X		X	
Yellow sweetclover	Melilotus indicus		X				
Pennyroyal	Mentha pulegium	Cal-IPC	X				X
Q tips	Micropus californicus		X	X	X	X	
Douglas' microseris	Microseris douglasii		X	X	X		
Sticky monkeyflower	Mimulus aurantiacus		X	X	X	X	
Yellow monkey flower	Mimulus guttatus		X	X		X	X
Musk monkey flower	Mimulus moschatus						X
Douglas' sandwort	Minuartia douglasii			X			
Siskiyou monardella	Monardella purpurea		X	X	X		
Coyote mint	Monardella villosa var. villosa		X			X	
California wax myrtle	Morella californica					X	X

\*Uncertainty in ID

## Appendix: Species List

Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
Broadleaf forget-me-not	<i>Myosotis latifolia</i>	Cal-IPC	X				
Marin county navarretia	<i>Navarretia rosulata</i>	1B.2		X	X		
Skunkweed	<i>Navarretia squarrosa</i>				X		
Sweet cicely	<i>Osmorhiza berteroi</i>		X			X	
Dallis grass	<i>Paspalum dilatatum</i>						X
Indian warrior	<i>Pedicularis densiflora</i>					X	
Coffee fern	<i>Pellaea andromedifolia</i>		X				
Gold back fern	<i>Pentagramma triangularis</i>		X		X	X	
Yampah	<i>Perideridia kelloggii</i>		X	X	X		
Grass pink	<i>Petrorhagia dubia</i>		X				
Harding grass	<i>Phalaris aquatica</i>	Cal-IPC	X				X
Turkey tangle fogfruit	<i>Phyla nodiflora</i>		X				X
Chaparral pea	<i>Pickeringia montana</i>			X			
Buckhorn plantain	<i>Plantago coronopus</i>		X				
California plantain	<i>Plantago erecta</i>		X	X	X		
Lanceleaf plantain	<i>Plantago lanceolata</i>	Cal-IPC	X		X	X	X
Creamcups	<i>Platystemon californicus</i>				X		
Shortspur seablush	<i>Plectritis congesta</i> ssp. <i>brachystemon</i>		X				
Annual bluegrass	<i>Poa annua</i>		X				X
Kentucky bluegrass	<i>Poa pratensis</i>						X
Fourleaved manyseed	<i>Polycarpon tetraphyllum</i>					X	
Milkwort	<i>Polygala californica</i>		X			X	
Water pepper	<i>Polygonum hydropiperoides</i>						X

\*Uncertainty in ID

## Appendix: Species List

Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
California polypody	<i>Polypodium californicum</i>				X		
Licorice fern	<i>Polypodium calirhiza</i>					X*	
Licorice fern	<i>Polypodium glycrrhiza</i>		X*				
Ditch beardgrass	<i>Polypogon interruptus</i>					X	X
Annual beardgrass	<i>Polypogon monspeliensis</i>			X	X		
Western sword fern	<i>Polystichum munitum</i>		X				
Cherry plum	<i>Prunus cerasifera</i>	Cal-IPC	X		X		X
Cudweed	<i>Pseudognaphalium beneolens</i>		X				
Ladies' tobacco	<i>Pseudognaphalium californicum</i>		X		X		
Douglas-fir	<i>Pseudotsuga menziesii</i> var. <i>menziesii</i>		X	X	X	X	
Slender woolly heads	<i>Psilocarphus tenellus</i>		X		X		
Western bracken fern	<i>Pteridium aquilinum</i> var. <i>pubescens</i>		X		X	X	
Firethorn	<i>Pyracantha angustifolia</i>	Cal-IPC	X				
Coast live oak	<i>Quercus agrifolia</i> var. <i>agrifolia</i>		X	X	X	X	X
Blue oak	<i>Quercus douglasii</i>	WR	X				
Leather oak	<i>Quercus durata</i>		X	X	X	X	
Oregon white oak	<i>Quercus garryana</i>		X				
California black oak	<i>Quercus kelloggii</i>		X				
Shreve oak	<i>Quercus parvula</i> var. <i>shrevei</i>			X		X	

\*Uncertainty in ID

## Appendix: Species List

Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
Interior live oak, chapparal oak	<i>Quercus wislizeni</i>					X	
Chase oak	<i>Quercus xchasei</i>		X	X		X	
Oracle oak	<i>Quercus xmorehus</i>					X	
Common buttercup	<i>Ranunculus californicus</i>		X	X	X	X	
Redberry	<i>Rhamnus crocea</i>			X		X	
Western azalea	<i>Rhododendron occidentale</i>				X	X	X
Wood rose	<i>Rosa gymnocarpa</i>		X				
Sweetbrier rose	<i>Rosa rubiginosa</i>		X				X
California blackberry	<i>Rubus ursinus</i>		X			X	
Sheep sorrel	<i>Rumex acetosella</i>	Cal-IPC			X		
Curly dock	<i>Rumex crispus</i>	Cal-IPC					X
Western pearlwort	<i>Sagina decumbens</i> ssp. <i>occidentalis</i>	WR		X	X		
Arroyo willow	<i>Salix lasiolepis</i>		X				
Pacific willow	<i>Salix lucida</i> ssp. <i>lasiandra</i>		X				
Purple sanicle	<i>Sanicula bipinnatifida</i>		X		X		
Pacific sanicle	<i>Sanicula crassicaulis</i>		X			X	
Coast sanicle	<i>Sanicula laciniata</i>					X	
Smallflower bullrush	<i>Scirpus microcarpus</i>		X			X	
Scribner's grass	<i>Scribneria bolanderi</i>				X		
California figwort	<i>Scrophularia californica</i>		X				
Wild hollyhock	<i>Sidalcea malviflora</i> var. <i>laciniata</i>		X		X		
Sleepy catchfly	<i>Silene antirrhina</i>		X*				

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## Appendix: Species List

Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
Common catchfly	<i>Silene gallica</i>		X		X	X	
Blue eyed grass	<i>Sisyrinchium bellum</i>		X	X	X	X	
South American soliva	<i>Soliva sessilis</i>		X		X		
Spiny sow thistle	<i>Sonchus asper</i>		X				
Sow thistle	<i>Sonchus oleraceus</i>		X				X
Spanish broom	<i>Spartium junceum</i>	Cal-IPC	X				
Purple sand spurry	<i>Spergularia rubra</i>				X		
Hedge nettle	<i>Stachys ajugoides</i>			X		X	
Short spike hedge nettle	<i>Stachys pycnantha</i>					X	X
Rough hedgenettle	<i>Stachys rigida</i> var. <i>quercetorum</i>		X			X	
Mouseear chickweed	<i>Stellaria media</i>		X				
Foothill needle grass	<i>Stipa lepida</i>		X		X	X	
Purple needle grass	<i>Stipa pulchra</i>		X	X	X	X	X
One sided jewelflower	<i>Streptanthus glandulosus</i> ssp. <i>secundus</i>			X	X		
Trailing snowberry	<i>Symphoricarpus mollis</i>					X	
Pacific aster	<i>Symphyotrichum chilense</i>						X
Common dandelion	<i>Taraxacum officinale</i>		X			X	
Sun cup	<i>Taraxia ovata</i>		X		X		
Kellogg's tauschia	<i>Tauschia kelloggii</i>					X	
California goldenbanner	<i>Thermopsis californica</i>			X	X		
Field hedge parsley	<i>Torilis arvensis</i>	Cal-IPC	X			X	
Wild parsley	<i>Torilis nodosa</i>		X		X		

\*Uncertainty in ID

## Appendix: Species List

Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep-Only Plants
Poison-oak	Toxicodendron diversilobum		X	X	X	X	X
Fremont's star lily	Toxicoscordion fremontii					X	
Salsify	Tragopogon porrifolius						X
Narrow leaved clover	Trifolium angustifolium		X				X
Bearded clover	Trifolium barbigerum				X		
Notch leaf clover	Trifolium bifidum var. decipiens		X	X	X	X	X
Tree clover	Trifolium ciliolatum		X				
Shamrock	Trifolium dubium		X			X	
Bull clover	Trifolium fucatum		X		X		
Clustered clover	Trifolium glomeratum	Cal-IPC	X			X	
Rose clover	Trifolium hirtum	Cal-IPC	X		X	X	
Small head clover	Trifolium microcephalum		X		X		
Valparaiso clover	Trifolium microdon			X		X	
Clammy clover	Trifolium obtusiflorum						
Few-flowered clover	Trifolium oliganthum		X		X*		
White clover	Trifolium repens		X				
Tomcat clover	Trifolium willdenovii		X	X	X		
Dwarf owl's clover	Triphysaria pusilla				X		
Tall trisetum	Trisetum canescens		X			X	
Wild hyacinth	Triteleia hyacinthina				X		X
Ithuriel's spear	Triteleia laxa		X	X	X		
California bay	Umbellularia californica		X	X		X	
Silver puffs	Uropappus lindleyi			X			

\*Uncertainty in ID



## Appendix: Species List

Common Name	Scientific Name	Status	Riparian and Oak Woodlands	Serpentine Barrens	Serpentine Grasslands and Chaparral	Live Oak Forest and Chaparral	Wetland and Seep- Only Plants
American vetch	<i>Vicia americana</i> ssp. <i>americana</i>		X				
Smaller common vetch	<i>Vicia sativa</i> ssp. <i>nigra</i>		X		X	X	
Smooth vetch	<i>Vicia tetrasperma</i>		X				
Smooth vetch	<i>Vicia villosa</i> ssp. <i>varia</i>				X		
Western modesty	<i>Whipplea modesta</i>					X	
Giant chain fern	<i>Woodwardia fimbriata</i>					X	
Narrow leaved mule ears	<i>Wyethia angustifolia</i>				X		
Centauray	<i>Zeltnera</i>				X		X

\*Uncertainty in ID

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# **Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan – Restoration of Azalea Hill**

**MMWD Mt. Tamalpais Watershed, Unincorporated Marin County**

**Initial Study/Mitigated Negative Declaration – Appendix E**

**Response to Comments**

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# APPENDIX E: RESPONSE TO COMMENTS

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**MARIN MUNICIPAL  
WATER DISTRICT**

## ***Amendment of Mt. Tamalpais Watershed Road and Trail Management Plan for Restoration of Azalea Hill***

### Section 1: Introduction

Beginning October 8, 2018, Marin Municipal Water District (district) initiated an agency and public review period for the subsequent Draft Initial Study/Mitigated Negative Declaration (IS/MND) for the Amendment of the *Mt. Tamalpais Watershed Road and Trail Management Plan (RTMP)* for the Restoration of Azalea Hill. The 30-day comment period ended on November 9, 2018 over which time the district received a total of 124 comments on the project by way of U.S. mail (2), emails (102), phone conversations and voice messages (7), and public expression (13). This document contains the all the agency, organization, and public comments received during the comment period and written (district) responses organized in the following manner.

- Section 1: Introduction
- Section 2: Organization of Responses
- Section 3: Master Responses
- Section 4: Response to Comments
- Section 5: Public Comments
  - Part I – Substantive Environmental Issues
  - Part II – General Comments

### Section 2: Organization of Responses

District staff compiled and categorized all comments that came via U.S. mail, email, phone, and public expression into two groups; substantive environmental issues and general comments. Substantive environmental issues are those that pertain to the content or adequacy of the IS/MND by commenting on the effectiveness of mitigation measures, conclusion of environmental impact analysis, identified or unidentified impacts, or otherwise. General Comments include expressions of support, displeasure, or anecdotal comments unrelated to the analysis and findings disclosed in the IS/MND and therefore do not necessitate a response (see Section 5, Part II). The district assigned a unique identifier to each substantive environmental issue comment which is composed of the commenter's initials and comment number (see Section 5, Part I). For example, the first comment received from the California Department of Fish and Wildlife is numbered as CDFW-1.

Through the process of reviewing all agency and public comments it was apparent that many of the comments had common or recurring themes and content. For example, numerous commenters raised concerns regarding potential habitat fragmentation, the adequacy of mitigation measures, and impacts

to special-status plants. Master responses were developed for these common/recurring environmental comments. Where appropriate, references are made to the master responses for common/recurring comments. For both master and individual responses, the district provides a summary of the comment in *italics*. Summaries of comments do not include general expressions of support, disapproval, unsubstantiated opinions, or anecdotal information without specific information pertaining to the adequacy or content of the IS/MND.

## Section 3: Master Responses

- Master Response 1: Special-Status Species Mitigation & Monitoring
- Master Response 2: Transplant Methods, Success Criteria, & Contingency Measures
- Master Response 3: Rare Plant Survey Protocols
- Master Response 4: Necessity of EIR & Adequacy of Mitigations
- Master Response 5: Fragmentation of Large Pristine Area
- Master Response 6: Conflict with Original RTMP (2005)
- Master Response 7: Expanded & Increased Trail Use
- Master Response 8: Project Goals & Alternate Routes
- Master Response 9: Soil Stockpiling
- Master Response 10: Recreation Impacts
- Master Response 11: Erosion & Sedimentation

### Master Response 1: Special-Status Species Mitigation & Monitoring

*During the public and agency review of the IS/MND, the district received a number of comments regarding the efficacy of Mitigation Measure BIO-1.*

Mitigation Measure BIO-1 was revised and now includes the design and implementation of a rare plant mitigation and monitoring plan for all special-status plant species affected. Special-status plant species include CRPR 4 and locally rare plant species. Revisions to Mitigation measure BIO-1 can be found starting on page 3 of the Final IS/MND. As noted, the district has clarified the definition of special-status plants to include those that are considered locally rare. See page 52 of the Final IS/MND for this clarification and updated Table 4-1 for species considered special-status. A rare plant mitigation and monitoring plan will be developed for any plants listed in Table 4-1 impacted by the project.

### Master Response 2: Transplant Methods, Success Criteria, and Contingency Measures

*During the public and agency review of the IS/MND, the district received a number of comments regarding the efficacy of transplantation methods, success criteria, and contingency measures included in the rare plant mitigation and monitoring plan.*

The transplantation methods, success criteria, and contingency measures for relocating rare plants was revised within Mitigation Measure BIO-1 to ensure relocation is successful and impacts to rare plants would be less than significant. Revisions to Mitigation measure BIO-1 can be found starting on page 3 of the Final IS/MND.

### Master Response 3: Rare Plant Survey Protocols – Marin Western Flax

*During the public and agency review of the IS/MND, the district received a number of comments regarding adequacy of rare plant survey methods.*

For the recirculated (October, 8, 2018) IS/MND, the district followed the 2009 CDFW rare plant survey protocol. The district botanist conducted surveys for Marin western flax when the known population in the area was at peak bloom and other all special-status plants were easily identifiable. With regard to Marin Western Flax, in the district botanist's past 9 years of experience in the project area, the plant has had a very narrow blooming window; about 2 weeks when it's most visible, generally at the end of May/beginning of June. The blooming window used to be mid-June, but it has shifted earlier the past few years.

From 2012 to 2018 the district botanist oversaw rare plant surveys on over 400 patches of rare plants on district land to update the 1990 Sensitive Plant Survey of the Marin Municipal Water District (Patterson, 1990), check CNDDDB polygons, and map CRPR 4 and locally rare plants. Extensive surveys of serpentine grassland areas around Azalea Hill and Pine Mountain were completed in May 2018 and in over 300 field days of searching only one new population of Marin western flax was discovered.

In addition to direct searches for rare plants, the district botanist has spent every May and June (approximately 20 field days annually) since 2010 pulling barbed goatgrass (*Aegilops triuncialis*) adjacent to Marin western flax populations at Pine Mountain and Azalea Hill. The District botanist visits a sentinel population of Marin western flax on Pine Mountain as a reference population for other staff and contractors pulling goatgrass. In all of these experiences, Marin western flax has always bloomed in late May to early June and this blooming period has been shifting earlier in the season over the years.

In 2015, the district piloted a project called "Serpentine Endemic Occupancy" to monitor serpentine species in barrens, primarily annuals. The project has since been turned over to OneTam, who monitors a suite of barrens annually—some new, and some "reference" barrens.

In 2018 Serpentine Endemic Occupancy surveys included six barrens in the Azalea Hill-Liberty Gulch area and surveys occurred on June 28 and July 3. These surveys were performed by two OneTam plant specialists and their seasonal staff late in the season, so all were familiar with the rare plants. The district botanist discussed the results with the plant specialists and neither saw any Marin western flax, nor did they see any rare species in surveyed areas not already captured by the district's rare plant survey which supports the district's botanist selection of survey dates in May/June as Marin Western Flax was not identified in late June and early July.

Overall, rare plant surveys were calibrated to local conditions, based on actual population phenologies and years of experience. Rare plant surveys occurred in 2018 when the Azalea Hill population of Marin western flax was at peak bloom and other special-status species were easily identifiable. 2018 was the best blooming year the district botanist has seen for Marin western flax on district lands. Therefore, the plant surveys were appropriately timed for Marin western flax and no populations were missed.

It should be noted that another survey for Marin western flax and other special-status species will also be completed prior to the commencement of construction activities (see Mitigation Measure BIO-1).

#### Master Response 4: Necessity of EIR & Adequacy of Mitigations

*During the public and agency review of the IS/MND, the district received a number of comments suggesting that an Environmental Impact Report (EIR), Mandatory Findings, and/or a Statement of Overriding Considerations was needed for the Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan – Restoration of Azalea Hill because the mitigation proposed to address impacts to special-status plant species (Mitigation Measure BIO-1 and BIO-2) was inadequate. This master response addresses these comments.*

In response to these comments, and as noted in **Master Responses 1 and 2**, Mitigation Measure BIO-1 has been revised based on field observations and protocol-level surveys and includes changes requested by the California Department of Fish and Wildlife (CDFW) and other commenters. This revised mitigation measure includes provisions for avoidance and, if necessary, transplantation under a project-specific rare plant mitigation and monitoring plan for all special-status species including locally rare species. Revisions to Mitigation measure BIO-1 can be found on page 3 and page 59 of the Final IS/MND. Among other things, the mitigation measure and plan requires a full-replacement transplantation success criterion of 1:1, as well as contingency measures in the event the criterion is not achieved after five years. The District has determined that this revised mitigation measure is adequate to reduce project impacts on special-status plants to a less-than-significant level. It meets the requirements of CEQA Guidelines Section 15370 by limiting the degree or magnitude of the action and implementation, rectifying impact by restoring impacted environment, and compensating for the impact by replacing or providing substitute resources or environments. Furthermore, the project would not result in “Take” of any CESA-listed species.

Accordingly, the District will make Mandatory Findings pursuant to CEQA Guidelines Section 15065 when it adopts the MND as part of its project approval action. In adopting a MND, the district finds that, although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because mitigation measures will also be adopted and required to be implemented as the project is implemented. Therefore, the District has determined that an EIR and an accompanying Statement of Overriding Considerations are not necessary for this project.

A number of comments expressed an opinion that the project’s mitigation measures would prove inadequate over time. However, no information was provided to support the opinion. As noted above, Mitigation Measure BIO-1 has since been revised to include a temporal component (i.e., five-years of monitoring, contingency actions in case of failure) to ensure mitigation success.

Many comments indicated that an EIR is necessary for the project pursuant to CEQA Guidelines Section 15073.5 or that an EIR is necessary to provide substantial evidence, an alternatives analysis, or a more detailed analysis and mitigation measures. The IS/MND does disclose potential significant adverse impacts to special-status species based on a history of field observations and protocol-level surveys, as noted in **Master Response 3**. To that end, Mitigation Measure BIO-1 was proposed to address these impacts and has been further revised in response to agency and public comments, as noted above.



CEQA Guidelines Section 15065(b)(1) states that where a project proponent (i.e., MMWD) agrees to mitigation measures that would avoid any significant effect on the environment or would mitigate the effect to a point where no significant effect would occur, the Lead Agency need not prepare an EIR solely because, without mitigation, the environmental effect at issue would have been significant. Further, CEQA Guidelines Section 15073.5 addresses recirculation of a [Mitigated] Negative Declaration. The requirement to prepare an EIR is presented in paragraph (d). Paragraph (c)(1) states that recirculation is not required when mitigation measures are replaced with equal or more effective measures pursuant to CEQA Guidelines Section 15074.1. With the revision of Mitigation Measure BIO-1 the District finds that the provisions of paragraph (c)(1) have been met and the need for additional impact evaluation or CEQA review is not required under this section.

In many cases, the comments directed toward the issue of the project's potential effect on special-status plant species only expressed opposition with no information supporting the argument. The district acknowledges its responsibility under CEQA Guidelines Section 15074(b) to consider the MND "together with any comments received during the public review process" at the time of adoption. By preparing these responses to comments, the district is fulfilling that responsibility as CEQA Lead Agency. The District notes that this recirculated IS/MND has been prepared pursuant to CEQA Guidelines Section 15168(c) and (d), which provides the Lead Agency guidance in evaluating later activities subsequent to certification of a program EIR (i.e., "tiering") – such as the current Azalea Hill restoration project relative to the RTMP. Further, CEQA Guidelines Section 15064(f)(7) addresses the standard by which tiered or subsequent documents may be reviewed. This section invokes the provisions of CEQA Guidelines Sections 15162, 15163, and 15164, which are applied when the project being analyzed is a change to, or further approval for, a project for which an EIR was previously certified. Under case law, this section indicates that the fair argument standard does not apply to a determination of significance pursuant to Sections 15162, 15163, and 15164.

### Master Response 5: Fragmentation of Large Pristine Area

*During the public and agency review of the IS/MND, the district received a number of comments suggesting the proposed improvement and adoption of the Liberty Gulch Road would fragment a large pristine area and that the proposed mitigations are insufficient in mitigating the identified impacts.*

Habitat fragmentation has been defined as a discontinuity in the spatial distribution of resources and physical conditions that would affect occupancy, reproduction, or survival of a particular species (Franklin et al, 2002). The Proposed Project could have habitat fragmentation impacts if construction or long term use of the facility created new or worsened existing discontinuities in resources or physical conditions.

CEQA requires that impacts be evaluated against the baseline or pre-project condition. Under pre-project conditions, two-thirds (1.2 miles) of the proposed Liberty Gulch road segment is along a road bed that was constructed in 1903 and 1904 when heavy equipment moved large quantities of soil and rock and bisected the project area. The resulting road bed and adjacent cut/fill slopes vary in width between ten and thirty feet wide – considerably larger than the four-foot wide road in the Proposed Project. All of the proposed Liberty Gulch Road improvements will occur within the limits of the existing Liberty Gulch road bed and will not include new spur trails into previously undisturbed areas or construction of additional roads in untrammelled areas that could increase discontinuities and overall habitat fragmentation. Perhaps more important, is that the existing Liberty Gulch road bed includes thirty-four stream crossings that are in various states of disrepair

which fragment the continuity of adjacent stream habitat and contribute fine sediment to Alpine Lake. The Proposed Project would upgrade and repair all these stream crossings.

The remaining one-third (0.7 miles) of the proposed Liberty Gulch road is along an existing fisherman's access trail that varies in width between two and three feet. This segment of the trail bisects and fragments numerous wetland complexes and unique grassland habitat. The Proposed Project would realign the trail to avoid these important resources and re-establish spatial connectivity – keeping users outside these sensitive areas. Overall, the construction of the proposed four-foot wide Liberty Gulch road would not substantially increase habitat fragmentation.

In regards to potential habitat fragmentation associated with increased long-term trail usage, the Proposed Project includes mitigation measures and design elements to keep users within the four-foot wide road (Mitigation Measure REC-3 and REC-4). The project's mitigation monitoring and reporting program also includes a long-term process for monitoring, enforcing, and implementing adaptive management actions to contain off-trail use as long as the routes are open (Mitigation Measure BIO-10). See **Master Response 4** regarding the efficacy of mitigation measures. One of the primary benefits of the Liberty Gulch Road adoption is that it will provide an environmentally responsible connection, along an existing route, between Bull Frog and Bolinas-Fairfax Road so that the network of social trails and concomitant habitat fragmentation on Azalea Hill can be decommissioned and restored. Over time, the Proposed Project will decrease fragmentation in areas known to support numerous sensitive plant species.

### Master Response 6: Conflict With Original RTMP (2005)

*During the public and agency review of the IS/MND, the district received a number of comments suggesting the RTMP called for decommissioning of Liberty Gulch Road and that the proposed improvement and adoption of the Liberty Gulch Road is in direct conflict with the conservative policies of the RTMP and the construction or adoption of new trail segments on district lands.*

Although the RTMP does state the district would not build new routes to accommodate expanded recreation activities, in this instance the Proposed Project is along an existing yet unofficial road bed and trail. The Proposed Project does not create a new trail or route in an undisturbed or virgin area, it redistributes users along an existing former road bed. In order to formally adopt Liberty Gulch Road the district would need to comply with Chapter 6 of the RTMP (see below).

The policies of the Road and Trail Management Plan are intended to protect water quality and “*the integrity of the natural wildlands on the Watershed, while allowing limited, passive recreational access in the Watershed*” (RTMP, 2005). The Proposed Project is consistent with the original policies of the RTMP and the district's watershed management policies; it will provide additional protection to water quality and biological species and support existing passive recreation activities by redistributing passive recreation activities.

The RTMP avoids adopting routes that traverse serpentine soils as they may support rare and endangered plants. This constraint or inferred policy was intended to guide management decisions at the scale and extent of available information at the time the RTMP was adopted. The plan affords the district the opportunity to make revisions based on new or additional information specific to a particular project or project area (see below). In the case of the Proposed Project, the district has completed supplemental botanical and biological surveys of the project area yielding new and refined information regarding the distribution of resources in the area. Based on this new and more

detailed information the Proposed Project has been developed to improve erosion and sensitive plant habitat conditions. The RTMP also acknowledges other important factors or policies that should be considered in adopting routes including connectivity, ongoing erosion, maintenance, and impacts to ecological function as a whole. The district has evaluated and addressed potential impacts of the Proposed Project based on more detailed site-specific information including the anticipated benefits of the project and the limited and confined impacts along an existing road bed.

The RTMP did not specifically address the fate of Liberty Gulch Road. Although Appendix B of the RTMP identifies a recommended approach for reducing erosion, the consultant's recommendation was based on the route being an unofficial segment of the road and trail system at the time. It is within that context that culvert removal and landform restoration was recommended as an approach to reduce erosion. In fact, Appendix B of the RTMP also includes a list of proposed actions along Liberty Gulch to reduce erosion including culvert replacement; clearly giving the district various options on how best to proceed. Overall, the Proposed Project is consistent with the detailed site treatment comments in the 2003 study which recommended upgrading and replacing stream crossings along Liberty Gulch to reduce erosion.

Neither adoption or decommissioning of the Liberty Gulch Road were suggested in the text or figures in the RTMP. Figures 2.05 and 2.06 of the RTMP clearly indicate the district did not intend on decommissioning Liberty Gulch in 2005 as Liberty Gulch is not identified as an "Unpaved Road (Decommission)" on either map. It's also clear that the RTMP did not formally adopt the Liberty Gulch Road (see Table 2.4 and Figures 2.09 and 2.10 in the RTMP) as there was not enough information at the time to adequately evaluate impacts of such an adoption. Therefore, the district did not rule out the option of conducting supplemental surveys and environmental review before a plan for Liberty Gulch could be finalized.

The district acknowledges that the Proposed Project was not specifically incorporated into the original RTMP, however, Chapter 6.4 of the RTMP identifies that watershed, trail, and road management are a dynamic process that may require future amendments to the standards and the Plan and that integrating substantial changes to the RTMP would require the following (Chapter 6.4 of RTMP):

- (3) The district is required to conduct a public hearing on any proposal to substantially change this Plan or its maps;
- (4) The district is required to conduct the necessary environmental reviews on any proposed change to the Plan and maps, including necessary measures that avoid or mitigate significant adverse environmental impacts attributable to the change.
- (5) The district may make substantial amendments to the plan upon the affirmative vote of the majority of the Board.

The district's trail planning and management actions under the Proposed Project are in fact consistent with the process outlined in the RTMP for adopting or incorporating substantial changes to the RTMP. The district has conducted the necessary environmental review on the proposed changes to the RTMP, performed supplemental botanical, biological, and cultural surveys, incorporated additional measures to mitigate significant adverse environmental impacts, held public meetings describing the project and anticipated impacts, and will request the district's board review and take action to either approve or reject the project.

## Master Response 7: Expanded & Increased Trail Use

*During the public and agency review of the IS/MND, the district received a number of comments suggesting potential impacts associated with an expansion or increase in trail use, over the long term, are not adequately discussed or addressed.*

Potential impacts of expanded trail use on special-status plants, animals, and habitat are discussed starting on Page 69 of the CEQA document. Potential impacts associated with increased use could include trampling of plants and wildlife, soil compaction, erosion, disturbance (due to noise & motion), pollution, nutrient loading, and introduction of non-native invasive plant species (Jordan, 2000). These activities can also result in increased trash and littering. Additional discussion of other impacts and a summary of research on potential impacts associated with increased trail usage on plant and animal populations and behavior is provided in the CEQA document. Overall, it is expected that increased low-intensity recreational use of the trails could result in trampling of plants and wildlife, soil compaction, erosion, disturbance to wildlife (due to noise and motion), pollution, nutrient loading, and introduction of non-native invasive plant species. It is also possible that some wildlife species would shift temporal or spatial use of habitats near existing and proposed routes.

The Proposed Project has incorporated specific mitigation and monitoring actions to address potential long-term impacts related to increased usage of the road and trail segments. Specifically, Mitigation Measure BIO-10 includes implementation of the BMPs and environmental protection measures in the RTMP, education, monitoring, and enforcement, design features to discourage off-trail use, interpretive signage, annual monitoring, and adaptive management actions for as long as the routes are in use. Adaptive management actions will include weeding, installation of fencing, additional signage, enforcement, and restoration of degraded habitat to reduce the impacts to a less than significant level. Also see **Master Response 4** regarding the efficacy of proposed mitigation measures.

## Master Response 8: Project Goals and Alternate Routes

*During the public and agency review of the IS/MND the district received a number of comments suggesting that there are feasible alternative routes and alignments, including removal of the Liberty Gulch Road, that would accomplish the goals of the project with fewer impacts.*

For background on the project area, purpose, and goals see Section 8.1 and 8.2 of the IS/MND.

The Proposed Project routes were developed after careful consideration of existing sensitive resources (wetlands, creeks, plants, wildlife, etc.), anticipated uses, connectivity, safety, topography, and overall trail-user experience. Over the last ten years, numerous alternative routes were considered, evaluated, and refined to produce the least impactful project that can achieve the following project goals:

- *Restore habitat, including sensitive serpentine habitats, by decommissioning non-system and superfluous roads and trails;*
- *Provide environmentally sensitive routes (i.e. routes that avoid environmentally sensitive areas wherever possible, and minimize and mitigate their impacts when not possible) over Azalea Hill for all users (hikers, equestrians, cyclists, and district patrol and response staff) to improve connectivity between the “Lakes” area and the “Pine Mt.” area;*

- *Improve visitor experience by providing new trail marker signage, informational kiosks, trash and recycling facilities, parking lot improvements, a self-contained serviceable convenience station (i.e. a port-a-potty or self-composting toilet), bicycle racks, split-rail fencing, and benches; and*
- *Ensure the routes are sustainable and designed and managed in a manner that strictly minimizes erosion and water quality impacts (e.g. routes that meet the best management practices (BMPs), design standards, and environmental protection measures per Chapter 3 of the RTMP)*

Other alternatives such as a combined bicycle, hiking, and equestrian route over Azalea Hill or a northeastern connection were evaluated but dropped from consideration. For example, early outreach to numerous interest groups identified that a combined hiking, bicycling, and equestrian trail over the top of Azalea Hill would lead to user conflicts as the slope of the trail (>10%) would make controlling downhill bicycle speeds challenging. In other words, the slope of the Azalea Hill Trail between Bull Frog and Azalea Hill is not conducive to a multi-use route and it would still require additional impacts to serpentine habitat on Azalea Hill (see next paragraph).

Given the required elevation gain between Bull Frog (~660 feet) and Azalea Hill (~1,140 feet) and the desire to construct a sustainable (<10% grade) connection for all users, a single shared-use trail incorporating switchbacks would be at least 4,400 feet long. The existing route up Azalea Hill is approximately 2,900 feet in length. A sustainable trail (~10% slope) would therefore require, at a minimum, an additional impact of over 1,500 lineal feet of previously undisturbed habitat and the incorporation and expansion of existing social trails to establish a four-foot width. The Liberty Gulch route is preferable in that it minimizes impacts to undisturbed habitat.

Furthermore, the RTMP and the Proposed Project both aim to remove bicycles entirely from Azalea Hill to preclude off-trail riding in this sensitive area. Construction of a separate bicycle connection over Azalea Hill or along the northeastern edge of Azalea Hill, instead of using the existing Liberty Gulch Road, would require new construction impacts in previously undisturbed habitat which is inconsistent with the RTMP. The Proposed Project utilizes, to the maximum extent practicable, official and unofficial routes instead of creating new roads and trails and new impacts. Where existing official and unofficial trails slated for adoption cross or approach sensitive resource areas, those segments have been realigned to reduce project impacts.

It has been suggested that removing the Liberty Gulch component of the project and moving forward with the measures for reducing sedimentation along Liberty Gulch would mitigate for increased usage on Azalea Hill. However, culvert replacement and sediment reduction activities along Liberty Gulch would require the same level of impact to serpentine soils and special-status plants as the Proposed Project. For example, the district would still need to establish a construction access corridor (minimum width of four feet) along the Liberty Gulch Road to import construction materials (culverts, erosion control blankets, tools, etc.) to complete the work.

Throughout the CEQA document the district discloses and evaluates potential impacts of the Proposed Project. Potential negative impacts associated with the construction and long-term use of the Liberty Gulch Road are not disregarded and will be mitigated for, so that on the whole, when combined with improvements and positive effects of decommissioning social trails and reducing impacts at Azalea Hill, the project will provide a net benefit to the ecological resources of the area.

## Master Response 9: Soil Stockpiling

*During the public and agency review of the IS/MND, the district received a number of comments suggesting that stockpiling and covering of serpentine soils would degrade the quality of special-status seeds, potentially initiate germination at the wrong time of the year, or make the seeds inviable due to moisture, mold, or heat.*

As discussed throughout the IS/MND, the final grading and trail improvement actions would be “light on the land” and would not include large cut or fill slopes that would necessitate the long-term storage and management of large quantities of soil. All work would be completed with small equipment and hand labor (wheel barrow dumps, miniature excavators, and miniature skid-steers and hand tools) so the overall volume of soil that could be moved at any time would be constrained. Regardless, grading or disturbance of soils or subsoils and rock with naturally occurring asbestos is a legitimate concern addressed by Mitigation Measure HAZ-1 which requires implementation of best management practices to limit the release of asbestos fibers including limiting vehicle speeds, wetting grading areas, covering soil stockpiles, and other actions. Wetting of serpentine soils and covering stockpiles with plastic helps reduce asbestos releases however, excessive wetting, long durations of high moisture, or heat generation in covered piles could affect salvaged seed viability by initiating germination, creating mold, or solarization.

The rare plant mitigation and monitoring plan includes stockpiling of topsoil supporting annual special-status plants as a practice to increase the success of revegetation efforts where special-status plants are impacted by the project. As discussed in revised Mitigation Measure BIO-1, salvaging of topsoil is but one method, but not the only method, that would be used to attain the success criteria for revegetation of areas supporting special-status plants. The district would also use transplantation and collected seeds to meet the success criteria outlined in Mitigation Measure BIO-1 which does mitigate for impacts to special-status plants.

Regarding the purpose and practice of stockpiling; the term “stockpile” means the temporary segregation and placement of onsite soils based on their intended use. Surficial soils and subsoils each have unique physical properties that affect their ultimate use, performance, and processing during construction. Deeper soils free of organics can be compacted to higher densities to support construction of the trail base and are therefore more valuable to stockpile to meet more restrictive design constraints. Since it would be generated from deeper horizons, deeper soils would not contain a high density of seeds and could be wetted and covered with little impact to seed viability. Surficial soils are less useful for trail construction as they contain higher levels of organics that limit their geotechnical suitability and use. Stockpiling of surficial organic seed-containing soils is not preferable from a trail construction perspective and would therefore be purposely limited in scale and extent. The immediate reuse of salvaged topsoil to dress impacted areas in close proximity to where it is generated is a priority to limit unnecessary handling, hauling, and labor resources.

Surficial soils proposed for temporary salvage and placement also contain a larger percentage of aggregating agents like organic matter, metal oxides, and carbonates (Frazzell, 2009). Water added to surficial soils works in concert with these natural stabilizing elements to effectively reduce the required volume of water per unit of soil to control asbestos emissions and reduce the likelihood that germination would commence at an inopportune time.

In terms of how the work would progress, construction crews would move in a linear and incremental fashion along a route, first clearing and scraping any seed containing topsoil (upper 4

inches depending on site conditions) and separating it from deeper soils that would be used to complete the trail base. Soils generated from below the topsoil layer would be more thoroughly wetted and potentially stockpiled within the work limits for longer durations. Surficial soils would be lightly wetted and temporarily stockpiled. This process of salvaging and placing topsoil would occur over a timescale of three to five days at most and would not require the long term stockpiling, covering, and storage of surficial serpentine soils that may contain special-status species.

Overall, soils will be managed to prioritize the immediate placement and dressing of surficial soils and to maximize the viability of any seeds. In order to emphasize the importance of limited wetting of salvaged organic topsoil, Mitigation Measure HAZ-1 has been amended to include guidance to not over-water salvaged topsoil and use limited water (no coverings) for temporary soil stockpiles. Revisions to Mitigation Measure HAZ-1 can be found on page 11 of the Final IS/MND. In the event seeds are compromised by construction and soil handling activities that prioritize worker safety, the district is still required to meet the success criteria for plant establishment which does mitigate for impacts to special-status plants through seeding and transplantation. Overall, the district is committed to using a range of revegetation methods to meet the success criteria but needs to prioritize worker safety.

### Master Response 10: Recreation Impacts

*During the public and agency review of the IS/MND, the district received a number of comments suggesting that the impacts associated with recreational use (hiking, biking, and horseback riding) are not adequately mitigated.*

It should be noted the overall goal of the project is to reduce recreational impacts on special-status plant species, wildlife, and water quality by redistributing users to less sensitive areas and to provide a sustainable and safe connection between the “Lakes” and “Pine Mt.” areas of the watershed. The district has developed the project and associated mitigation measures with this overall goal in mind. See **Master Response 4** regarding the efficacy of proposed mitigation measures.

A discussion of potential impacts related to hiking, biking, and equestrian activities is provided in the IS/MND including references to various scientific studies on the matter. The scientific studies provide general correlations and relationship between different uses and environmental impacts. Some studies indicate wildlife, for instance, may become habituated to human recreation while others provide a causal link between off-trail use and habitat degradation. Notwithstanding, the district acknowledges that the impacts of recreation could be potentially significant and has proposed mitigation measures that specifically address the potential impacts that scientific studies have correlated to hiking, biking, and equestrian use. For example, actively or overused trails can cause a source of sedimentation, horses and biking can overly compact off-trail areas and disturb habitat, and recreation as a whole can cause trampling, soil compaction, disturbance to wildlife, and introduction of non-native species. Mitigation Measure BIO-10 is put forth to mitigate specifically for these potential impacts. Mitigation Measure BIO-10 includes monitoring and implementation of adaptive management actions to control invasive weeds, constrain off-trail usage (trail migration) and monitoring the success of revegetation as long as the routes are in use. Adaptive management actions for controlling trail migration could include installation of physical barriers, fences, brush piles, and focused enforcement.

The numerous user surveys completed by the district indicate equestrian use is very low. This is primarily because there are not a large number of facilities to support equestrian use which requires

large areas and turnarounds for trailering animals to the site or a concentration of stables near the project area. Based on historic management of the watershed as a whole and ongoing water quality testing the district performs at all its reservoirs, the district has not observed water quality impact related to equestrian use on any part of the watershed. Based on this evaluation the district does not see evidence to indicate impacts to water quality associated with equestrian use are or could rise to a level that would require mitigation. Furthermore, given the low historic equestrian use and lack of facilities nearby that would support an increased equestrian use component, the anticipated impact to special-status plants associated with manure and concomitant increases in soil nutrient levels is similarly not expected to rise to a level of significance.

To mitigate for other potential adverse impacts from equestrian use (seed dispersal, trail compaction, straying off trail) the IS/MND includes Mitigation Measures BIO-10, BIO-13, and REC-4 which specifically address these issues. These measures include adaptive management and monitoring which would result in weeding, trail maintenance, and installation of trail borders to confine uses to the adopted trail base.

### Master Response 11: Erosion and Sedimentation

*During the public and agency review of the IS/MND, the district received a number of comments suggesting that the Proposed Project would cause additional erosion and sedimentation over the long term.*

Regarding the potential for long-term erosion, the district completed an evaluation of erosion and sediment delivery associated with the existing road and trail network in 2003 (PWA, 2003). That assessment identified specific road segments, crossings, and sub-watersheds within the Azalea Hill and Liberty Gulch project area that contribute sediment to the district's reservoirs and stream network. The Proposed Project would repair the failed stream crossings along the existing Liberty Gulch Road that currently contribute sediment and install critical dips to capture and retain sediment at the source. The project would also revegetate social trails on steeply sloped serpentine soils on Azalea Hill. Both actions, over the long term, would reduce erosion and subsequent sedimentation as compared to existing conditions.

In addition, the Project includes long-term monitoring and adaptive management (Mitigation Measure BIO-10) by district staff which would identify and repair any localized erosion or unanticipated conditions as they develop.



## Section 4: Response to Comments

The following response to comments are ordered according the unique identifiers in the margins of Section 5.

### Response to Comment CDFW – 1

*The comment advises that a CESA permit must be obtained if the project may result in “Take” of plants or animals listed under CESA.*

See **Master Response 4**.

### Response to Comment CDFW – 2

*The comment identifies that a Lake and Streambed Alteration Agreement would be required for project activities affecting lakes or streams and associated habitat.*

The district has submitted a Joint Aquatic Resources Permit Application for the project and is currently working with CDFW, RWQCB, and USACE staff to finalize the required environmental permits and agreements.

### Response to Comment CDFW – 3

*The comment suggests a single negative survey does not constitute evidence a plant population is no longer present at a particular location.*

Rare plant surveys were completed in 2016 (not the entire project disturbance area) and 2018. Mitigation Measure BIO-1 states that a rare plant survey must also be completed prior to construction. Therefore, special-status plants will be surveyed for more than one field season prior to project implementation. Also see **Master Response 3**.

### Response to Comment CDFW – 4

*The comment advises California Rare Plant Rank 1B meets the definition of Rare or Endangered under CEQA Guidelines §15125(c) and/or §15380, and CEQA requires a Mandatory Finding of Significance if a project is likely to substantially restrict the range or reduce the population of a threatened or endangered species.*

See **Master Response 1**.

### Response to Comment CDFW – 5

*The comment advises that a no-work zone (buffer) of 500 feet should be established around all Western Marin Flax identified in previous and future botanical surveys and recommends further coordination with CDFW in the event a 500-foot buffer is infeasible.*

Mitigation Measure BIO-1 was revised to include this requested language including an increase in the buffer distance to a total of 500 feet and subsequent consultation with CDFW when the 500-foot buffer cannot be accomplished.

## Response to Comment CDFW – 6

*The comment suggests the proposed compensatory mitigation (trail decommissioning) may not address or fully mitigate potential long term impacts to special-status plant species. The comment requests the IS/MND address potential impacts to special-status species resulting from expanded use of the trails and outline restoration or mitigation goals and activities.*

Mitigation Measure BIO-1 was revised to ensure protection of the population size of special-status plant species. Mitigation Measure BIO-10 addresses potential impacts from the potential expanded use of the trail.

See **Master Response 7** for a discussion of potential impacts associated with expanded or increased trail use.

It should be noted that although decommissioning of social trails does not guarantee special-status species would establish within decommissioned trails and directly offset long-term impacts to special-status plants, the decommissioned trails are located on Azalea Hill in similar environmental conditions (soil, hydrology, etc.), and in close proximity to known special-status plants and that these areas will, over the long-term, provide an area for population expansion. Furthermore, Mitigation Measure BIO-13 specifically includes monitoring and weeding of decommissioned trails for five years following decommissioning to establish native populations representative of existing serpentine soil conditions. Therefore, although the project does not include active revegetation and establishment of special-status plants within decommissioned areas the project will provide potential areas of expansion and limit the influence of non-native weeds.

## Response to Comment CDFW – 7

*The comment suggests revisions to the mitigation measures to further protect special-status plant species.*

Mitigation Measure BIO-1 was revised and includes most of the revisions CDFW requested. The requirement of the transplantation site being "free of weeds" was not included in the mitigation measure because finding a weed free transplantation site is likely not feasible. The other transplantation site requirements requested were added to Mitigation Measure BIO-1 including that the site "be of the same quality habitat" and have "similar physical characteristics and soil type". The success criteria amended in Mitigation Measure BIO-1 is now stricter (1:1 replacement ratio) than what CDFW recommended (0.75:1 replacement ratio). Because there is so much annual variability in plant populations Mitigation Measure BIO-1 also added that success criteria will account for annual variability as measured by a reference population.

## Response to Comment CDFW – 8

*The comment identified the requirement [Pub. Resources Code, § 21003, subd. (e)] that information developed in environmental impact reports and negative declarations should be made publicly available.*

Mitigation Measure BIO-1 was updated to include reporting survey results to the CDFW California Natural Diversity Database.

## Response to Comment MCBC – 1

*The comment requests the district integrate a broader array of professionals with expertise in hydrology, soils, geomorphology, trail maintenance when developing adaptive management actions*

The district acknowledges cross-discipline nature of managing the Proposed Project and specifically the implementation of Mitigation Measures BIO-10 and BIO-13. The district fully intends on integrating the full suite of disciplines required to develop and implement effective adaptive management measures and corrective actions. Mitigation Measures BIO-10 and BIO-13 have been modified to clarify the multi-disciplinary nature of trail management and supplemental expertise that will be integrated into adaptive management and corrective actions. Revisions to Mitigation Measure BIO-10 and BIO-13 can be found on page 9 of the Final IS/MND.

### Response to Comment MCBC – 2

*The comment requests the district utilize design standards developed by the International Mountain Bicycling Association when developing speed calming measures for Liberty Gulch.*

The district acknowledges the importance of designing and implementing effective speed-calming measures that ensure the safety of all user groups. Mitigation Measure REC-3 addresses the need to reduce bicycle speeds to avoid user conflicts and improve safety. The mitigation measure does not specify the exact locations, orientations, design details, or design criteria of each speed calming measure along Liberty Gulch. Rather than specifying a specific standard or guidance document based solely on one user group, the district will treat each speed-calming component on a case-by-case basis. The final design may include measures and approaches successfully implemented by similar land management agencies, grey literature produced by other land management agencies, or even trail building guidelines circulated by advocacy groups (biking, hiking, equestrian). Regardless, the final configuration, orientation, and type of speed-calming measures will reflect an integration of trail design standards with a focus on overall user safety. Mitigation Measure REC-3 has been modified to clarify that the final design of speed calming measures will integrate standard trail design practices for all user groups. See page 12 of the Final IS/MND for revised Mitigation Measure REC-3.

### Response to Comment OG – 1

*The comment requests the district allow access to Azalea Hill for all users (presumably bicycle use as well).*

The district acknowledges the importance of providing a safe yet environmentally sustainable connection between the “Lakes” and “Pine Mt.” areas. However, based on the analysis contained in the CEQA document and sensitivity of serpentine habitat on Azalea Hill, the Proposed Project only includes hiking and equestrian uses on the Azalea Hill Trail and redirects bicycle use onto the Liberty Gulch Road where it can be accommodated with fewer environmental impacts.

### Response to Comment CNPS – 1

*The comment suggests the record contains substantial evidence that the construction and long-term use of the Liberty Gulch Road will have impacts that cannot be avoided or mitigated to a less than significant level and that, therefore, an EIR must be prepared. The comment also suggests an EIR would provide a more detailed analysis of the impacts associated mitigation measures.*

See **Master Response 4**.

## Response to Comment CNPS – 2

*The comment suggests that the original RTMP called for the decommissioning or abandonment of the Liberty Gulch road.*

See **Master Response 6**.

## Response to Comment CNPS – 3

*The comment restates the findings in the IS/MND; that construction of the Liberty Gulch Road and increased visitation may have significant adverse impacts.*

The comment is noted. No further response is required as the comment only summarizes the IS/MND and does not include a comment pertaining to the adequacy of the information or the analysis provided in the IS/MND. However, it should be noted that implementation of Mitigation Measure BIO-10 would reduce potential impacts to sensitive biological resources from anticipated use (non-construction related) and operation of the project to a less than significant level. Also see **Master Response 7** regarding impacts associated with increased trail usage (visitation).

## Response to Comment CNPS – 4

*The first part of the comment reviews the sensitive characteristics of the project area (serpentine soils, special-status plants, wetlands, and riparian areas) and reiterates the potentially significant impacts already identified in the IS/MND.*

The comment is noted. No further response is required as the comment does not pertain to the adequacy of the information or the analysis provided in the IS/MND.

*The second component of this comment identifies Mitigation Measure BIO-10 as an educational program aimed at keeping users from straying off trail.*

User education, through signage and outreach is a component of Mitigation Measure BIO-10. There are other components, including enforcement, monitoring, and implementation of adaptive management actions tailored to limiting usage impacts. The comment is noted. No further response is required as the comment does not pertain to the adequacy of the information or the analysis provided in the IS/MND. Also see **Master Response 7** regarding impacts associated with increased trail usage (visitation).

*The third component of this comment suggests the proposed mitigation measures are inadequate to address habitat fragmentation, long term sedimentation and erosion, and increased usage.*

Comments regarding habitat fragmentation are addressed in **Master Response 5**. Long term sedimentation and erosion are addressed in **Master Response 11**, and increased usage is addressed in **Master Response 7**.

*The fourth component of this comment quotes CEQA Guidelines 15073.5 and suggests there is substantial evidence that the project “may have a significant effect on the environment which cannot be mitigated or avoided,” thereby necessitating the preparation of an EIR. CEQA Guidelines 15073.5.*

See **Master Response 4**.

### Response to Comment CNPS – 5

*The comment suggests the district’s process for determining which sensitive plants can be impacted without mitigation is arbitrary.*

The district has updated Mitigation Measure BIO-1 to include a rare plant mitigation and monitoring plan for all special-status species impacted by the project. See **Master Response 1**.

### Response to Comment CNPS – 6

*The comment suggests the decommissioning of social trails will not be successful especially given the anticipated stockpiling and covering of seed-containing serpentine soils.*

Regarding the decommissioning of social trails and efficacy of proposed actions and mitigation measures see **Master Responses 1 and 2**. See **Master Response 9** regarding the collection and stockpiling of serpentine soils.

### Response to Comment CNPS – 7

*The comment suggests the district has not provided substantial evidence demonstrating the Proposed Project impacts would be reduced to a less than significant level.*

See **Master Responses 1, 2, and 4**.

### Response to Comment CNPS – 8

*The comment suggests the proposed mitigation and specification of success criteria for impacts to rare plants are excessively low.*

See **Master Response 1 and 2**.

### Response to Comment CNPS – 9

*The comment suggests the timing and adequacy of botanical surveys and the effectiveness of BIO-1 which called for the avoidance of Marin Western Flax “when the plant is above ground” are insufficient.*

See **Master Responses 1, 2, and 3**. Mitigation Measure BIO-1 was revised and "when the plant is above ground" was removed. All Marin wester flax plants will be avoided.

### Response to Comment CNPS – 10

*Comment CNPS-10 includes numerous elements that collectively suggest impacts by equestrians and mountain bikers are not adequately addressed in the IS/MND and that there is substantial evidence that the mitigations will prove inadequate to prevent significant impacts to serpentine habitat and associated rare plants.*

A response to each sub-element of the comment is provided below. See **Master Responses 7 and 10** regarding impacts associated with increased use and recreational uses, respectively. Overall, the district has evaluated biking and equestrian impacts and included mitigation measures that address and reduce impacts to a less than significant level. See **Master Response 4** regarding the efficacy of proposed mitigation measures.

*The first component of the comment identifies permitted uses on Azalea Hill and the Liberty Gulch Trail.*

To clarify, horseback riding and hiking are already permitted uses on the Azalea Hill Trail. The Proposed Project does not include any changes to the permitted uses on Azalea Hill as adopted in the RTMP; only the improvement of Azalea Hill Trail and realignment to avoid sensitive resources. The Proposed Project includes Mitigation Measure BIO-10 to mitigate for long term recreation impacts.

*The second component of this comment summarizes the potential impacts of horseback riding and biking that are already discussed in the IS/MND and addressed with mitigation measures.*

The comment is acknowledged. No response is required because the summary of already presented information does not question or challenge the adequacy of information or the analysis presented in the IS/MND.

*The third component of this comment incorrectly states that the IS/MND (Page 97) concludes equestrian usage is low enough to not require any specific mitigation measures.*

Comment CNPS-10 references a section of the IS/MND that evaluates potential water quality impacts related to equestrian use. Impacts of equestrian use are discussed and addressed with effective mitigation measures. See **Master Response 10**.

### Response to Comment CNPS – 11

*The comment identifies CNPS's opposition of the Proposed Project because the area supports several special-status plant species.*

See **Master Response 1**. All locally rare plants that could potentially occur within the project area have been added to Table 4-1 (special-status plant species), including stream orchid and western ladies tresses. Mitigation Measures BIO-1, BIO-2, BIO-10, BIO-11, BIO-12, and BIO-13 ensure impacts to special-status plants and sensitive natural communities have been reduced to less than significant levels. A rare plant mitigation and monitoring plan will be developed for any plants in Table 4-1 impacted by the project.

### Response to Comment CNPS – 12

*The comment summarizes potentially significant impacts (negative consequences) of the project including bisection of largely pristine habitat, trail widening, erosion, habitat fragmentation, and removal of sensitive plants and claims the district is disregarding the impacts.*

The IS/MND addresses the impacts raised by comment CNPS-12. See **Master Response 5** regarding habitat fragmentation and **Master Responses 7** and **10** for impacts associated with increased use and recreational activities, respectively. Also see **Master Response 11** regarding long-term erosion and sedimentation and **Master Response 8** for a response to project objectives.

### Response to Comment CNPS – 13

*The comment questions the justification (project goals and objectives) for adopting the Liberty Gulch Road and suggests removing the Liberty Gulch Road from the Proposed Project would mitigate for impacts associated with increased usage on Azalea Hill.*

See **Master Response 8** for a discussion of project goals, route planning, and justification for the project. Also see **Master Response 4** regarding the adequacy of the IS/MND and efficacy of proposed mitigation measures.

#### Response to Comment CNPS – 14

*The comment contends the Proposed Project conflicts with the original goals of the RTMP.*

See **Master Response 6**.

#### Response to Comment CNPS – 15

*The comment suggests the environmental impacts of the project outweigh the recreational benefits and requests that alternative alignments or routes through less botanically important areas are pursued.*

See **Master Response 8**.

#### Response to Comment MCL – 1

*The comment disagrees with the district’s classification of “low sensitivity plants” and mitigations for impacts thereto.*

Mitigation Measure BIO-1 has been revised to treat all special-status species the same. No distinction is made between special-status species of low and high sensitivity. See **Master Response 1**.

#### Response to Comment MCL – 2

*The comment requests that a rare plant mitigation and monitoring plan should be developed for all special-status plants impacted by the project – not just those determined by the district to be “low sensitivity”.*

Mitigation Measure BIO-1 has been revised to require a rare plant mitigation and monitoring plan for all special-status species impacted by the project. See **Master Response 1**.

#### Response to Comment MCL – 3

*The comment questions the efficacy of Mitigation Measure BIO-1 and requests the measure be modified to incorporate contingency measures for as long as is required to meet the success standard.*

See **Master Responses 1** and **2**. Monitoring will occur for at least 5 years or until the success criteria have been met.

#### Response to Comment MCL – 4

*The comment acknowledges the importance of Mitigation Measure BIO-2 in curbing the spread of invasive and non-native plants and requests implementation of this mitigation measure throughout the project area where soils are disturbed.*

The comment is noted. Attention is directed to Mitigation Measures BIO-2, BIO-10, BIO-11, BIO-12, and BIO-13 which also include weed monitoring and removal during and after construction to ensure protection of sensitive plant communities.

### Response to Comment MCL –5

*The comment summarizes and stresses key components of Mitigation Measure BIO-10 which addresses potential impacts related to existing and future recreational uses. The comment suggest these measures should be incorporated into the mitigation and monitoring plan and applied throughout the length of roads and trails in the project area.*

Per California Public Resources Code Section 21081.6(a)(1), the district will incorporate all mitigation measures required to avoid significant effects on the environment into a Mitigation Monitoring and Reporting Program (MMRP) to be implemented by the district. All mitigation measures in the RTMP program Environmental Impact report and subsequent IS/MND for the Proposed Project will be included in the MMRP. Implementation of the Mitigation Measures in the MMRP, including BIO-10, apply for all segments of the Proposed Project including decommissioned social trails, Liberty Gulch Road, and the Azalea Hill Trail.

### Response to Comment MCL – 6

*The comment acknowledges the need to incorporate the district biologist, regulatory agency personnel, and land management objectives in developing replacement ratios for impacted trees with a diameter greater than 8-inches at breast height.*

Comment noted. As described in Mitigation Measure BIO-11, the district will integrate the district botanist and regulatory agency staff when adjusting tree replacement ratios to meet the structure and function of existing landscapes.

### Response to Comment MCL – 7

*The comment requests the success criteria for areas temporarily disturbed during construction should require improvement of native habitat.*

CEQA Guidelines Section 15126.4(a)(4)(B) invokes Dolan v. City of Tigard (512 U.S. 374 [1994]) which found that a mitigation measure must be “roughly proportional” the impact(s) of a project. This section incorporates the Dolan decision as a requirement under CEQA. Therefore, this project is required to only provide mitigation that reduces the impacts it creates and is not bound to mitigate environmental effects in the area caused by other unrelated and independent actions or to a point in time prior to contemplation of the project.

### Response to Comment MCL – 8

*The comment reiterates that significant effects could result from operational impacts along Azalea Hill Trail and Liberty Gulch Road and further emphasizes the importance of effectively and successfully implementing Mitigation Measures REC-2 and BIO-10 to reduce the anticipated impacts to a less than significant level.*

The district acknowledges the comment and is legally-bound by CEQA to implement all measures incorporated into the Proposed Project MMRP.



### Response to Comment CWW – 1

*The comment suggests there is an inconsistency between the RTMP and Proposed Project and that the proposed route crosses numerous serpentine areas supporting rare plants and will fragment habitat.*

See **Master Response 6** for further discussion about consistency with the RTMP.

See **Master Response 5** for impacts related to habitat fragmentation.

See **Master Response 1** for impacts related to serpentine habitat and impacts to rare plants.

### Response to Comment CWW – 2

*The comment suggests there is no potential effective mitigation for habitat fragmentation and that, therefore, the district should complete an Environmental Impact Report.*

See **Master Response 5** for impacts related to habitat fragmentation. See **Master Response 4** regarding the adequacy of the IS/MND and efficacy of proposed mitigation measures.

### Response to Comment MAS – 1

*The comment requests the district complete an Environmental Impact Report because the project has the potential to cause or result in significant adverse effects. Further analysis on impacts to serpentine habitat, rare plants, adequacy of proposed mitigations, post-construction habitat loss, off trail use, consistency with MMWD policies, and impacts to wildlife is requested.*

See **Master Response 4** regarding the adequacy of the IS/MND and effectiveness of mitigation measures and **Master Responses 7** and **10** regarding increased use and long-term recreational impacts, respectively.

### Response to Comment AA – 1

*The comment requests that “common sense” prevail and that the project area should be protected due to its unfragmented character.*

The comment is acknowledged. No further response is required as the comment does not pertain to the adequacy of the information or the analysis provided in the CEQA document. See **Master Response 5** regarding habitat fragmentation.

### Response to Comment CA – 1

*The comment suggests the Proposed Project will fragment a large pristine area, is against the standards in the RTMP, and that habitat fragmentation cannot be adequately mitigated.*

See **Master Responses 5** regarding habitat fragmentation and **Master Response 6** regarding the consistency with the RTMP. In regards to the inadequacy of habitat mitigation, the comment does not provide information as to why mitigation is not adequate. See **Master Response 4** regarding the adequacy of the IS/MND and effectiveness of mitigation measures.

### Response to Comment CA – 2

*The comment identifies that serpentine habitat and rare plants exist in the project area and that mountain bikes and equestrians should be routed to less sensitive areas.*

The district has performed numerous botanical surveys and is aware the project area supports serpentine soils and associated rare vegetation assemblages including some special-status plants. The district has discussed and addressed impacts so special-status plants and other resources associated with construction and operation of the trail and has addressed these impacts with mitigation measures. See **Master Response 8** regarding the selection of the proposed routes.

### Response to Comment CA – 3

*The comment requests that a rare plant mitigation and monitoring plan should be developed for all special-status plants impacted by the project.*

See **Master Response 1**.

### Response to Comment CA – 4

*The comment questions the effectiveness of the proposed transplantation methods and claims the success criteria for plant establishment is too low.*

See **Master Response 2**.

### Response to Comment CA – 5

*The comment requests the district complete an Environmental Impact Report because the proposed mitigations will prove inadequate over the long-term.*

See **Master Response 4**.

### Response to Comment DB – 1

*The comment addresses a broader scale policy issue of prohibiting bike on trails.*

The comment is acknowledged, however, no response is required as the comment does not pertain to the CEQA findings under consideration.

### Response to Comment DB – 2

*The comment requests that bicycles be allowed on the Azalea Hill Trail.*

The district acknowledges the importance of providing a safe yet environmentally sustainable connection between the “Lakes” and “Pine Mt.” areas. However, based on the analysis contained in the CEQA document, sensitivity of serpentine habitat on Azalea Hill, site topography, and the potential for impacts, the Proposed Project does not include a multi-use trail on Azalea Hill. Bicycle use on Azalea Hill is not permitted under the current RTMP and the Proposed Project would not change the existing use. Instead, the Proposed Project would provide a Class IV road (suitable for hiking, biking, and equestrian use) along the existing the Liberty Gulch Road where it can be accommodated without significantly impacting sensitive resources.

### Response to Comment TB – 1

*The comment suggests the Proposed Project is in conflict with the RTMP and will lead to extirpation of endangered plants by encroaching on serpentine habitat.*

See **Master Response 5** regarding impacts to natural areas and encroachment into un-fragmented habitat. See **Master Response 6** regarding the Proposed Project's consistency with the RTMP. Regarding impacts to special-status plants, see **Master Responses 1** and **2**. No endangered plants would be removed or relocated as part of the project. Mitigation Measures BIO-1, BIO-2, BIO-10, BIO-11, BIO-12, and BIO-13 ensure impacts to special-status plants and sensitive natural communities have been reduced to less than significant levels.

### Response to Comment TB – 2

*The comment requests reconsideration of alternate routes and preparation of an EIR.*

See **Master Response 8** regarding alternate routes and **Master Response 4** regarding the adequacy of the IS/MND and effectiveness of mitigation measures.

### Response to Comment MB – 1

*The comment claims the Proposed Project will fragment pristine serpentine habitat and questions the district's intent.*

See **Master Response 5** regarding habitat fragmentation and **Master Response 8** regarding the objectives of the project. Also see **Master Response 6** regarding the Proposed Project's consistency with the RTMP.

### Response to Comment MB – 2

*The comment questions the effectiveness of transplantation methods and impacts to rare plants.*

See **Master Responses 1** and **2**.

### Response to Comment MB – 3

*The comment questions the efficacy of the mitigation measures and requests preparation of an EIR to understand the full implications of the project.*

See **Master Responses 4**.

### Response to Comment EB – 1

*The comment requests that early detection/rapid response measures be included in the Proposed Project.*

Weed monitoring and removal will occur during construction and post-construction to ensure protection of sensitive plant communities. See Mitigation Measures BIO-1, BIO-2, BIO-10, BIO-11, BIO-12, and BIO-13.

### Response to Comment EB – 2

*The comment suggests decommissioning the social trail network on Azalea Hill should be independent of adopting Liberty Gulch Road and an analysis should be presented on whether one of the existing non-system routes could be modified for hiking and biking.*

See **Master Response 8**.

### Response to Comment EB – 3

*The comment questions the requirement for motorized emergency vehicle access on Liberty Gulch Road and requests that all users share a multi-use route along an alternative route that utilizes the existing Azalea Hill Trail.*

As discussed in the IS/MND the adoption of Liberty Gulch will provide a more direct connection between the “Lakes” and “Pine Mt” region. Currently, district response vehicles must navigate the much longer and circuitous Bolinas-Fairfax road to access the Pine Mountain Fire Road. Having a more direct connection would substantially improve the district’s ability to respond to emergency situations and dispatch its fleet of off-road vehicles.

See **Master Response 8**.

### Response to Comment EB – 4

*The comment requests additional information regarding the volume of sediment entering Alpine Lake as compared to other segments of the watershed and whether the reported erosion rates include actions recommended in the RTMP.*

In 2003 the district performed a watershed-scale assessment of erosion and sedimentation associated with the road and trail network (PWA, 2003). The study provided a watershed-scale accounting of erosion associated road or trail stream crossings, potential and existing landslides related to the road or trail system, gullies below ditch relief culverts and other runoff outfalls, and long sections of uncontrolled road or trail surface and ditch runoff that currently discharge to the stream system (persistent erosion). A summary of the estimated 20-year sediment yield (in cubic yards) by sub-watershed is provided below (from PWA, 2003).

Sub-watershed	Sediment Yield (CY) <sup>1</sup>	Sediment Yield (CY) <sup>2</sup>
Alpine Lake	23,633	40,563
Kent Lake	19,010	37,266
Redwood Creek	15,268	25,468
Phoenix Lake	12,071	27,063
Arroyo Corte Madera del Presidio	9,523	16,266
Old Mill Creek	8,516	12,686
Lagunitas Creek	3,339	8,702
Deer Park	1,852	3,825
Cascade Canyon	820	2,809
Ross Creek	627	1,037
Lake Lagunitas	304	5,555
Bon Tempe Lake	284	3,343
Larkspur Creek	139	959

<sup>1</sup> Includes landslide, stream crossing, and ditch relief culvert erosion

<sup>2</sup> Includes persistent erosion (road surfaces)

The sediment yields reported in the IS/MND reflect the sediment yield developed in the 2003 study which do not include any of the improvements outlined in the RTMP or the Proposed Project. The estimated 2,573 cubic yards of sediment generated by the project area is approximately 11% of the sediment entering Alpine Lake associated with landslides, stream crossings, and ditch relief culverts or 6% of the total sediment entering Alpine Lake. As part of the Proposed Project, the work along Liberty Gulch Road would include replaced, repaired, or improved stream crossings with the intent to reduce sediment entering Alpine Lake

As the comment noted, watersheds naturally produce sediment, and, over the long term we expect sediment to enter the district’s reservoirs. However, erosion specifically associated with human infrastructure can be mitigated and reduced by improving stream crossings and road drainage.

### Response to Comment EB – 5

*The comment requests additional information about the potential import of “other fill materials” and whether these materials could include soil that could contain invasive seeds.*

As discussed in the IS/MND, the project would not import soil from outside the project area. Furthermore, the district’s botanist will work with construction crews to identify topsoil salvage locations and appropriate locations for repurposing. To clarify, “other fill materials” means anything other than native soil. This could include structural backfill (base rock) for bridge abutments or concrete as required by subsequent geotechnical and civil design. These materials are sourced from rock quarries or batch plants, are inert by nature, and do not contain large quantities of organic material or soil that could contain invasive seeds. The import of “other fill materials” would be limited to the extent required to attain the design specifications of the individual bridge or

abutment element where native soils do not meet specification requirements. In general, this material would be buried below ground.

### Response to Comment EB – 6

*The comment requests additional information about volume of sediment being generated from a 0.3 mile “fishing access” trail along Alpine Lake.*

No detailed estimate regarding the volume of sediment associated with the “fishing access” reroute has been completed to date. The purpose of rerouting this segment is to avoid wetland habitat and sensitive plants. Improvements associated with erosion reduction are anticipated but are ancillary benefits of the action.

### Response to Comment EB – 7

*The comment contends the Proposed Project will destroy undisturbed plant communities and that it does not clearly describe accepted uses and infrastructure requirements on the Liberty Gulch Road.*

See **Master Response 5** regarding impacts to pristine and undisturbed habitat and **Master Responses 1 and 2** regarding special-status plant mitigations. To clarify, according to the RTMP route designations, roads are categorized as Class I, II, III, IV, and V. Trails are designated as Class VI, VII, VIII, IX, and X, with Class X being reserved for future use. In regards to the comment about accepted use and infrastructure, the IS/MND is clear that the Liberty Gulch Road would be a Class IV road (not a trail). It is true that a Class VI Trail requires substantial infrastructure improvements to support equestrian use but this is relative to other trail designations (e.g. Classes VII, VIII, and IX) which only support hiking. The infrastructure required to support equestrian use is comparable to that required for patrol and route connectivity roads passable with small vehicles (Class IV Road).

### Response to Comment EB – 8

*The comment suggests that potentially significant and adverse impacts associated with equestrian use are not discussed or adequately addressed in the IS/MND and that additional signage should be incorporated into the project to educate equestrian users.*

See **Master Response 10** regarding equestrian impacts. Regarding trail signage and equestrian use, the district has included in its project description educational signage for all users, including equestrians.

### Response to Comment EB – 9

*The comment suggests that the proposed mitigation measures are inadequate to prevent the destruction of the “mostly pristine” Liberty Gulch corridor.*

Mitigation Measures have been proposed to mitigate for potential habitat degradation and invasion of weeds (see Mitigation Measures BIO-1, BIO-2, BIO-10, BIO-11, and BIO-12). See **Master Response 4** regarding adequacy of the IS/MND and effectiveness of mitigation measures. Regarding the fragmentation of pristine or undisturbed habitat see **Master Response 5**. See **Master Response 7** and **10** regarding increased use and recreation, respectively.

### Response to Comment EB – 10

*The comment calls into question the timing and adequacy of botanical surveys.*

See **Master Response 3**.

### Response to Comment EB – 11

*The comment calls into question the effectiveness of BIO-1 which called for the avoidance of Marin Western Flax “when the plant is above ground”.*

Mitigation Measure BIO-1 was revised and "when the plant is above ground" was removed. All Marin western flax plants will be avoided.

### Response to Comment EB – 12

*The comment suggests the project will result in the removal (construction period) and trampling (long-term) of special-status plants.*

As discussed in the IS/MND, the project includes avoidance measures to protect special-status plants from incidental harm during construction (BIO-2). This includes biological resource training, vehicle access limitations, flagging of work limits, designated staging and storage areas, and other measures to minimize the incidental disturbance to special-status plants. The Proposed Project also includes Mitigation Measure BIO-1, which mitigates for the intentional removal of some special-status plants within the existing road bed, as is required to complete the project. A distinction is no longer made between special-status species of low or high sensitivity so a rare plant mitigation and monitoring plan will be developed for all special-status species impacted by the project. See **Master Response 1** and **2**.

### Response to Comment EB – 13

*The comment questions the timing of surveys for Tiburon buckwheat and Mt. Tamalpais thistle and requests that a rare plant mitigation and monitoring plan be developed for Tiburon buckwheat, Marin County navarretia and serpentine reedgrass despite being identified as a species of low sensitivity in the IS/MND.*

While the buckwheat and Mt. Tamalpais thistle were not at peak bloom during the survey period, vegetative plants were clearly visible and distinguishable and surveys were appropriately timed according to local conditions to identify both species. See **Master Response 3** regarding timing of botanical surveys.

Regarding impacts to other special-status plant species, a distinction is no longer made between special-status species of low or high sensitivity so a rare plant mitigation and monitoring plan will be developed for all special-status species impacted by the project. See **Master Response 1** and **2**.

### Response to Comment EB – 14

*The comment suggests that stockpiling and covering of serpentine soils would degrade the quality of special-status seeds, potentially initiate germination at the wrong time of the year, or make the seeds inviable due to moisture, mold, or heat.*

See **Master Response 9**.

## Response to Comment EB – 15

*The comment requests clarification on the frequency of weeding activities post-construction and development of mitigation ratios.*

Construction period invasive weed control practices are included in Mitigation Measures BIO-2. Mitigation Measure BIO-10 also includes long term monitoring and adaptive management including early detection and rapid response to monitor and then remove invasive weeds along the Proposed Project routes for as long as those routes are open. Mitigation Measure BIO-1 has been updated to clarify that weeding actions are included in adaptive management that would be required for as long as the routes are open. In other words, Mitigation Measure BIO-10, which includes weeding as one potential action, is required in perpetuity as requested by the comment. Also see Mitigation Measure BIO-13 which outlines monitoring and weed removal along decommissioned routes.

See **Master Response 2** regarding transplant methods and success criteria mitigation ratios. Success criteria for impacts to special-status species are based on full replacement.

## Response to Comment EB – 16

*The comment requests consideration of a single multi-use route along an alternative route that utilizes the existing Azalea Hill Trail.*

Numerous alternatives were considered in the planning phase of the Proposed Project. See **Master Response 8** for an explanation of why a shared-use trail over Azalea Hill was removed from the considered alternatives.

## Response to Comment EB – 17

*The comment suggests the IS/MND lacks an assessment of potential direct, indirect, and cumulative impacts to special-status plant species.*

Impacts to all special-status plants were discussed and addressed in the IS/MND. Subsequent to agency and public review, the district extended the requirement for rare plant mitigation and monitoring plant to all special-status species. See **Master Responses 1 and 2**. Rare plants were analyzed and locally rare plants were added to Table 4-1. Mitigation Measures BIO-1, BIO-2, BIO-10, BIO-11, BIO-12, and BIO-13 ensure impacts to special-status plants and sensitive natural communities have been reduced to less than significant levels.

Direct impacts of the project have been disclosed and discussed in the IS/MND. The IS/MND also recognizes the indirect effects, such as the those stemming from the closure of the existing unsanctioned social trails. Insofar as cumulative impacts are concerned, CEQA Guidelines Section 15064(h)(2) states that a Lead Agency may determine if a project's contribution to a cumulative impact is less than cumulatively considerable when mitigated in an Initial Study. CEQA Guidelines Section 15152(f)(2), which is part of the larger section on tiering from previous CEQA documentation – as is the case here, limits the evaluation of a later action's (i.e., project's) cumulative impacts to whether the effects of the action are cumulatively considerable. In light of this, coupled with the requirements of the revised Mitigation Measure BIO-1 and BIO-10, the district feels that its project is not cumulatively considerable. The revised mitigation measure includes provisions for avoidance and, if necessary, transplantation and revegetation under a project-specific rare plant mitigation and



monitoring plan as well as monitoring and adaptive management in perpetuity. Among other things, the mitigation measure and plan under BIO-1 requires a full-replacement transplantation success criterion of 1:1, as well as contingency measures in the event the criterion is not achieved after five years. Therefore, the district has determined that the project's incremental effects to special-status plant species is not cumulatively considerable.

Regarding preservation of the seed bank see **Master Response 9**.

### Response to Comment EB – 18

*The comment questions the district's rationale for categorizing some plants as "low sensitivity" and not requiring rare plant mitigation and monitoring for impacts to those species.*

The district has updated Mitigation Measure BIO-1 to include mitigation and monitoring for all special-status species. See **Master Response 1**.

### Response to Comment EB – 19

*The comment calls into question the timing and adequacy of botanical surveys and requests a rare plant mitigation and monitoring plan be developed for Tiburon buckwheat and Marin County navarretia.*

See **Master Response 3** regarding timing and adequacy of botanical surveys. While some species (buckwheat and lessingia in particular) were not at peak bloom during the survey period, vegetative plants were clearly visible and distinguishable and abundant outside the project area. The district updated Mitigation Measure BIO-1 to include a rare plant mitigation and monitoring plan for all impacted special-status species (including Tiburon buckwheat and Marin County navarretia). See **Master Response 1**.

### Response to Comment EB – 20

*The comment calls into question the objectives of the Proposed Project and consistency with district watershed management policies.*

See **Master Response 8** regarding the goals and objectives of the Proposed Project and **Master Response 6** regarding consistency with the adopted RTMP. The district's board will consider the Proposed Project's benefits and impacts in light of the existing and robust watershed protection policies already being implemented.

### Response to Comment EB – 21

*The comment contends the project is inconsistent with the draft (un-adopted) BFFIP and that it is "insensible" to impact rare plants and sensitive habitat along Liberty Gulch.*

See **Master Response 8** regarding the goals and objectives of the Proposed Project and **Master Response 6** regarding consistency with the adopted RTMP. The district's board will consider the Proposed Project's benefits and impacts in light of the existing and robust watershed protection policies already being implemented.

## Response to Comment EB – 22

*The comment repeats comments raised in EB-2, EB-3, and EB-16.*

Numerous alternatives were considered in the planning phase of the Proposed Project. See **Master Response 8** for an explanation of why a shared-use trail over Azalea Hill was removed from the considered alternatives.

## Response to Comment EB – 23

*The comment suggests the proposed mitigation measures as outline in the RTMP cannot reduce impacts to sensitive plants and habitats to a less than significant level.*

See **Master Response 4**.

## Response to Comment BC – 1

*District personnel responded to a request for information on Monday October 29, 2018 and clarified the terminology used to describe the existing Azalea Hill Trail which is composed of two segments – both which are managed as a hiking and equestrian-only trail per the RTMP (see Section 5 for the district’s initial response. No further comments were received from Basia Crane before the end of the comment period.*

## Response to Comment BC – 2

*District personnel responded to a request for information on Monday October 29, 2018 and clarified existing and allowable uses on the Azalea Hill Trail (see Section 5 for the district’s initial response). No further comments were received from Basia Crane before the end of the comment period.*

## Response to Comment BC – 3

*District personnel responded to a request for information on Monday October 29, 2018 and clarified existing and allowable uses on the Azalea Hill Trail and proposed Liberty Gulch Road (see Section 5 district’s initial response). No further comments were received from Basia Crane before the end of the comment period.*

## Response to Comment PdS – 1

*The comment suggests the Proposed Project would fragment serpentine habitat.*

See **Master Response 5**.

## Response to Comment PdS – 2

*The comment suggests the Proposed Project is inconsistent with the RTMP and that alternate alignments existing that would reduce project impacts.*

See **Master Response 6** regarding consistency with the RTMP and **Master Response 8** regarding alternate alignments.

## Response to Comment PE – 1

*The comment requests that an EIR is developed for the Proposed Project because there are rare native plants in the area.*

See **Master Response 4**.

### Response to Comment BE – 1

*The comment requests the Proposed Project alter the design approach to leave the trail in as natural a state as possible rather than “bulldozing the whole thing flat”*

As described in the IS/MND the district intends on re-establishing a four-foot wide passageway along the existing Liberty Gulch Road. Grading actions would not include bulldozing of a large homogeneous swath of land. Grading actions would be targeted to improve drainage, reduce erosion, and create a safe route of travel for all users.

### Response to Comment BE – 2

*The comment requests bikes be allowed on the existing Azalea Hill Trail as bicycle use would not substantially increase erosion.*

The district acknowledges the importance of providing a safe yet environmentally sustainable connection between the “Lakes” and “Pine Mt.” areas. However, based on the analysis contained in the CEQA document, sensitivity of serpentine habitat on Azalea Hill, site topography, and the potential for impacts, the Proposed Project does not include a multi-use trail on Azalea Hill. Bicycle use on Azalea Hill is not permitted under the current RTMP and the Proposed Project would not change the existing use. Instead, the Proposed Project would provide a Class IV road (suitable for hiking, biking, and equestrian use) along the existing the Liberty Gulch Road where it can be accommodated without significantly impacting sensitive resources.

### Response to Comment RF – 1

*The comment suggests the Proposed Project will fragment a large pristine, is inconsistent with the RTMP, and the proposed mitigations are inadequate.*

See **Master Response 5**.

See **Master Response 6**.

See **Master Response 4**.

### Response to Comment RF – 2

*The comment requests mitigation and monitoring plans be developed for all special-status species.*

See **Master Response 1**.

### Response to Comment RF – 3

*The comment questions the effectiveness of the proposed transplantation methods and claims the success criteria for plant establishment is too low.*

See **Master Response 2**.

#### Response to Comment RF – 4

*The comment requests the district complete an Environmental Impact Report because the proposed mitigations will prove inadequate over the long-term.*

See **Master Response 4**.

#### Response to Comment GF – 1

*The comment suggests the project will not be successful in removing bicycle impacts from the Azalea Hill Trail.*

Adoption of the Liberty Gulch Road will provide bicyclists a sustainable and safe route between the “Lakes” and “Pine Mt” areas. Impacts related to the illegal use of the Azalea Hill Trail, after adoption of the Liberty Gulch Road are addressed with Mitigation Measure BIO-10 which includes additional enforcement, education and outreach to user groups, and adaptive management.

#### Response to Comment SF – 1

*The comment requested the district complete an Environmental Impact Report because of impacts to serpentine soils and sensitive plants in the area.*

See **Master Response 4**.

#### Response to Comment JG – 1

*The comment expresses support of the project and requests electric assist bikes be allowed on the proposed routes. The comment does not pertain to the adequacy of the IS/MND. No response is provided.*

#### Response to Comment AG – 1

*The comment suggest the district follow the standards set forth in the RTMP.*

See **Master Response 6**.

#### Response to Comment AG – 2

*The comment requested the district complete an Environmental Impact Report because of impacts to serpentine soils and sensitive plants.*

See **Master Response 4** regarding adequacy of IS/MND and proposed mitigation measures and **Master Response 5** regarding pristine un-fragmented habitat.

#### Response to Comment AG – 3

*The comment suggests the project will not be successful in removing bicycle impacts from the Azalea Hill Trail.*

Adoption of the Liberty Gulch Road will provide bicyclists a sustainable and safe route between the “Lakes” and “Pine Mt” areas. Impacts related to the illegal use of the Azalea Hill Trail, after adoption of the Liberty Gulch Road are addressed with Mitigation Measure BIO-10 which includes additional enforcement, education and outreach to user groups, and adaptive management.

### Response to Comment MG – 1

*The comment questions the need to impact rare and endangered plants and the rationale for adopting the Liberty Gulch Road which may contribute large amounts of sediment to Alpine Lake.*

The IS/MND discusses the impacts to special-status species and addresses the impacts with mitigation measures that will reduce impacts to special-status plant species to a less than significant level.

See **Master Response 8** regarding the rationale of the project.

See **Master Response 11** regarding erosion and sediment concerns.

See **Master Response 7** regarding impacts associated with increased use.

### Response to Comment MG – 2

*The comment suggests an alternative alignment that utilizes the existing Azalea Hill Trail could provide a shared-use connection between Bull Frog and the top of Azalea Hill.*

See **Master Response 8**.

### Response to Comment MG – 3

*The comment requested the district complete an Environmental Impact Report.*

See **Master Response 4**.

### Response to Comment DjH – 1

*The comment does not pertain to the adequacy of the IS/MND. No response is provided.*

### Response to Comment LI – 1

*The comment does not pertain to the adequacy of the IS/MND. No response is provided.*

### Response to Comment LI – 1

*The comment does not pertain to the adequacy of the IS/MND. No response is provided.*

### Response to Comment MJ – 1

*The comment questions the Proposed Project's consistency with the RTMP and requests preparation of and EIR.*

The IS/MND discusses impacts of adopting and improving the Liberty Gulch Road. See **Master Response 6** regarding consistency with the RTMP and **Master Response 4** regarding adequacy of IS/MND and proposed mitigation measures.

### Response to Comment MJ – 2

*The comment suggests the project will destroy irreplaceable wildlife habitat.*

The IS/MND discusses the impacts to biological resources and addresses the impacts with mitigation measures that will reduce impacts to a less than significant level. Specifically, Mitigation Measure

BIO-10 require long-term monitoring and adaptive management to mitigate for indirect and direct impacts.

### Response to Comment RIB – 1

*The comment expressed concern regarding safety and user conflicts associated with a Class IV road.*

District personnel explained the design elements of the project and referenced section of the IS/MND that describes safety elements of the project including separate hiking/equestrian and hiking/equestrian/biking routes and speed calming features that address this concern (Mitigation Measure REC-3).

### Response to Comment GL – 1

*The comment requests the district complete an Environmental Impact Report because of impacts to serpentine soils and sensitive plants.*

See **Master Response 4**.

### Response to Comment LL – 1

*The comment suggests the Proposed Project is not consistent with the RTMP.*

See **Master Response 6**.

### Response to Comment LL – 2

*The comment suggests the Proposed Project will fragment un-fragmented habitat.*

See **Master Response 5**.

### Response to Comment LL – 3

*The comment questions the objectives and goals of the project.*

See **Master Response 8**.

### Response to Comment LL – 4

*The comment questions the effectiveness of the proposed transplantation methods.*

See **Master Responses 1 and 2**.

### Response to Comment LL – 5

*The comment suggests mitigation measures included in the Proposed Project are inadequate.*

See **Master Response 4**.

### Response to Comment FM – 1

*The comment suggests the environment would be damaged by the project.*

The IS/MND discusses potential impacts of the project, including impacts to the environment, and reduces the impacts to a less than significant level with mitigation measures in accordance with CEQA guidelines.

### Response to Comment FM – 2

*The comment suggests damage to pristine habitat cannot be adequately mitigated and that special-status plants are not relocatable.*

See **Master Response 5** regarding pristine habitat. See **Master Response 1** and **2** regarding mitigation measures for impacts to special-status plants and **Master Response 2** regarding transplant methods and success criteria.

### Response to Comment TM – 1

*The comment does not pertain to the adequacy of the IS/MND. No response is provided.*

### Response to Comment SN – 1

*The comment does not pertain to the adequacy of the IS/MND. No response is provided.*

### Response to Comment LN – 1

*The comment suggests adoption of Liberty Gulch will fragment a large pristine area, conflicts with the RTMP, and cannot be adequately mitigated.*

See **Master Response 5** regarding habitat fragmentation.  
See **Master Response 6** regarding consistency with the RTMP.  
See **Master Response 4** regarding the adequacy of the IS/MND and proposed mitigation measures.  
See **Master Response 8** regarding project goals and alternative routes

### Response to Comment LN – 2

*The comment requests development of a rare plant mitigation and monitoring plan for all special-status plant species.*

See **Master Response 1**.

### Response to Comment LN – 3

*The comment questions the effectiveness of the proposed transplantation methods.*

See **Master Response 2**.

### Response to Comment LN – 4

*The comment requests the district complete an Environmental Impact Report because the proposed mitigation measures will prove inadequate over the long-term.*

See **Master Response 4**.

### Response to Comment EN – 1

*The comment suggests the project will impact pristine unfragmented habitat and rare serpentine adapted plants and is therefore in conflict with the RTMP.*

See **Master Response 5** regarding habitat fragmentation. Mitigation Measures BIO-1, BIO-2, BIO-10, BIO-11, BIO-12, and BIO-13 ensure impacts to special-status plants and sensitive natural

communities have been reduced to less than significant levels. See **Master Responses 1 and 2** regarding impacts to rare serpentine adapted plants. See **Master Response 6** regarding consistency with the RTMP.

### Response to Comment EN – 2

*The comment questions the effectiveness of the proposed mitigations.*

See **Master Responses 1 and 2** regarding impacts to rare serpentine adapted plants. Also see **Master Response 4** regarding adequacy of IS/MND and the proposed mitigation measures.

### Response to Comment EN – 3

*The comment requests the district complete an Environmental Impact Report because the proposed mitigation measures will prove inadequate over the long-term.*

See **Master Response 4** regarding adequacy of IS/MND and the proposed mitigation measures.

### Response to Comment DoD – 1

*The comment does not pertain to the adequacy of the IS/MND. No response is provided.*

### Response to Comment CoB – 1

*The comment requests reconsideration of alternate routes that wouldn't cross pristine serpentine communities and fragment rare and sensitive plant habitat.*

See **Master Response 8** regarding project objective and alternative routes. See **Master Response 5** regarding habitat fragmentation. Mitigation Measures BIO-1, BIO-2, BIO-10, BIO-11, BIO-12, and BIO-13 ensure impacts to special-status plants and sensitive natural communities have been reduced to less than significant levels.

### Response to Comment CoB – 2

*The comment suggests the proposed mitigations for habitat fragmentation are inadequate and that the success criteria is too low.*

See **Master Response 5** regarding habitat fragmentation. See **Master Responses 1 and 2**. Mitigation Measures BIO-1, BIO-2, BIO-10, BIO-11, BIO-12, and BIO-13 ensure impacts to special-status plants and sensitive natural communities have been reduced to less than significant levels.

### Response to Comment CoB – 3

*The comment requests the district complete an Environmental Impact Report because the proposed mitigations are insufficient.*

See **Master Response 4**.

### Response to Comment CoB – 4

*The comment requests the district heed the concern of CNPS and protect rare and threatened plant communities.*

See **Master Responses 1 and 2**. Also see responses to CNPS comments (CNPS-1 through CNPS-15)



### Response to Comment BP – 1

*The comment requests that any improvements made should be accommodate legal use for bikes and e-bikes.*

The comment does not pertain to the adequacy or content of the IS/MND. No response is required. However, based on the analysis contained in the IS/MND and sensitivity of serpentine habitat on Azalea Hill, the Proposed Project only includes hiking and equestrian uses on the Azalea Hill Trail and redirects bicycle use onto the Liberty Gulch Road where it can be accommodated with fewer environmental impacts. See **Master Response 8** regarding the proposed route selection process.

### Response to Comment BR – 1

*The comment suggests bulldozing and grading an entirely new road along the shores of Alpine Lake conflicts with the district's mission.*

See **Master Response 8** regarding the proposed route selection process. See **Master Response 6** regarding consistency with the district's RTMP.

### Response to Comment BR – 2

*The comment suggests an alternative multi-use trail along the eastern slope of Azalea Hill with engineered switchbacks would avoid impacts to Azalea Hill and the shores of Alpine Lake.*

See **Master Response 8** regarding the proposed route selection process. Furthermore, although a multi-use along the eastern slope of Azalea Hill would be more direct and shorter than the Liberty Gulch Road, it would require new construction and new impacts to attain a sustainable slope conducive to supporting all trail users.

### Response to Comment BR – 3

*The comment suggests restoring Azalea Hill to its pre 1903 state to reduce erosion, avoid the concentration of runoff, and allow sensitive plant communities to recover.*

See **Master Response 8** regarding the proposed route selection process. Although restoring the Liberty Gulch Road to its historic pre-1903 condition may provide the best opportunity to expand native habitat and ecologic function, the required level of work, physical impact, and cost to complete such a project would be substantially greater than re-establishing a four-foot wide road within the existing Liberty Gulch Road. For example, the equipment needed to regrade and restore Liberty Gulch Road would be substantially larger than the mechanized wheelbarrows, mini-excavators, and bobcats used under the Proposed Project. The total area of disturbance associated with staging, access, and grading actions to restore Liberty Gulch to historic conditions is expected to be an order of magnitude higher.

### Response to Comment MR – 1

*The comment questions the objectives and rationale for the selected route and Proposed Project.*

See **Master Response 8** regarding the proposed route selection process and project goals. See **Master Response 5** regarding impacts to pristine unfragmented habitat.

## Response to Comment MR – 2

*The comment questions the efficacy of the proposed mitigation measures and requests the area be protected from further degradation.*

See **Master Responses 1 and 2**. Mitigation Measures BIO-1, BIO-2, BIO-10, BIO-11, BIO-12, and BIO-13 ensure impacts to special-status plants and sensitive natural communities have been reduced to less than significant levels. See **Master Responses 8** regarding the proposed route selection process.

## Response to Comment MR – 3

*The comment requests an alternative route be developed that does not cross such sensitive habitat.*

See **Master Response 8** regarding the proposed route selection process.

## Response to Comment NS – 1

*The comment requests additional information about which trails would be decommissioned. District staff responded to this initial comment during the public review period to clarify the Proposed Project and support the public review process.*

## Response to Comment NS – 2

*The comment requested the project maintain a loop trail on Azalea Hill but later clarifies the commenters confusion with routes. No further comment was received from Mr. Svenson.*

## Response to Comment LW – 1

*The comment suggests the project would impact pristine unfragmented habitat and challenges the efficacy of plant relocation as a mitigation measure.*

See **Master Response 5** regarding habitat fragmentation and **Master Responses 1 and 2** regarding mitigations for impacts to special-status plants.

## Response to Comment KW – 1

*The comment suggests the Proposed Project conflicts with the RTMP.*

See **Master Response 6**.

## Response to Comment RR – 1

*The comment requested the district incorporate post-project monitoring of the proposed routes and decommissioned trails.*

The Proposed Project does include post-project monitoring for the proposed routes and decommissioned social trails. Mitigation Measure BIO-10 includes monitoring and adaptive management for as long as the trails are open for use and BIO-13 includes up to five years of monitoring of decommissioned social trails.



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## Agencies & Organizations

### Gregg Erickson (California Department of Fish & Wildlife)

**From:** Hultman, Debbie@Wildlife <Debbie.Hultman@wildlife.ca.gov>  
**Sent:** Friday, November 30, 2018 4:21 PM  
**To:** Azalea Hill  
**Cc:** Waller, Deborah@Wildlife; Weiss, Karen@Wildlife; Weightman, Craig@Wildlife; Kelly, Audrey@Wildlife; OPR State Clearinghouse  
**Subject:** Amend of Mt. Tamalpais Rd-Trail Management Plan for Azalea Hill Project  
**Attachments:** Amend of Mt. Tamalpais Rd-Trail Management Plan for Azalea Hill Project-Fulton-KELLY113018.pdf

Mr. Fulton,

Please see the attached letter. Original to follow.

Thank you,

Debbie Hultman

Assistant to the Regional Manager

Bay Delta Region

California Department of Fish and Wildlife

707.428.2037

[debbie.hultman@wildlife.ca.gov](mailto:debbie.hultman@wildlife.ca.gov)



State of California – The Natural Resources Agency  
DEPARTMENT OF FISH AND WILDLIFE  
Bay Delta Region  
2825 Cordelia Road, Suite 100  
Fairfield, CA 94534  
(707) 428-2002  
[www.wildlife.ca.gov](http://www.wildlife.ca.gov)

*EDMUND G. BROWN JR., Governor*  
*CHARLTON H. BONHAM, Director*



November 30, 2018

Mr. Aaron Fulton  
Associate Civil Engineer  
Marin Municipal Water District  
220 Nellen Avenue  
Corte Madera, CA 94925

Dear Mr. Fulton:

Subject: Amendment of Mt. Tamalpais Road and Trail Management Plan for Restoration of Azalea Hill Project, Mitigated Negative Declaration, Marin County

The California Department of Fish and Wildlife (CDFW) received a Notice of Intent to Adopt a Mitigated Negative Declaration (MND) from the Marin Municipal Water District for the Amendment of Mt. Tamalpais Road and Trail Management Plan for Restoration of Azalea Hill Project (Project) pursuant to the California Environmental Quality Act (CEQA) and CEQA Guidelines. CDFW previously submitted comments in response to the Notice of Preparation for the *Mt. Tamalpais Watershed Road and Trail Management Plan*, SCH #2004082018.

Thank you for the opportunity to provide comments and recommendations regarding those activities involved in the Project that may affect California fish and wildlife. Likewise, we appreciate the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may be required to carry out or approve through the exercise of its own regulatory authority under the Fish and Game Code.

#### **CDFW ROLE**

CDFW is California's Trustee Agency for fish and wildlife resources, and holds those resources in trust by statute for all the People of the State. [Fish and Game Code, §§ 711.7, subd. (a) and 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a)]. CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. (*Id.*, § 1802). Similarly for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources.

CDFW is also submitting comments as a Responsible Agency under CEQA. (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381). CDFW expects that it may need to exercise regulatory authority as provided by the Fish and Game Code. As proposed, for example, the Project may be subject to CDFW's Lake and Streambed Alteration (LSA) regulatory authority. (Fish and Game Code, § 1600 et seq.). Likewise, to the extent implementation of the Project as proposed may result in "take" as defined by State law of any species protected under the California Endangered Species Act (CESA) (Fish and Game Code, § 2050 et seq.), the Project proponent may seek related take authorization as provided by the Fish and Game Code.

## REGULATORY ROLE

### California Endangered Species Act

Please be advised that a CESA permit must be obtained if the Project has the potential to result in "take" of plants or animals listed under CESA, either during construction or over the life of the Project. Issuance of a CESA permit is subject to CEQA documentation; therefore, the CEQA document must specify impacts, mitigation measures, and a mitigation monitoring and reporting program. If the Project will impact CESA listed species, early consultation is encouraged, as significant modification to the Project and mitigation measures may be required in order to obtain a CESA permit.

CDFW-1

CEQA requires a Mandatory Finding of Significance if a project is likely to substantially restrict the range or reduce the population of a threatened or endangered species. (Pub. Resources Code, §§ 21001, subd. (c), 21083; CEQA Guidelines, §§ 15380, 15064, and 15065). Impacts must be avoided or mitigated to less-than-significant levels unless the CEQA Lead Agency makes and supports Findings of Overriding Consideration (FOC). The CEQA Lead Agency's FOC does not eliminate the Project proponent's obligation to comply with Fish and Game Code section 2080.

### Lake and Streambed Alteration

CDFW requires an LSA Notification, pursuant to Fish and Game Code section 1600 et. seq., for project activities affecting lakes or streams and associated riparian habitat. Notification is required for any activity that may substantially divert or obstruct the natural flow; change or use material from the bed, channel, or bank including associated riparian or wetland resources; or deposit or dispose of material where it may pass into a river, lake or stream. Work within ephemeral streams, washes, watercourses with a subsurface flow, and floodplains are subject to notification requirements. CDFW will consider the CEQA document for the Project and may issue an LSA Agreement. CDFW may not execute the final LSA Agreement (or Incidental Take Permit) until it has complied with CEQA as a Responsible Agency.

CDFW-2

## PROJECT DESCRIPTION SUMMARY

**Proponent:** Marin Municipal Water District

**Objective:** The objective of the Project is to improve 1) Azalea Hill trail for hikers and equestrian use by correcting erosion and drainage issues and adopting 250 feet of non-system trails. 2) Increase connectivity of the Liberty Gulch Road by adopting and improving 1.9 miles of trails for pedestrians, bikers, and equestrian, and small vehicle use. 3) Decommission and restore non-system trails to improve erosion and minimize impacts to special-status plant communities. Primary Project activities include, minor grading, vegetation clearing, and soil loosening using hand tools and mechanized equipment.

**Location:** Azalea Hill, accessible from the west at Bolinas-Fairfax Road or from the east at Bull Frog Road, approximately four miles west-southwest of the Town of Fairfax, Marin County, California (latitude 37.9626, longitude -122.6206), APN 197-120-31

**Timeframe:** The estimated construction timeframe in total is approximately four to six months; however, the construction would likely be accomplished in phases over several years as funding is secured.

## COMMENTS AND RECOMMENDATIONS

CDFW offers the comments and recommendations below to assist Marin Municipal Water District in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct and indirect impacts on fish and wildlife (biological) resources. Based on the Project's avoidance of significant impacts on biological resources with implementation of mitigation measures.

### Special-Status Plant Species

Appendix D of the MND states that special-status plants observed at the Project site include documented populations of Marin western (dwarf) flax (*Hesperolinon congestum*), a CESA listed threatened species and California Rare Plant Rank List 1B species. California Rare Plant Rank list 1B plants including Mt. Tamalpais manzanita (*Arctostaphylos montana* ssp. *montana*), Mt. Tamalpais thistle (*Cirsium hydrophorum* var. *vaseyi*), Tiburon buckwheat (*Eriogonum luteolum* var. *caninum*), Marin County navarretia (*Navarretia rosulate*) and California Rare Plant Rank List 4 plants including (*Calamagrostis ophiditis*), Oakland mariposa lily (*Calochortus umbellatus*), and Hartequin lotus (*Hosackia gracilis*).

CDFW-3 The failure to locate a known special-status plant occurrence during one field season does not constitute evidence that the plant occurrence no longer exists at a location, particularly if adverse conditions are present. California Rare Plant Rank List 1B species that were not documented but still likely to occur in the Project area include but is not limited to: Mt. Tamalpais lessingia (*Lessingia micradenia* var. *micradenia*), Marin manzanita (*Arctostaphylos virgata*), and Tamalpais bristly jewel flower (*Streptanthus glandulosus* ssp. *pulchellus*).

CDFW-4 California Rare Plant Rank 1B meets the definition of Rare or Endangered under CEQA Guidelines §15125(c) and/or §15380, and CEQA requires a Mandatory Finding of Significance if a project is likely to substantially restrict the range or reduce the population of a threatened or endangered species. Plants with a California Rare Plant Rank of 4 are of limited distribution or infrequent throughout a broader area in California and impacts to these species should be evaluated for impact significance similarly to rank 1B.

CDFW-5 *Marin Western (Dwarf) Flax at Azalea Hill Trail*  
Activities described on page 23 of the Project objective and description in section 8.2 of the MND associated with trail improvements, reconstruction and non-system trail decommissioning may impact the Marin western (dwarf) flax (CESA threatened) population located adjacent to segment 4 of the Azalea Hill Road Project area. In order to adequately avoid impacts to this species, CDFW requests the Mitigation Measure BIO-1 measures be updated to include:

1. Increasing the construction buffer distance for Marin western (dwarf) flax listed from 50 feet to 500 feet. The U.S. Fish and Wildlife Service (USFWS) recovery strategy for Marin dwarf flax (*Hesperolinon congestum*) suggests a 500-foot buffer to reduce human impacts and allow for population expansion (USFWS, 2011).

CDFW-5

2. In instances where a 500-foot buffer cannot be accomplished, the Project botanist should consult with CDFW on appropriate buffer distances and any potential additional protective measures such as additional species monitoring or installation of fences and signage to dissuade users from going off trail. Direct impacts to Marin western (dwarf) flax, including seed collection require a CESA take permit (pursuant to Fish and Game Code § 2080 et seq.).

CDFW-6

*California Rare Plant Rank 4 and 1B at Liberty Gulch Road*

Activities described in the Project objective and description, section 8.2 of the MND related to widening and improving Liberty Gulch Road and the adoption of the social trail may result in habitat loss and removal of special-status plants. Increased usage of Liberty Gulch Road may increase the potential for off-trail hikers or bikers and off-leash dogs in the area immediately adjacent to the trail to impact habitat, through trampling, soil compaction, increased erosion, and introduction of invasive species. The population size reduction could be a potentially significant impact to species long-term persistence.

The proposed decommissioning of 4.4 miles of social trails as compensatory habitat does not directly address impacts on special-status species. Unless there are additional documented occurrences adjacent to the decommissioned areas or the correct soil types, the effected special-status species may not naturally move into the restored areas and improve population numbers. The MND should address potential impacts from the expanded use of the trails, and clearly outline restoration or mitigation goals and activities.

CDFW-7

In order to address impacts to special-status plant species, CDFW requests that Mitigation Measure BIO-1 be expanded to include the following:

1. A mitigation and monitoring plan should include all special-status species affected by this Project, including minimizing impacts and potential loss of habitat.
2. Transplantation methods described in section b and c for plants be completed with as little physical disturbance as possible to the individual, and at a time when the individual is photosynthetically inactive or dormant; the transplantation site shall be of the same quality habitat, free of weeds, and having similar physical characteristics and soil type (Fielder, 1991).
3. Update the monitoring plan and success criteria described in section d and e of Mitigation Measure BIO-1 to require that >75% of the mitigation propagules established reproducing population, and that monitoring and adaptive management techniques be employed until this standard is achieved.

## ENVIRONMENTAL DATA

CDFW-8

CEQA requires that information developed in environmental impact reports and negative declarations be incorporated into a database which may be used to make subsequent or supplemental environmental determinations. [Pub. Resources Code, § 21003, subd. (e)]. Accordingly, please report any special-status species and natural communities detected during Project surveys to the California Natural Diversity Database (CNDDDB). The CNDDDB field survey form can be found at the following link: <https://www.wildlife.ca.gov/Data/CNDDDB/Submitting-Data>. The completed form can be mailed electronically to CNDDDB at the following email address:

Mr. Aaron Fulton  
November 30, 2018  
Page 5

CDFW-8

[CNDDDB@wildlife.ca.gov](mailto:CNDDDB@wildlife.ca.gov). The types of information reported to CNDDDB can be found at the following link: <https://www.wildlife.ca.gov/Data/CNDDDB/Plants-and-Animals>.

## FILING FEES

The Project, as proposed, would have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required in order for the underlying project approval to be operative, vested, and final. (Cal. Code Regs. tit. 14, § 753.5; Fish and Game Code, § 711.4; Pub. Resources Code, § 21089).

## CONCLUSION

CDFW appreciates the opportunity to comment on the MND to assist the Marin Municipal Water District in identifying and mitigating Project impacts on biological resources.

Questions regarding this letter or further coordination should be directed to Ms. Deborah Waller, Environmental Scientist, at (707) 576-2880 or [Deborah.Waller@wildlife.ca.gov](mailto:Deborah.Waller@wildlife.ca.gov); or Ms. Karen Weiss, Senior Environmental Scientist (Supervisory), at [Karen.Weiss@wildlife.ca.gov](mailto:Karen.Weiss@wildlife.ca.gov).

Sincerely,



Gregg Erickson  
Regional Manager  
Bay Delta Region

cc: Office of Planning and Research, State Clearinghouse, Sacramento

## REFERENCES

Fielder, Peggy L. Mitigation-Related Transplantation, Relocation and Reintroduction Projects Involving Endangered and Threatened, and Rare Plant Species in California. 14 June 1991, <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=3173>.

(USFWS) *Hesperolinon congestum* (Marin dwarf-flax) 5-Year Review: Summary and Evaluation. September 2011, [https://ecos.fws.gov/docs/five\\_year\\_review/doc3961.pdf](https://ecos.fws.gov/docs/five_year_review/doc3961.pdf)

**Tom Boss (Marin County Bicycle Coalition)**

**From:** Tom Boss [REDACTED]  
**Sent:** Friday, November 09, 2018 1:03 PM  
**To:** Aaron Fulton; Azalea Hill  
**Subject:** MCBC Azalea Hill Comment Letter  
**Attachments:** MCBC\_Azalea\_Hill\_comment\_letter\_2018-1108.pdf

Hello Aaron,

Attached please find Marin County Bicycle Coalition's comments on the Azalea Hill RTMP Amendment Initial Study/Mitigated Negative Declaration.

Thank you for the opportunity to comment.

Tom

--

**Tom Boss**

Events & Off-Road Director

Marin County Bicycle Coalition

[REDACTED] | [marinbike.org](http://marinbike.org)

*When you ride Marin's roads, trails, and pathways, you Experience MCBC. [Join us today.](http://marinbike.org)*



*MARIN COUNTY BICYCLE COALITION*

November 9, 2018

Aaron Fulton  
Marin Municipal Water District  
220 Nellen Avenue  
Corte Madera, CA 94925

Dear Aaron:

The Marin County Bicycle Coalition (MCBC) appreciates the opportunity to comment on the Draft Initial Study – Mitigated Negative Declaration (IS-MND) for the Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan (RTMP) for the Restoration of Azalea Hill. MCBC represents over 2,500 annual contributing cyclists in Marin and throughout the Bay Area who enjoy riding through our county’s spectacular landscapes. MCBC’s Off Road Program, started in 2012, works to expand mountain biking opportunities in the County through education, environmental stewardship, and collaborative trail development.

Since 2016, the Off Road Program’s 3 Gaps Trail Initiative has identified Azalea Hill as one of the most critical gaps in the county’s unpaved road and trail network. To travel between the District’s popular Lakes Basin and Pine Mountain regions, cyclists are forced onto Bolinas-Fairfax Road, a narrow, twisting road with limited/no shoulder and often fast moving vehicular traffic (particularly on weekends). We are deeply grateful to the District for acknowledging the safety hazard this poses to cyclists, and for proposing to improve existing but undesignated facilities (the old Liberty Gulch/Bolinas-Fairfax Road and its eastern trail extension to Bullfrog Road) to make them safely accessible to hikers, cyclists, and equestrians. In addition, the proposed decommissioning of an extensive labyrinth of social trails on Azalea Hill will significantly enhance the area’s sensitive environment, helping to protect and expand populations of rare serpentine plant communities and decrease sediment delivery to seep-fed wetlands and other receiving waters farther downslope.

MCBC supports the project as proposed in the Draft IS-MND, and has the following comments:

- As documented in the Project Description, the proposed project will decommission approximately 4.4 miles of non-system roads and trails on Azalea Hill and restore those routes to natural conditions consistent with the provisions of Project Restore (Chapter 5 of the District’s RTMP). Mitigation Measure BIO-10 summarizes Project Restore’s multi-pronged approach to trail management, which utilizes education, signage, stewardship, and enforcement to maintain trail closures. For the past 4 years, MCBC has supported similar efforts by Marin County Parks to consolidate its road and trail network into a system of environmentally sustainable, multi-use routes through its own RTMP. This support has included circulating information over email and social media to educate the Marin cycling community about the



how and whys of trail consolidation, placing signage in conjunction with Parks emphasizing the importance of respecting trail closures (see photo below), and providing volunteer labor to help implement trail improvements and decommissions. MCBC is committed to providing the same kinds of logistical and material support to the District before, during, and after implementation of the proposed project. Based on our experience with Parks, we are confident that a collaborative approach will result in an increased likelihood of community compliance and project success.



- Mitigation Measure BIO-10 also addresses the possibility that portions of the proposed trail system could experience “overuse” or “excessive” use once they are officially improved and adopted by MMWD. This concern – that once new multi-use trails are adopted, or existing trails are opened to cyclists, they can become destinations vulnerable to excessive use – has been a common refrain in Marin County, particularly as Parks has implemented their RTMP. However, recent data collected by Parks on trails newly opened to the public indicates that this concern is unlikely to materialize. The following table presents visitor use data from the past year on three

newly adopted trails within the Giacomini Open Space Preserve (adjacent to District lands along San Geronimo Ridge).<sup>1</sup>

Trail Name	Daily Average, Weekday Pedestrians	Daily Average, Weekend Pedestrians	Daily Average, Weekday Cyclists	Daily Average, Weekend Cyclists
Boulder Springs	4	12	2	5
Haute Lagunitas	4	6	2	4
Hunt Camp	5	11	3	8

Though the newly designated multi-use route through the Liberty Gulch corridor will be located relatively closer to parking facilities than the new Giacomini trails, these data demonstrate that its visitation is unlikely to be on a scale that could be reasonably characterized as “excessive.” Nonetheless, should the District encounter evidence of excessive use of the Liberty Gulch multi-use route (see comment below), MCBC is committed to working with the District to develop adaptive management recommendations.

MCBC-1

- Mitigation measures BIO-10 and BIO-13 propose that the District botanist assess the post-project conditions of both the newly designated multi-use route through Liberty Gulch and the decommissioned trails on Azalea Hill. We believe this approach is a good start, and suggest that the District also include the watershed engineer, maintenance specialists, and related natural resource specialists with relevant expertise in hydrology, soils, geomorphology, and trail construction/maintenance as well as botany. Watershed projects such as the proposed project require multi-disciplinary teams to plan and implement, and are most effectively monitored and adaptively managed as such.

MCBC-2

- REC-3 proposes the installation of speed calming features on Liberty Gulch Road to manage the downhill speeds of cyclists. To most effectively protect the safety of cyclists while fostering a positive recreational experience, we recommend that the design and construction of these features be based upon the guidelines developed by the International Mountain Bicycling Association (IMBA).<sup>2</sup> These guidelines have been successfully applied by land managers across California, including Marin County. As with Project Restore efforts, MCBC is happy to assist the District with the design, construction, and monitoring of these features.

Again, we deeply appreciate the effort that the District has invested in the Azalea Hill – Liberty Gulch project, and we look forward to supporting future project planning, fundraising, implementation,

<sup>1</sup> Data from compiled Annual Visitor Use Reports at <https://www.marincountyparks.org/-/media/files/departments/pk/about-us/announcements/2018-eco-counter-annual-report.pdf?la=en>.

<sup>2</sup> See <https://www.imba.com/resource/trail-solutions> for details.

monitoring, and adaptive management. Thank you again for the opportunity to comment on the IS-MND, and please do not hesitate to get in touch with any further questions.

Best,

Tom Boss, MCBC Off Road Program Director

Jim Elias, MCBC Executive Director

MCBC Off-Road Program Committee:

John Vipiana, Chair

Christina Toms

Julia Violich

Maureen Gaffney

Matt Adams

Chris Hobbs

Alex Burnham

Anne Spaulding

Richard Petersen

## Otis Guy (Museum of Bicycling and Mountain Bike Hall of Fame)

**From:** [REDACTED] on behalf of Otis Guy [REDACTED]

**Sent:** Thursday, November 01, 2018 4:15 PM

**To:** Azalea Hill

**Subject:** Azaleahill support

OG-1 | Hi Aaron. I am writing in support of opening up Azalea Hill up to all users. Thanks for the forethought and support from MMWD. Many areas throughout the world are shared by many users with no conflicts between hikers, cyclist and all. The economic impact and use of the wonderful areas that we have here will be enhanced with more trail access for all. This is an important connection for all users and I look forward to seeing its completion.

There are many users who would be happy to volunteer their time to help with this project.

Again thanks, Otis

Otis Guy, Founding Board Member, Director of the MBHOF

[REDACTED]

*"Nothing compares to the simple pleasure of riding a bike."*

[John F. Kennedy 35th President of the United States](#)

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**Carolyn Longstreth (California Native Plant Society)**

**From:** Carolyn Longstreth [REDACTED]  
**Sent:** Friday, November 09, 2018 6:48 AM  
**To:** Azalea Hill  
**Subject:** Comment from California Native Plant Society  
**Attachments:** Azalea hill Round 2 draft CNPS comment- final.docx

Hello Mr. Fuller:

Please find attached a comment submitted by the California Native Plant Society. Do not hesitate to contact me if you have any questions.

--Carolyn Longstreth

*Carolyn Longstreth*

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]



November 9, 2018

Aaron Fuller, Associate Civil Engineer  
Marin Municipal Water District (MMWD)  
220 Nellen Ave.  
Corte Madera, CA 94925  
Azaleahill@marinwater.org

Dear Mr. Fuller:

The following comments are submitted on behalf of the Marin Chapter of the California Native Plant Society (Marin CNPS) regarding MMWD's recently-noticed recirculated Initial Study and Mitigated Negative Declaration (IS-MND) for the Azalea Hill/Liberty Gulch Road project.

The California Native Plant Society is an organization of nearly 10,000 members statewide dedicated to conserving native plants and their natural habitats and to increasing the understanding, appreciation, and horticultural use of native plants. Marin CNPS has 350 members.

As you know, the Azalea Hill//Liberty Gulch Road project has several components: (1) improvements to the Azalea Hill trail and parking lot, (2) extension of the Azalea Hill trail along the alignment of a social trail in order to provide a route from the Hill to the lake area at Bull Frog Road, (3) decommissioning a number of nearby social trails. Separate features of this proposal include: (4) adoption of and drainage improvements to the so-called Liberty Gulch road, bringing a lightly used footpath up to the level of a Class IV 4-foot wide multi-use road and (5) amendments to the 2005 Mt. Tamalpais Watershed Road and Trail Management Plan that are necessary to bring the Liberty Gulch trail into conformity therewith.

The District withdrew an earlier version of the IS/MND in 2017. The current recirculation of the document was undertaken pursuant to California Environmental Quality Act (CEQA) Guidelines Section 15073.5 to consider additional botanical surveys conducted in 2018 and the "additional potentially significant effects related to long term use of the Proposed Project." IS/MND at 2. New mitigation measures were added to the project to address these issues.

Marin CNPS appreciates the effort that MMWD has put into CEQA compliance and further commends the District for its updated botanical surveys, additional BMPs and mitigation measures to address long-term usage impacts and protect serpentine habitats and native plants on Azalea Hill and the Liberty Gulch Road. Nevertheless, we conclude that CEQA requires an Environmental Impact Report under the

circumstances presented. Furthermore, we oppose the Liberty Gulch upgrade and urge the District to eliminate this portion of the project, with the exception of certain erosion control improvements.

**A. As applied here, CEQA Guidelines Section 15073.5 Requires An EIR**

CEQA Guidelines Section 15073.5 states:

If during the negative declaration process there is substantial evidence in light of the whole record before the lead agency that the project as revised may have a significant effect on the environment which cannot be mitigated or avoided, the lead agency shall prepare a draft EIR and certify a final EIR prior to approving the project.

CNPS-1

The record as discussed herein contains substantial evidence that the construction and long-term use of the Liberty Gulch Road will have impacts that cannot be avoided or mitigated to a less-than-significant level. Therefore, an EIR must be prepared. Not only would an EIR set forth a more detailed analysis of the impacts and associated mitigation measures, it would include a robust analysis of alternatives to the project as presently proposed, with associated advantages and disadvantages. This analysis could well facilitate a redesign of the project that would enable the District to better achieve its goals of environmental protection and water quality, along with providing increased recreational opportunities. See footnote 2, *infra*.

**1. The adverse impacts of constructing a new trail through unfragmented area cannot be adequately mitigated**

The Road and Trails Management Plan fully acknowledged the negative impacts of trails:

Roads and trails can have many undesirable effects on the environment. They can *increase the number of visitors and intensify human use in seldom-visited areas*. They can provide migration routes for non-native *invasive plants* into previously un-infested areas and facilitate the spread of *Sudden Oak Death* syndrome. They can *fragment habitats* by creating migration or foraging barriers to some wildlife. They can *physically remove habitat* or a portion of it... *Wetland areas, riparian areas, serpentine soils* (which are fragile, erodible soils that can contain a host of *endemic, rare and endangered species of plants*), and active nesting or roosting areas, are all sensitive habitats that require protection in one form or another. *Furthermore, an increase in the density and amount of human presence in previously untrammled or seldom visited areas leads to an increase in the severity of effects and a proliferation of additional effects.*

RTMP at 2.6 (Emphasis added). The Plan further states:

Roads and trails actively used and maintained represent a *chronic, or persistent, type of erosion and source of sediment*. Causes of persistent erosion include: (1) *pulverizing and wearing down of the surface by vehicles, horses, bicycles or foot traffic*; (2) cutbank erosion (due to natural causes and maintenance activities), (3) inboard ditch erosion (due to natural causes and maintenance activities), and (4) wet weather erosion on the roads and trails.

RTMP at 4.5 (Emphasis added). See also Final Environmental Impact Report (FEIR) at 52.

CNPS-2 | As a result of these concerns, the RTMP takes a conservative approach to adopting new routes to increase connectivity. RTMP at 2.8. No non-system roads were proposed to be adopted when the Plan was first approved and, indeed, the Plan calls for decommissioning of abandoned roads like the Liberty Gulch route.

CNPS-3 | For its part, the Azalea Hill IS/MND concedes that construction and of the Liberty Gulch road and increased visitation may have significant adverse impacts on plant life, that wildlife such as deer, coyotes and mountain lions alter their behavior near trails, and that “actively used or overly used trails can cause erosion and a source of sedimentation.” IS/MND at 55, 68-69.

CNPS-4 | All of the types of impacts discussed in the Plan, the FEIR and the Azalea Hill IS/MND can be expected to occur as a result of the increased usage, particularly on the new Liberty Gulch road. This area is characterized by serpentine soils, endemic, rare and endangered species of plants, wetlands and riparian areas. While the addition of Mitigation Measure BIO-10 attempts to address the impacts of long-term usage, it largely consists of an educational program aimed at keeping users on the trails.

Mitigation Measure BIO-10 is beneficial as far as it goes but the fact is that the typical BMP’s, standard mitigation measures and outreach efforts are inadequate to mitigate habitat fragmentation, long-term sedimentation and erosion and increased human visitation to what is now a seldom-visited area. In our view, the District’s recognition of such adverse impacts resulting from trails, together with importance and rarity of the plant communities in the project area, constitutes substantial evidence that the project “may have a significant effect on the environment which cannot be mitigated or avoided,” thereby necessitating the preparation of an EIR. CEQA Guidelines 15073.5.

**2. The IS/MND improperly authorizes the District botanist to downgrade the status of certain rare plants and fails to adequately mitigate impacts to these species.**

Mitigating Measure BIO-1 confers on the District biologist the authority to assign to a special status plant species the status of “common” or “low-sensitivity.” IS/MND at 3. No specific rare plant monitoring and mitigation plans will be prepared for these species. IS/MND at 4. The document cites no legal or scientific basis for this arbitrary approach and CNPS is not aware of any.

CNPS-5 | The six so-called “low-sensitivity” species include Tamalpais lessingia, Marin County navarretia, Tiburon buckwheat, Mt. Tamalpais Manzanita, Oakland star-tulip and serpentine reedgrass, the first 4 of which hold a California Rare Plant Rank (CRPR) of 1B, meaning they are rare and endangered throughout their ranges. The latter two species hold a CRPR of 4.2 and 4.3 respectively, meaning limited distribution and infrequent occurrence. CNPS website at <https://www.cnps.org/rare-plants/cnps-rare-plant-ranks>. At least four of the rare plants documented in the project area—Mt. Tamalpais thistle, Tamalpais lessingia, Tiburon buckwheat and Tamalpais bristly jewelflower-- are endemic to the County or even Mt. Tamalpais alone. *Marin Flora* at 40-41; IS/MND at Table 4.1.

CEQA Guideline 15380(d) states that a species not officially listed as endangered or threatened “shall nevertheless be considered to be endangered, rare or threatened, if the species can be shown to meet the criteria in subdivision (b).” The latter provision in turn includes species that “Although not presently



threatened with extinction, ... exist[] in such small numbers throughout all or a significant portion of its range that it may become endangered if its environment worsens.” This guideline is widely interpreted to require mitigation of 1B species, even though such plants may not be listed under either the state or federal Endangered Species Act. Indeed, such species may properly be regarded as listed under state law because, while List B was initially created by CNPS, it is now under the aegis of a state agency, the California Department of Fish and Wildlife and has been renamed California Rare Plant Rank. Guidance by the DFW states that any species listed by a government agency should be treated as rare under CEQA. <http://www.resources.ca.gov/ceqa/guidelines/art20.html>. See also FEIR at 85.

CNPS-5

CNPS submits that the District’s designation of several special status species as less worthy of protection is scientifically unwarranted and without any legal basis. Characterized by limited geographical distribution and occurring solely on serpentine substrates, it seems imprudent to call these species of “low sensitivity ranking,” “resilient,” and that “complete avoidance is not necessary.”

Furthermore, the impacts to these species are not adequately addressed by the IS/MND. The document acknowledges that the Liberty Gulch Road construction will result in the removal of an unspecified number of allegedly low-sensitivity Marin County navarretia, serpentine reedgrass, Mt. Tamalpais lessingia, Mt. Tamalpais Manzanita and Tiburon buckwheat. IS/MND at 55. Because they are deemed to be less worthy of mitigation, these species will not be the subjects of specific mitigation and monitoring plans. IS/MND at 4.<sup>3</sup>

CNPS-6

While the IS/MND asserts that the decommissioning of social trails in the Azalea Hill vicinity will offset such losses, our experience with serpentine substrates on the Tiburon peninsula has shown that serpentine reedgrass and Tiburon buckwheat are not easily reestablished in disturbed habitats.

Moreover, the collection of seed and stockpiling of serpentine soils may well fail, especially in light of the separate requirement (MM HAZ-1) that stockpiled serpentine soils be kept wet, thereby increasing the risk that seeds will germinate out of season and fail to grow. IS/MND at 90 MM.

CNPS-7

The District’s optimistic and casual approach to mitigation of these species is thus not supported by substantial evidence demonstrating that impacts will be reduced to a level less than significant. An EIR is necessary to examine the likely success of the mitigation proposed by the District for each of the ten special status species documented in the project area. IS/MND at Table 4-1.

**3. The mitigation measures for both the rare plants deemed “sensitive” by the IS/MND and the endangered Marin western flax are inadequate**

CNPS-8

Although the IS/MND declines to specifically identify the species that will be covered by rare plant mitigation and monitoring plans; IS/MND at 4; one can infer by process of eliminating the low-sensitivity

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<sup>3</sup> Mitigation for these species will be limited to the construction-related BMP’s set forth in the Final Environmental Impact Report for the RTMP, efforts to minimize disturbance, training of construction personnel, marking, use of biodegradable erosion control fabrics, placement of rocks or barriers around some plants, collection and later distribution of seed or propagules, (See discussion B below at 8) and a public outreach program. See IS/MND at 3-5, 8-9, 55.

species that they include Mt. Tamalpais thistle, Tamalpais bristly jewelflower, and Mt. Saint Helena morning-glory. See IS/MND at Table 4-1.

CNPS-8

CNPS submits that the mitigation plan for these species sets an excessively low standard for success of efforts to relocate them: the establishment of at least one stable population within 3 years. IS/MND at 4. In other words, the efforts are deemed a success if they are not a complete failure and no further monitoring and restoration efforts are required.

CNPS-9

Regarding the Marin western flax, the IS/MND states that the project will avoid all visible federally-threatened/CRPR 1B Marin western flax plants. CNPS submits, however, that the surveys were conducted only during the early part of the bloom time-frame (May through July) and may have missed additional populations in the project area. The Liberty Gulch route may well harbor this species, since it is known to occur with Tiburon buckwheat and serpentine reedgrass in the Tiburon peninsula. Moreover, it is questionable that avoiding the plants only when “above ground” is effective as mitigation: if construction takes place at a later date, the extensive disturbance to the habitat, especially to the soils, will impact the seed-bank. Disturbance of the soil, burying the seeds at a greater depth than would occur under normal conditions, or soil compaction from heavy equipment use, would diminish, if not destroy, the seedbank, which could lead to the long-term loss or extirpation of the species in the project area.

Again, substantial evidence in the record demonstrates that the Project will have unmitigated significant impacts, thereby triggering the requirement for an EIR.

#### **4. Impacts caused by equestrians and mountain bikers are not adequately addressed in the IS/MND**

Horse-riding and mountain biking are to be permitted on a portion of the Azalea Hill trail and on the new Liberty Gulch Road. IS/MND at 1, 107 but the mitigation measures for these impacts are again, inadequate.

Indeed, the IS/MND itself notes the following regarding these specific kinds of impacts:

CNPS-10

Mountain biking can impact the habitat and wildlife in ways unlike hiking. Trampling is a major concern for mountain biking that may occur off-trail, and when on developed trails, erosion is a major concern. Since mountain bikes travel more swiftly than other forms of recreation, they can have a more pronounced impact on certain animals due to the “sudden encounter” effect (Chernoff and Quinn, 2010 - cited in Bernabe et al., 2017).

Compared to hikers and runners, horses cause greater compaction of the soil and leaf litter (Dawson et al., 1974; Whittaker 1978 – cited in Bernabe et al., 2017). Horses were also found to destroy 8 times as much cover and created an order of magnitude more bare ground than hikers (Nagy and Scotter, 1974 - cited in Jordan, 2000). Additionally, horse manure can be a dispersal mechanism for exotic species in nature preserves (Benninger, 1989 - cited in Jordan, 2000).

IS/MND at 69. Despite these findings, the IS/MND’s cursory discussion of equestrian impacts concluded that equestrian usage is low enough as to not require any specific mitigation. IS/MND at 97. It failed to

consider that heavy animals with ironclad hoofs can do irreparable damage to plants, in this case, special-status plants in a sensitive serpentine plant community. It failed to consider the fact that horse manure is especially detrimental to native vegetation in serpentine plant communities. Plants in these communities evolved without nutritional soils, and manure as a fertilizer is highly undesirable both for this reason and because it spreads non-native seeds that thrive in fertilized soil. Furthermore, some horses will not walk on wooden bridges and may consequently go through creeks and wetlands, depositing nitrogen-rich manure.

Like equestrians, the tires of cyclists riding into the project area from other parts of the County are likely to bring in seeds of invasive plants such as broom.

The District addressed mountain bike impacts by expressing doubt that completion of the project would increase usage by mountain bikes with all attendant impacts. It noted that its motion-sensor cameras, erected in 2018, counted an average daily use of only 2.4 cyclists for the Azalea Hill Trail and 3.1 for the Liberty Gulch route. However, the cameras also recorded as many as 55.2 daily riders on a route going around the golf course known as the Meadow Club and 49.5 on Pine Mountain Road. But publicity about the project issued by the Marin County Bicycle Coalition enthusiastically promotes the project on the ground that it “provides a safe alternative to the current bike route around the golf course and up Bolinas-Fairfax Road on a 1.3 mile stretch of windy road with no shoulder.”

<http://www.marinbike.org/news/offroad/comments-needed-today-on-azalea-hill-ceqa-document/>. It is thus reasonable to expect that many of the riders that currently use the Meadow Club will switch to the Liberty Gulch Road to access the Pine Mountain area, once it is adopted.

The only mitigation for equestrian and cycling impacts on plants are the general mitigation measures called for in the RTMP, MM BIO-1, 2 and 10 and MM REC 1 through 4. These include rangers patrolling the area on a regular basis to monitor trail conditions and enforce regulations, calming features to slow cyclists, the placement of logs or rocks to demark the tread margins and prevent users from going outside these margins, surveys by a botanist to identify habitat degradation or the invasion of weeds (after the fact) and adaptive management of problem areas. IS/MND at 3-4, 109.

Despite the measures called for by the District, we submit that the record as a whole includes substantial evidence that over time, such actions will prove inadequate to prevent significant impacts to the pristine serpentine habitats and associated rare plants and plant communities along the Liberty Gulch route. Accordingly, CEQA requires the District to prepare an EIR.

### **B. The Liberty Gulch Road Proposal Is Ill-Advised**

CEQA aside, CNPS opposes the proposed upgrade of the Liberty Gulch trail. The route crosses serpentine areas and supports several special status plants such as bristly jewelflower, serpentine reedgrass, Oakland star tulip, Mt. Tamalpais thistle, Tiburon buckwheat and Marin western flax.

CNPS-11 In addition to providing habitat for many listed and special status species, the Liberty Gulch route supports many uncommon species that are not rare enough for recognition with a special status but are nevertheless deserving of protection. Examples of such are yellow mariposa lily, stream orchid, variable linanthus, western ladies tresses and California Indian pink.

CNPS-12 As discussed above, the newly-public trail would cut through a largely pristine area that currently experiences little human usage. That alone will have negative environmental consequences for wildlife and vegetation, including trail widening, invasive plants, chronic erosion, habitat fragmentation, and outright removal of sensitive plant habitats, including serpentine areas, creeks and seeps, all as recognized in the Road and Trails Management Plan and its accompanying FEIR. RTMP at 2.6. The IS/MND invoked the avoidance of these impacts as reasons to implement the Azalea Hill portion of the project but then disregards or minimizes these very same impacts in its proposal to construct the Liberty Gulch road.

All of these acknowledged impacts can be expected to occur as a result of the increased usage on both Azalea Hill and Liberty Gulch trails. While the addition of Mitigation Measure BIO-10 is beneficial, the specified steps do not and cannot prevent the impacts discussed in the RTMP—that is, long term sedimentation and erosion, fragmentation of habitat, increased human visitation to what is now a seldom-visited area.

CNPS-13 A weighty justification or pressing need for the project is plainly needed to override its numerous negative consequences. According to the IS/MND, the proposed new Liberty Gulch Trail is needed to provide a less steep alternative for cyclists and others to travel from the Bullfrog Road and lake area to the Fairfax-Bolinas Road and Pine Mountain Road. As noted above, this alternative is a priority for the Marin County Bicycle Coalition and is being actively promoted by it.  
<http://www.marinbike.org/news/offroad/comments-needed-today-on-azalea-hill-ceqa-document/>.

While we acknowledge the desires of the cycling community, in our view, they can and should be accommodated outside serpentine areas and places rich in rare and sensitive native plants.<sup>4</sup>

Conversely, removing this component of the project (while proceeding with the measures for reducing sedimentation) would significantly mitigate the impacts associated with increased usage on Azalea Hill.

**C. The Road and Trail Management Plan should not be amended to allow adoption of Liberty Gulch road.**

CNPS-14 The proposal to amend the Road and Trail Plan does not comport with the Plan itself. It violates the Plan’s conservative approach to adopting new routes to increase connectivity. RTMP at 2.8. No non-system roads were adopted when the Plan was first approved and, indeed, the Plan calls for

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2. For example, it might be feasible to realign portions of Azalea Hill Road, a Class VI Azalea Hill Road that already provides the desired connection between Bullfrog Road and Pine Mountain, so as to largely avoid serpentine habitats. This would entail connecting the eastern third of Azalea Hill Road (which lies outside serpentine) to the western end at Bolinas-Fairfax Road by traversing a more northerly route around the circuitous, steep, serpentine-rich portion it currently crosses. See Biological Evaluation Report, Figure2 at p. 10.

CNPS-14 decommissioning of abandoned roads like the Liberty Gulch route. RTMP at 2.8-9. The Liberty Gulch proposal is also contrary to the Plan's stated policy to avoid adopting trails in serpentine areas and rare plant habitats. RTMP at 2.8-9.

CNPS-15 In short, CNPS believes that the recreational benefit to be gained from the Liberty Gulch proposal is insufficient to outweigh the environmental costs and urges the District to consider alternative routes through less botanically important areas.

Thank you for your attention. CNPS appreciates the opportunity to comment.



Carolyn K. Longstreth, Director

Eva Buxton, Conservation Chair

Marin Chapter of the California Native Plant Society

## Linda Novy (Marin Conservation League)

**From:** MCL [REDACTED]  
**Sent:** Thursday, November 08, 2018 3:56 PM  
**To:** Azalea Hill  
**Subject:** Comments on proposed Mitigated Negative Declaration, Azalea Hill  
**Attachments:** adv\_MCL\_AzaleaHillTrails\_IS\_MND\_comments\_11.08.2018.pdf



November 8, 2018

Marin Municipal Water District

220 Nellen Avenue

Corte Madera, CA 94925

Attention: Aaron Fulton

Subject: Proposed Mitigated Negative Declaration for Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan for the Restoration of Azalea Hill

Dear Mr. Fulton:

Marin Conservation League appreciates the opportunity to offers the following comments on the subject IS/MND. We understand that the 2005 "Mt. Tamalpais Watershed Road and Trail Management Plan" (RTMP) lays out the District's entire road and trail system and details many erosion control projects. Although the RTMP did mention improving the hiker-horse trail on Azalea Hill, it did not anticipate that the long-abandoned Liberty Gulch Road might be adopted and improved as a multi-use route. Nor did it anticipate the extensive decommissioning of social trails that cross the hill. Therefore it is necessary to amend that plan and prepare an Initial Study and Mitigated Negative Declaration.

### Adequacy of IS/MND

As a general commentary, MCL believes that the Marin Municipal Water District (“district”) has fulfilled the legal requirements of CEQA by recirculating the IS/MND in response to criticisms and comments received on the 2017 draft. The recirculated document provides new information (plant surveys) that was not available in October 2017. It augments the 2017 draft by identifying the potential long-term impacts of visitor use of the proposed project, a topic that was wholly missing from the earlier document. And it presents more fully described measures that are intended to mitigate significant impacts.

**Notwithstanding the general adequacy of the CEQA document, MCL believes that the proposed mitigation measures, as written, will not mitigate significant impacts to a less than significant level without further clarification and strengthening. Our recommendations are explained below. We request that conditions placed on the project reflect these recommendations.**

### Basis for MCL’s concerns

The project proposes several actions that, taken together, attempt to trade-off benefits of (1) removing existing impacts (erosion, sedimentation) and restoring habitat (decommissioning and revegetating non-system social trails), and the significant impacts of (2) improving and opening up the long-abandoned Liberty Gulch route to intensified recreational use in areas of known populations of rare and sensitive plants.

This latter component of the project contradicts the District’s own Road and Trail Management Plan, which states the following:

“Roads and trails can have many undesirable effects on the environment. They can increase the number of visitors and intensify human use in seldom-visited areas. They can provide migration routes for non-native invasive plants into previously un-infested areas and facilitate the spread of Sudden Oak Death syndrome. They can fragment habitats (in some cases environmentally sensitive habitats) by creating migration or foraging barriers to some wildlife. They can physically remove habitat or a portion of it. Moreover, construction of roads and trails can disturb or destroy, directly or indirectly, plants or animals that are legally protected. Wetland areas, riparian areas, serpentine soils (which are fragile, erodible soils that can contain a host of endemic, rare and endangered species of plants), and active nesting or roosting areas, are all sensitive habitats that require protection in one form or another. Furthermore, *an increase in the density and amount of human presence in previously untrammelled or seldom visited areas leads to an increase in the severity of effects and a proliferation of additional effects.*” (Emphasis added)

Another section of the RTMP states that

“ . . . if (a) route went through serpentine areas that may support rare and endangered plants, or went too close to a known sensitive breeding or roosting area, the District would not adopt it.”

**Clarification and strengthening of mitigation measures**

To justify the tradeoff and minimize significant impacts raised particularly by the Liberty Gulch component of the project, effective mitigation measures are key! The recirculated MND lists mitigation measures which, if clarified, strengthened, properly implemented, and monitored over time, could avoid, or at least reduce impacts to a less than significant level, to populations of rare and sensitive plant populations. MCL comments also address several Recreation impacts.

The following mitigation measures need to be modified as shown:

MCL-1 | **Mitigation Measure BIO-1.** We appreciate that all Marin western flax will be avoided, but question the basis for ranking as “low sensitivity” some special status species considered (by whom?) to be more common in the project vicinity and/or resilient to disturbance (e.g., serpentine reed grass, Mt. Tamalpais manzanita, Mt. Tamalpais lessingia, Tiburon buckwheat, Oakland star tulip). We disagree that these species are of “low sensitivity” such that they would receive a lesser degree of protection. See the next bullet.

MCL-2 | **Supplement to Mitigation Measure 3.2-B.2** in the RTMP FEIR states that If avoidance is not practicable, and *if the plant(s) do not have a low sensitivity rating and are not common in the project vicinity and/or resilient to disturbance (as determined by a district botanist)* (emphasis added), then a rare plant mitigation and monitoring plan shall be designed and implemented.” This appears to avoid granting long term protection and monitoring of serpentine reed grass, Mt. Tamalpais manzanita, Mt. Tamalpais lessingia, Tiburon buckwheat, Oakland star tulip by not including them in the “rare plant mitigation and monitoring plan.” These species should be included in the plan, subject to performance standards detailed in item e., in the mitigation measure.

MCL-3 | As a further commentary on this mitigation measure, we question the efficacy of the proposed “rare plant plan” that attempts to re-establish populations of rare plants in other locations. We accept the standard of 2-year success, provided the 5-year monitoring protocol promised in BIO-11 is followed and a finding of non-success (of the new population) within three-year time frame will result in applying contingency measures and monitoring continues for *whatever* time period it takes to reach the 2-year success standard.

MCL-4 | **Mitigation Measure BIO-2.** The district or district’s contractor shall protect special status plant species from incidental harm due to construction equipment and spread of weeds by implementing the following. This appears to be the only mitigation measure that addresses the widely recognized impact of spread of weeds in new road and trail construction, and here, only to protect special status plant species. This mitigation measure should apply to all native habitats throughout the project area, not just those with special status species. Where any new or improved portion of road or trail that exposes disturbed or new soil to the treat of invasion by weed, this multi-faceted measure should apply.



**Mitigation Measure BIO-10** “. . .active and adaptive management measures are needed to ensure the routes perform as designed and that they would not have a substantial adverse impact on biological resources.” The district has experienced several years of successful use of adaptive management techniques to control undesirable road and trail use through its “Project Restore” program. MCL is relying on the past success of the Project Restore program’s multi-disciplinary management approach, detailed under BIO-10, to serve in effectively decommissioning 4.4 miles of social trails and correcting numerous other sources of erosion and sedimentation along the Liberty Gulch route, as well as preventing incursion into sensitive plant populations as detailed in the IS/MND.

**Mitigation Measure BIO-10**, one bullet point under this measure states the following: “At locations where the trail borders sensitive biological resources (e.g., rare plant populations, wetlands), design features (e.g., logs, rocks) will be used where appropriate to clearly demarcate the tread margins and discourage encroaching into adjacent vegetation.” The IS/MND gives more explicit examples:

- “. . .strategically placed rocks, small boulders, or logs and slash piles that also provide ancillary habitat or cover for small terrestrial species. Alternatively, more obvious barriers like a split-rail fencing with regulatory signage that facilitates issuing citations may also be installed. In areas prone to saturation during the winter, the surface tread would be rocked, or hardened, to protect the tread and prevent erosion. In a worst case scenario, such as a particularly wet weather period, the route could be subject to temporary closures.”

These detailed measures should be incorporated into the mitigation and monitoring plan and applied throughout the length of roads and trails to demarcate trail margins so as to *prevent* (not simply discourage) encroaching into adjacent vegetation. It is especially critical along both Liberty Gulch Road and Azalea Hill Trail wherever the routes traverse or are adjacent to rare plant populations.

BIO-10 is also essential in mitigating significant impacts on biological resources by assuring increased patrols or other monitoring measures to ensure that routes perform as designed, and by assuring that adaptive management measures *shall persist and remain in effect for as long as the routes are in use and shall be maintained at a level to protect biological resources, as necessary* (emphasis added). Note that these provisions also apply to mitigating certain impacts in the Recreation section of the IS/MND, which notes that the Project could attract more visitors to the project area and therefore potentially degrade existing recreational facilities. “Mitigation measure BIO-10 will be implemented to track and control potential user impacts on district facilities through the implementation of edge-of-trail treatments, trail surface hardening, seasonal closures, monitoring, and enforcement.”

**Mitigation Measure BIO-11.** “Any trees larger than 8-inch DBH that are removed as part of the Proposed Project shall be replaced. The minimum ratio for tree replacement shall be 3:1 (three trees replaced for each tree removed) but shall be adjusted by the district botanist in concert with the regulatory agencies to re-establish the structure and function of existing landscapes). Areas disturbed by construction will be monitored and adaptively managed to ensure revegetation for a period of five years.” We agree that judgment of the district biologist will be

MCL-6

needed to determine replacement ratio, appropriate to species, with the objective of maintaining habitat structure and function.

MCL-7

**Mitigation Measure BIO-12.** “All areas temporarily disturbed during project construction, including areas where tree replacement is conducted, will be restored and revegetated to their *pre-disturbance* condition.” This mitigation measure sets the rather low bar (baseline) of ‘pre-disturbance balance of native vs non-native vegetation’ as the performance standard for revegetating areas disturbed by the project (“at a minimum, require that non-native species cover shall not exceed pre-disturbance non-native species cover and re-establishment of native cover to pre-disturbance levels”). We recommend raising the bar by making a determined effort to revegetate and monitor with the objective of improving native habitat!

The Recreation section of the IS/MND notes that significant impacts could result from increased use of recreational facilities, and from expansion and/or construction of new facilities. **Mitigation Measure REC-2, in conjunction with BIO-10,** addresses these impacts.

Without discussion of *use* of the proposed Liberty Gulch Road or the Azalea Hill Trail or identification of use as a source of potential impacts, the section includes two important mitigation measures that address operational impacts. They are quoted here to emphasize their importance:

MCL-8

- **Mitigation Measure REC-3.** On Liberty Gulch Road, speed calming features (e.g. signs, changes in elevation such as earthen speed bumps, lane narrowing, diagonal diverters using local logs or rocks, etc.) to reduce the downhill speed of bicyclists shall be constructed. To discourage cycling on the Azalea Hill Trail, bicycle deterrence elements (e.g. signs, abrupt changes in elevation that are difficult to roll over, horse friendly diverters or step-overs using local logs or rocks, etc.) shall be constructed. The effectiveness of these features shall be monitored to ensure they perform as designed in accordance with Mitigation Measures BIO-10 and REC-2.
- **Mitigation Measure REC-4.** The District shall conduct focused patrols at Azalea Hill, similar to those it conducts for Project Restore, and document its patrol and enforcement activity in the Azalea Hill area and prepare a report on its findings after five years. **(MCL requests that such findings be available to the public on an annual basis.)** The number of focused patrols shall be determined based on the illegal activity discovered or reported (the schedule of such patrols need to remain confidential). Findings of illegal activity, including failure to abide by permitted use on a route, failure to comply with speed limits, including when passing, and failure to keep out of closed areas, shall trigger corrective actions as described in Mitigation Measure BIO-10. These efforts shall continue until the desired outcome, compliance with District regulations preventing illegal activities, is achieved.”

Finally, MCL is relying on the District’s past record in applying adaptive management approaches, coupled with focused patrol, monitoring, and enforcement. With diligent application of these mitigation approaches over the long term, the significant impacts of the project can be mitigated and the environmental goals of the Azalea Hill restoration project be realized.

Thank you for the opportunity to comment.

Sincerely,

Linda Novy

President

Nona Dennis

Parks and Open Space Committee Chair

[Marin Conservation League](#)



San Rafael, CA 94903

415-485-6257



**Mike Painter (Californians for Western Wilderness)**

**From:** Californians for Western Wilderness [REDACTED]  
**Sent:** Friday, November 09, 2018 1:54 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill/Liberty Gulch Road Project  
**Attachments:** MMWD LH 110918.pdf

Hi Mr. Fulton —

Attached please find comments from Californians for Western Wilderness on MMWD’s proposed Azalea Hill/Liberty Gulch Road Project.

Thanks,

Mike Painter, Coordinator

=====  
Californians for Western Wilderness  
P.O. Box 210474  
San Francisco, CA 94121-0474  
[REDACTED]  
[info@caluwild.org](mailto:info@caluwild.org)  
<http://www.caluwild.org>  
=====

# Californians for Western Wilderness

A project of Resource Renewal Institute



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e-mail:  
info@caluwild.org

November 9, 2018

Mr. Aaron Fulton  
Marin Municipal Water District

via email: azaleahill@marinwater.org

## Comments by Californians for Western Wilderness on the Azalea Hill/Liberty Gulch Road Project, IS/MND

Dear Mr. Fulton:

I am writing on behalf of the more than 885 members and supporters of Californians for Western Wilderness (CalUWild), a citizens organization dedicated to encouraging and facilitating participation in legislative and administrative actions affecting wilderness and other public lands in the West. Our members use and enjoy the public lands in California and all over the West. Many of our members live in Marin County, and I grew up there myself, frequently exploring the Marin Municipal Water District (MMWD) watershed. I often visit the watershed with family and friends even now.

We appreciate this opportunity to comment on the Azalea Hill/Liberty Gulch Road Project.

We object to the project included in the overall proposal to create a small vehicle road along the old Liberty Gulch Trail. MMWD's own Biodiversity Plan states:

*Liberty Gulch Trail, which used to be a road, has not been maintained since Alpine Dam was raised. Its stream crossings have failed and are causing streams to divert down the old roadbed and deliver sediment to the reservoir. It is recommended that Liberty Gulch Trail be decommissioned and all of its unstable fills and stream crossings be removed.*

There are no circumstances that have changed since the Plan was developed that would justify abandoning that proposal and instead constructing a new road. In fact, the stated benefit of providing a legal trail for mountain bikers instead of the illegal ones now on Azalea Hill is substantially outweighed by several factors.

— The proposed route crosses numerous serpentine areas, known to provide habitat for rare plants. Relocating plant populations is not an adequate mitigation response.

— Roads are known to fragment habitat. The Liberty Gulch Road will do exactly that, to a large unfragmented area.

CWW-1

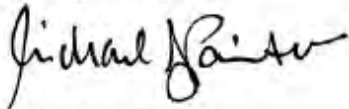
— There is no adequate mitigation possible for habitat fragmentation.

CWW-2

MMWD should prepare a full Environmental Impact Report on the project, rather than its proposed Mitigation Negative Declaration, because the mitigation proposals are simply unlikely to be sufficient.

Thank you for the opportunity to comment. Please inform us of your decision in this matter and please also inform us of further opportunities to be involved in your public decision-making processes.

Respectfully submitted,



Michael J. Painter  
Coordinator

**Barbara Salzman (Marin Audubon Society)**

**From:** Barbara [REDACTED]  
**Sent:** Friday, November 09, 2018 4:21 PM  
**To:** Azalea Hill  
**Subject:** Fwd: Fwd: MAS comment letter  
**Attachments:** Azalea Jill Neg Dec.pdf

Hi Aaron,

Here is our letter

Barbara



# Marin Audubon Society

P.O. Box 599 | MILL VALLEY, CA 94942-0599 | MARINAUDUBON.ORG

November 9, 2018

[azaleahill@marinwater.com](mailto:azaleahill@marinwater.com)

Aaron Fuller, Associate Civil Engineer  
Marin Municipal Water District

Re: Comments on Azalea Hill/Liberty Gulch Road Project

Dear Mr. Fuller:


The Marin Audubon Society recommends that an Environmental Impact Report be prepared for the Azalea Hill project, with a particular focus on the Liberty Gulch Road segment. The project has the potential to cause or result in significant adverse impacts due to locating the road through a large area of undisturbed and rare vegetative habitat. At minimum the following issues should be addressed:

MAS-1

- biological impacts due to location of the road through rare serpentine habitat
- adverse impacts to special status plants and the adequacy of proposed mitigation measures
- potential for ongoing habitat loss due to post-construction use of the project site
- erosion and trampling of rare plant communities due to off-trail use post-construction
- potential wildlife impacts due to invading a remote area. A wildlife survey should be conducted.
- project compliance of the project with MMWD policies

Thank you for addressing our recommendation.

Sincerely,

  
Barbara Salzman, Co-chair  
Conservation Committee

  
Phil Peterson, Co-chair  
Conservation Committee



## Individuals

### Ann Adams

**From:** Ann Adams [REDACTED]  
**Sent:** Thursday, November 08, 2018 12:47 PM  
**To:** Azalea Hill  
**Subject:** Fwd: Azalea hill

Dear Aaron,

AA-1

Please let common sense prevail... much of the Azalea Hill habitat area is 'an unfragmented area'... a wonderful gift to further study and protect.

Please do NOT 'decommission' this area for more public access. It will truly get spoiled as so many other stressed and easily accessible areas have to 'the uninformed public'.

Thank you for listening to my concerns.

Ann C.Adams. (Mother, nature appreciator, hiker, dog owner, horseback rider & cyclist)

## Chris Anderl

**From:** Chris Anderl [REDACTED]  
**Sent:** Wednesday, November 07, 2018 1:54 PM  
**To:** Azalea Hill  
**Subject:** I am opposed to your plan and will back lawsuits by CNPS and others to STOP IT

I support the CNPS position below and will happily support legal action to protect the lands and biomes MMWD has historically and apparently continues to mismanage.

Your plan shows little regard for biological science and reason, particularly with regard to protecting native, rare plants and soils.

MMWD clearly is unable to even MANAGE NON-NATIVE INVASIVES LIKE BROOM, so I have real doubts (based on experience, science, reason)

That you, they, can do as they are charged by law with: PROTECT OUR NATURAL RESOURCES FROM FURTHER DEGRADATION.

- CA-1 | • The Liberty Gulch road will fragment a large pristine area, contrary to standards set forth in the Road and Trail Management Plan. Habitat fragmentation cannot be adequately mitigated, therefore, the road proposal should be dropped.
- CA-2 | • The route crosses many areas of serpentine that support numerous rare plants. Mountain bikers and equestrians should be routed to less sensitive areas.
- CA-3 | • Mitigation and monitoring plans should be prepared for all special status plant species, not just the select species currently chosen by the District.
- CA-4 | • The suggestion of relocating rare plants is unreasonable. The standard for successful relocation of annual and perennial plants is far too low: one population within 3 years.
- CA-5 | • An Environmental Impact Report should be prepared because the mitigation measures proposed in the Initial Study/Mitigated Negative Declaration will prove inadequate over the long term.

CHRIS ANDERL, M.A., PH.D

## David Broome

**From:** David Broome [REDACTED]  
**Sent:** Monday, November 05, 2018 8:25 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill trail proposal

Good Morning Aaron,

I'm 54 years old with a family and I'm a long-time resident of San Anselmo. My family has been hiking and biking within the MMWD lands for many years. Over the past 15 or so years, I've watched other land managers (ie. State and County) that surround the MMWD land evolve with their access policies to include other user groups including mountain bikers. It is my belief that specific trails can and should be opened to multi-use to include bikes, but not all. It makes no sense to me for MMWD to continue a long standing prohibition of mountain bikes on trails.

I'm writing you to request that you seriously consider opening a new Azalea Hill trail to multi-use to include bikes. It is one of those specific trails that could be a great option for multi-use for a broad range of legitimate reasons.

I realize there are hiker interests that wield influence over MMWD that remain unyielding in wanting to retain their exclusive trail access rights in the County.

Thank you for all of your good work and efforts. It is appreciated.

David

**Tish Brown**

**From:** Tish Brown [REDACTED]  
**Sent:** Friday, November 09, 2018 11:04 AM  
**To:** Azalea Hill  
**Subject:** opposition to present planned Liberty Gulch Rd.

Dear Sir,

TB-1 | Your current plans disturb intact native areas, contrary to the Road and Trail Management Plan. It's  
TB-2 | especially upsetting that serpentine areas will be encroached and endangered plants will be, probably,  
TB-2 | extirpated. It's not reasonable to assume that the endangered plants can be relocated. I urge you to  
TB-2 | redraw the road or trigger an EIR.

Tish Brown

## Mark Butler

**From:** Mark Butler [REDACTED]  
**Sent:** Wednesday, November 07, 2018 1:29 PM  
**To:** Azalea Hill  
**Subject:** Comments on Road Proposal at Azalea Hill

Aaron — I just became aware of the plan to disregard the standards developed for the Road and Trail Management Plan, and fragment pristine serpentine habitat at Azalea Hill. This seems rather  
MB-1 irresponsible given the significant special status plant species present, and the fact that you seem to be  
acquiescing to a special interest group who have shown no respect for the area, and have repeatedly  
and selfishly abused it. It doesn't seem a good precedent. Also troublesome is the fact that  
MB-2 knowledgeable plant scientists would understand that success relocating rare plants, as I understand is  
planned, would most likely be only marginally successful, and would likely lead to the loss of a number  
of species. The mitigation measures proposed seem inadequate, and only with an EIR can the agency  
MB-3 and the public understand the full implications of such a project. Thank you for your attention — Mark

Mark Butler

**Eva Buxton**

**From:** Eva Buxton [REDACTED]  
**Sent:** Wednesday, November 07, 2018 12:22 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Restoration project  
**Attachments:** Azalea Hill recirc amend comments nov 2018.docx

Hi Aaron,

Attached is my comment-letter regarding the above-referenced project.

Best,

Eva Buxton

Date: November 7, 2018

To: Aaron Fulton, MMWD [azaleahill@marinwater.org](mailto:azaleahill@marinwater.org)

From: Eva Buxton - Botanist; Retired Environmental Consultant

**Subject: *Recirculated* Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan, Azalea Hill Restoration Project - Initial Study/Mitigated Negative Declaration (IS/MND)**

I appreciate the opportunity to submit the following comments on the 2018 Recirculated Amendment (RA) of the Mt. Tamalpais Watershed Road and Trail Management Plan (RTMP) for the Azalea Hill Restoration Project - IS/MND. Some of the comments were submitted relating to the IS/MND released in September 2017 for the same project.

I had the opportunity to visit a portion of the project site on a fieldtrip on August 27, 2016, led by Mike Swezy and Nick Salcedo and have since walked the entire Liberty Gulch Road (LGR) and the existing Azalea Hill trail.

*Issues include the following:*

EB-1 ***---Remove approximately 4.4 miles of non-system roads and trails and restore those routes to natural conditions to improve habitat and water quality.*** Removal of these trails that crisscross the hill impacting the serpentine habitat and disrupting natural ecological functions is a desirable goal. According to the project description, the trails will be restored using mainly hand-tools to uncompact the trail tread and to scrape existing soils over the open trail surface, and revegetation would minimize erosion from these areas, saving ca. 1,702 cubic yards from entering Alpine Lake in 20 years. I commend the District for proposing to implement corrective actions, if it is determined that “the trails are not revegetating with appropriate vegetation characteristics of surrounding areas on similar soils or if non-native weeds require management.” I found that most of the trails traverse non-native grassland, dominated by rattle-snake grass (*Briza maxima*). *As the decommissioning of trails is occurring in sensitive plant communities (serpentine grassland with barrens), the concept of early detection/rapid response (ED/RR) needs to be part of the corrective action.*

EB-2 One of MMWD’s goals as a land manager is to protect natural resources (Board Policy No. 7, Mt. Tam Watershed Management Policy) in the long term. The action to decommission non-system trails on Azalea Hill may, over time, contribute to this goal. *Decommissioning the “mishmash” of trails on Azalea Hill should be independent of converting LGR to a multiuse route. If the Azalea Hill route, even with improvements, is considered too steep, an analysis*

EB-2 | *should be presented of whether or not one of the non-system trails can be preserved and modified to make it a suitable trail for bikers.*

***---Adopt and improve an approximately 1.9-mile route as an unpaved, approximately 4-foot wide, small vehicle, or multiuse route (comprised of the existing Liberty Gulch Road (LGR) (1.2 miles) and conversion of some existing non-system trails (0.7 mile) to the wider, small vehicle route.***

One of the goals of the 2005 RTMP is ‘to improve water quality and minimize sediment into the creeks and reservoirs.’ The purpose of upgrading the LGR to a multiuse route is presented as 1) the need to reduce the sediment that enters Alpine Lake and 2) to provide a connection from the lakes area to the Pine Mountain area for all visitors and for district patrol and response staff.

***---The Azalea Hill Road and Trail provide the hiking and equestrian connection over the peak of Azalea Hill between Bullfrog Road and Bolinas –Fairfax Road. As such, there is no official bicycle or vehicle connection between Bullfrog and Bolinas-Fairfax Roads (8.1 Background).***

EB-3 | It is unclear why a road for motorized emergency vehicles is necessary between Bull Frog Road and Fairfax-Bolinas Road, a relatively short distance of 1.9 miles. Hundreds of miles on the watershed and other areas of Mt. Tam lack such access. In addition, it is not clear why bicycles cannot use the same connection from Bull Frog Road and Fairfax-Bolinas Road as hikers and equestrians (projects described as “reroute of Azalea Hill Trail to a gentler, more sustainable grade” (Transportation/Traffic, ), *i.e.*, using the Azalea Hill Trail route. *Such a multiuse trail, appropriately rebuilt with switchbacks in steeper portions through non-native grassland and the oak woodland (invaded by Douglas fir), as well as appropriate “speed-calming features, e.g., changes in elevation such as earthen speed bumps, lane narrowing, diagonal diverters using logs and rocks, etc.”(p.21) and clear lines of sight to minimize negative encounters among users would appear to be feasible design and construction features.*

EB-4 | The proposed LGR multiuse route would create a connection between Alpine Lake and Pine Mountain Road, a desirable goal for mountain bikers, but it will also be open to equestrians. In 2016, Mr. Swezy informed us during the fieldtrip that “not much sediment “was presently being deposited in Alpine Lake from the LGR trail. An estimated 2,573 (?) cubic yards of sediments would run into Alpine Lake over the next 20 years, if left untreated. Are 2,573 cubic yards considered “not much sediment?” *It would seem that water reservoirs are dependent on rills and gullies for their water, and all of these features cannot be reinforced at all water district lakes, therefore a certain amount of sediment is deposited into the reservoirs every year. It is unclear whether 2,573(?) cubic yards in 20 years would be the result if no “fortifications” of ‘wetlands and other waters’ were installed and LGR was open to bikers and equestrians. A comparison of other sites where sediment deposition occurs on the watershed would be useful.*

EB-5 | Mr. Swezy also stated that 15 creek crossing, some of which were in need of repair, were present along this route, and that it may be easier to acquire funding for these repairs, if the trail is opened up to all users. During a presentation by Mr. Fulton at a MCL’s Parks and Open Space



EB-5 committee meeting in September 2018, a map with ca 33 waterway/wetland/seep crossings was shown. According to the RA, six bridges for a total length of ca. 194 feet, 22 armored crossings, a causeway, a puncheon, and a pile-supported bridge or trestle or retaining wall structure at the northern end would be constructed along LGR. (8.2, 3, Segments 1-3) (Figure 4) *Mr. Fulton stated that no foreign soil would be used. “Sites where imported gravel or other fill materials are installed or stored should be mapped and monitored to prevent the introduction of new weeds” (MM 3.2-I.2). Could “other fill materials” include soil? With such a massive project as that of constructing a 4-foot road along the shoreline, presently a narrow trail on a steep slope in places, it is difficult to imagine that no imported soils will be necessary.*

EB-6 The decommissioning of a 0.3-mile “fishing access” along the lake shore seems unwarranted in the scheme, considering the damage done by horses and bikers. *Is there an estimated amount of sediment being deposited into the lake per year from this small trail?*

The LGR (not presently a “road” but a footpath that widens in places) will be upgraded to a “Class IV, small vehicle, unpaved road” (Table 2.5, Road Classification on the Watershed, Amendment to Mt. Tam Watershed RTMP), with characteristics such as “Primary use for patrol and route connectivity; some sections only passable with small vehicles (i.e., ATV quads or small “bobcat” sized tractors). Seasonal closures may apply.” *When horses, as proposed by the project, are allowed, a “Class V, equestrian trail” [per the same road classification amendment (Table 2.6)] should be necessary with the following characteristic: “Substantial infrastructure improvements required to support use.”*

EB-7 *Clearly, substantial infrastructure improvements, including such features as a 4-foot wide road with ca. 30 bridges, rock fortifications, and other structures would “destroy” the LGR and its relatively undisturbed adjacent plant communities, including a serpentine plant community supporting rare and endangered plants. If LGR remains a footpath, and some stream crossings still need to be fortified to prevent erosion, it seems plausible that it could be done without bringing in “bobcat” sized tractors and excavators and instead using motorized wheelbarrows, as suggested for upgrading certain sections of the Azalea Hill trail to a Class VI trail. The LGR is referred to as a “multiuse route” (p. 19) and as such should include equestrians; however, there is no mention of the above-cited RTMP road classification section, i.e., a Class V equestrian trail should be necessary....” to accommodate horses.*

EB-8 A literature review by the District identified horse manure as a “dispersal mechanism for exotic species in nature preserves” (Benninger, 1989 - cited in Jordan, 2000) (RA, p. 69). It is a fact that horse manure is especially detrimental to native vegetation in serpentine plant communities. Plants in these communities evolved without nutritional soils, and manure as a fertilizer is highly undesirable both for this reason and because it spreads non-native seeds that thrive in fertilized soil. Similarly, horse manure should not be allowed to enter waterways, and with several creeks or gullies along LGR, the water quality of Alpine Lake could be impacted. The RA states that there will be no impact from horse manure to creeks and Alpine Lake, because during surveys of visitor use in 2012-13 and in 2018, substantial equestrian use was not recorded, thus, “no mitigation is required” (Hydrology/Water Quality, p. 97). - The District agrees that there will likely be an increased visitor use when the routes on Azalea Hill are completed. *It is, therefore, not prudent to suggest that because few equestrians were seen in 2012-13 and 2018, the same*

*situation will be true in the future. In addition, cumulative effects are not considered; a few horses over a long period of time are just as destructive to vegetation as several horses during a shorter period. Impacts from manure should not be deemed “negligible” (p.97) based on expectations of minimal use of the trails. If horses will be allowed on a Class IV Road, contrary to the District’s road classification, which requires a Class V Road (see above), then, at a minimum, a mitigation plan addressing the removal of horse manure should be designed and implemented. All users should be required to be good environmental stewards of the land! -- There is no mention of the detrimental effect of horse manure in a serpentine plant community.*

EB-8

Furthermore, based on the District’s research “Horses were also found to destroy 8 times as much cover and created an order of magnitude more bare ground than hikers (Nagy and Scotter, 1974 - cited in Jordan, 2000)” (RA p.69), *signage informing equestrians that horses are not allowed to leave the trail to be watered and rested should be placed at the starting points of the LGR. Heavy animals with ironclad hoofs do irreparable damage to plants, in this case, special-status plants in a sensitive serpentine plant community. Additionally, it is worth noting that some horses will not walk on wooden bridges. If that is the case, information prohibiting the equestrian from entering the LGR route should be posted.*

*Mitigation measures that include rangers patrolling the area on a regular basis to monitor trail conditions and enforce regulations, the placement of logs or rocks to clearly demark the tread margins and prevent users from going outside these margins, and surveys by a botanist to identify habitat degradation or the invasion of weeds will still not prevent the destruction, over time, of the mostly pristine LGR “corridor” resulting from construction and a multi-use route in this area.*

EB-9

## **2018 Azalea Hill Rare Plant Surveys**

The conservation of special-status plants and their habitats, as well as sensitive natural communities, is integral to maintaining biological diversity, a MMWD goal. Certain species are in danger of extinction, because their habitats have been severely reduced in acreage, are threatened with destruction or adverse modification as a result of human actions, or because they cannot withstand the competition from non-native, invasive species.

Regulatory agencies (USFWS, CDFW) and CNPS require that surveys for rare plants be conducted according to standardized guidelines. Some of the requirements in the guidelines are that botanical surveys must occur during the appropriate season, *i.e.*, when plants will be both evident and identifiable (during flowering or fruiting), and be floristic in nature. This usually involves multiple visits to the project area – in early, mid and late-season. Focused surveys are limited to habitats known to support special-status plants.

EB-10

The MMWD Addendum states that rare-plant surveys were conducted on May, 21, 22, 25, 31 and June 1, 2018. It is questionable whether these surveys were performed according to plant survey protocol. The flowering period for the annual species Marin dwarf flax (*Hesperolinon congestum*) - the only species known to occur in the area that is listed pursuant to the endangered species acts (CESA and FESA) – is from May through July, thus the surveys were not conducted

EB-10

during its entire flowering season. Survey results revealed that Marin dwarf flax is present on Azalea Hill but was not observed along LGR or its vicinity in 2018. *It is plausible that Marin dwarf flax would have been visible above ground had the survey been conducted later in its blooming cycle. Additional appropriately-timed surveys should be conducted for this species.*

*Rare and endangered plants*

***---All Marin Western flax plants will be avoided and all work will be avoided within 50 feet of the Marin Western flax population when the plant is above ground (late May-July). (MM BIO-1).***

EB-11

It is unclear why construction will stop and the flax only avoided when the plants are “above ground.” *If construction takes place at a later date, the extensive disturbance to the habitat, especially to the soils, will impact the seed-bank. Disturbance of the soil, burying the seeds at a greater depth than would occur under normal conditions, or soil compaction from heavy equipment use, would diminish, if not destroy, the seedbank, which could lead to the extirpation of the species at this location (near the top of Azalea Hill). Seeds underground are just as vulnerable to disturbance leading to extirpation as plants above ground. The District’s botanist proposes avoidance of the segment of the Azalea Hill route that goes through the population or creating other populations nearby. An undisturbed LGR corridor would be a suitable mitigation site for this species, as it harbors species commonly occurring with the flax such as on the Tiburon peninsula (Tiburon buckwheat, serpentine reedgrass) (personal observation).*

***---Avoidance and mitigation for these rare annuals are the same: avoid grading in serpentine areas, but if any grading is done stockpile and re-dress the site with topsoil from the area. Potential long-term harm may be done to these populations if the Liberty Gulch Road sees regular use, as plants could be trampled out of existence in the open serpentine as evidenced by the few rare plants seen in the bed of the existing Azalea Hill Trail, adjacent Pine Mountain Road, and heavily trafficked social trails around the Azalea Hill Summit (Memorandum p. 7).***

EB-12

Three annual species - Tiburon buckwheat (*Eriogonum luteolum* ssp. *caninum*) (May-Oct) (CRPR 1B.2), Marin County navarretia (*Navarretia rosulata*) (May-Jul) (CRPR 1B.2), and Tamalpais lessingia (*Lessingia micradenia* ssp. *micradenia*) (Jun-Oct) (CRPR 1B.2) occur in the project area. These species are considered rare and endangered throughout their ranges by CNPS. Tamalpais lessingia, Marin County navarretia, and Mt. Tamalpais manzanita (*Arctostaphylos montana* ssp. *montana*), a perennial plant, are also endemic to Mt. Tam. All these species plus Oakland star tulip (*Calochortus umbellatus*) (CRPR 4.2) and serpentine reedgrass (*Calamagrostis ophitidis*) (CRPR 4.3) are considered of “low sensitivity ranking” and “resilient to disturbance” by the District (MM BIO-1). It considers these plants common in the area, and suggests that the loss of individuals of these species would not have an adverse effect on the species. It is further stated that all these rare, soil-endemic species, which have been found along LGR, will be avoided to the extent practicable. *LGR is naturally expected to get regular use when opened up to bikers and equestrians. Avoidance in the relatively narrow LGR corridor is highly unlikely, if not impossible, during construction, considering the use of motorized equipment and the need for, e.g., staging areas and places for soil stockpiles. (See*

EB-12 below for undesirable effects of keeping stockpiled soil “wetted.”) *Therefore, plants in the LGR area “could be trampled out of existence.”*

Tiburon buckwheat was abundant and growing in serpentine barrens during my visit in 2016 to the LGR area. According to the District’s botanist, this species occurred “in the thousands over much of Azalea Hill” in the past, but in 2018 “fewer than 100 above-ground plants” were found, mostly in the LGR area. As an annual species, fluctuations in number of plants can occur from year to year depending on environmental factors; however, a ten-fold (or many more) reduction in number of individuals is cause for concern. As there will be major disturbance to the habitat along LGR, where the plants were seen in the past and would have added to the seedbank, as a result of construction and future use of a 4-foot Class IV road, it is plausible that the population of this species will become extirpated at this location. It is also plausible that the survey at the end of May in 2018 did not detect the species, the blooming period of which extends from May through October. *With the apparent drastic change in numbers of Tiburon buckwheat individuals, this rare serpentine-endemic species should no longer be considered a species of “low sensitivity ranking” and “resilience.” An appropriately-timed survey should be conducted for Tiburon buckwheat and a mitigation and monitoring plan should be developed and implemented for this rare and endangered species.*

EB-13 Marin County navarretia (CRPR List 1B.2, endemic to Mt Tam (except for some potential populations in Napa County?), is not mentioned as a “low sensitivity ranking” but instead as a “common species.” According to the 8<sup>th</sup> edition of the CNPS ‘Inventory of Rare and Endangered Plant of California’, only 15 occurrences of this species are known, most of them on the north side of Mt. Tam. Two populations along LGR and one on Azalea Hill with “a dozen individuals each” were detected during surveys, consequently, this is not a common species. *A mitigation and monitoring plan for this species should be prepared.*

Tamalpais lessingia and Mt. Tam manzanita are rare and endangered throughout their ranges and referred to as “low sensitivity” species. These two serpentine-endemic species, plus Marin County navarretia (occasional individuals on other soil types) (see above for occurrence in Napa County), grow only on and in the vicinity of Mt. Tamalpais in Marin County, thus are also narrow geographical endemics. With such a limited geographical distribution and occurrence on serpentine substrates, it seems imprudent to call these species of “low sensitivity ranking,” “resilient,” and that “complete avoidance is not necessary” (MM BIO-1). *One catastrophic event could destroy the plants and their seedbanks and result in the species becoming extinct. These species will be impacted by the project.*

Serpentine reedgrass and Tiburon buckwheat are both also deemed “low sensitivity” species, and therefore, total avoidance is not necessary. *These species will be impacted by the project and no mitigation/monitoring plan will need to be devised. (It is my experience from working on serpentine substrates on the Tiburon peninsula that the reedgrass and buckwheat are not easily reestablished in disturbed habitats.)*

Mt. Tamalpais thistle (*Cirsium hydrophilum* ssp. *vaseyi*) (CRPR 1B.2) (Jun-Sep), a serpentine-endemic wetland plant, has occurred naturally in the past along LGR, as well as in a planted population. This species was detected during surveys along LGR at the end of May/June 1 in 2018. The RA states that the hydrology has changed along LGR and suitable habitat is therefore no longer present. *With ca 33 stream banks, seeps, gullies, and wetlands along LGR, habitat might be present and the thistle could have spread naturally. Surveys should be conducted at the appropriate time for the Mt. Tamalpais thistle (June through September).*

EB-13

***---If the plants do not have low sensitivity rating and are not common in the project vicinity and/or resilient to disturbance, then, a rare-plant mitigation and monitoring plan shall be designed and implemented*** [MM BIO 3.2-B.2 (RTMP FEIR)]. In the case of the Azalea Hill restoration project, the above would refer only to Marin dwarf flax. *Because of the extreme disturbance that will occur during construction of a Class IV road in the LGR corridor through a sensitive serpentine community with rare and endangered species, and avoidance will not be practicable or possible, a mitigation and monitoring plan should be designed and implemented for other special-status species (see above).*

#### *Soils*

Approximately 1,260 cubic yards of soil are expected to be disturbed to facilitate construction of the proposed project (p.46). It can be assumed that some of this soil will be stockpiled for later use. MM 3.2-B.2 proposes that one of the elements in a mitigation plan for annual species should be to stockpile the topsoil from areas containing special-status species (only Marin dwarf flax or all?) to be used in restoration later. MM HAZ-1 states that “Areas to be graded or excavated must be kept adequately wetted to prevent visible emissions” and “Temporary storage piles containing serpentinite-derived soils must be kept adequately wetted or covered when material is not being added to or removed from the pile,” a precautionary measure as serpentine contains asbestos fibers considered carcinogenic. *By wetting the soil containing seeds, the seeds will be damaged or have germinated and be unusable for redressing the site in a later restoration effort. Thus, this method of saving the seedbank is not an option! Not wetting the soil during excavation is not an option either, so even if only “covering” and not “wetting” stockpiled soil after excavation, the soil has already been wetted and the seeds likely rendered inviable. Collecting seeds during the appropriate time would be the correct method.*

EB-14

#### *Restoration sites*

Revegetation with the rare species is proposed and monitoring surveys of the seeded or transplanted areas will be conducted for a minimum of two years. If desired results have not been reached in three years, contingency measures will be implemented which may include ...altering or implementing a weed control regime. It is stated that weeding will occur “as needed” (MM 3.2-B2), which may refer to ED/RR. *If not, this method should apply from year one as part of a mitigation plan.* It is commendable that “weed populations in and adjacent to project sites will be treated prior to any soil disturbing activities to minimize the seed dispersal of those plants” and that “Monitoring and/or treatment of these sites shall occur quarterly, or until it has been determined that there is no longer a risk of an unintentional release of an invasive,

EB-15

EB-15 exotic species” (MM 3.2-I.1 and I.3). *It appears that this refers to construction activities only. No mitigation measures have been identified that would reduce impacts from invasive species in perpetuity, as a result of use by bikers and equestrians. - Furthermore, an explanation is needed of how a ratio of  $x$  number of impacted sites to one restoration site was determined. Usually, the reverse of this restoration ratio is required.*

### Alternative project

EB-16 --- ***Improve the existing approximately 1.1-mile hiking and horse route over Azalea Hill to correct its erosion problems and make it more sustainable (8.2, 4).*** In view of the above, it is disconcerting that “improvement” of LGR, *i.e.*, opening it up to mountain bikers and equestrians, is recommended, when there is an existing route, the Azalea Hill Trail (partly a road), which could be made suitable for hikers, bikers, and equestrians, and serve as a connection between Pine Mountain Road and Bull Frog Road. It has come to my attention that most bikers are not interested in the LGR connection and would be satisfied with an improved Azalea Hill Trail/Road as a connecting route, if the route was made less steep. *With repairs, necessary realignments, and some newly constructed sections, including switchbacks, avoiding the serpentine area mid-slope on Azalea Hill, such a multi-purpose trail could serve all users wanting a connection between the two roads. It appears that this trail should be the focus of the Azalea Hill Restoration Plan (except for the parking lot area) and where recommendations, such as those outlined for LGR, should be implemented: “...speed calming features (i.e. changes in elevation such as earthen speed bumps, lane narrowing, diagonal diverters using local logs or rocks, etc.), passing opportunities, lines of sight and horse-friendly tread surfaces” (8.2, 3) to make it safe for all users.*

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### Concluding remarks

EB-17 The IS/MND lacks an assessment of potential impacts, except to Marin dwarf flax, to all special-status species found during the surveys (MMWD Memorandum). As avoidance is not possible if the present “foot-path” along the LGR corridor is developed into a Class IV road, a thorough discussion is lacking of 1) the significance of the rare plants in the project area considering the total range/distribution of the species, 2) the significance of the fact that sections of the LGR corridor is one of the most pristine serpentine communities on Mt. Tam, and 3) the significance of project-related direct, indirect and cumulative impacts, including non-native species that will spread into undisturbed land outside of a constructed road, as has been the case throughout Mt. Tam over several decades. - Wetting or “watering” the soil before disturbance and keeping it wetted, are not options, as described above, to preserve seeds in the seedbank for future reintroductions in restoration projects.

EB-18 It is unclear how the decision was made that the special-status species considered in the document are of “low sensitivity ranking” besides considering them “common.” Most rare plants are common, *i.e.*, occur in large or relatively large populations, where they occur. Rarity or endangerment refers to the number of populations of a species or its geographical range or its

EB-18 requirement of a certain rare soil type – all factors applicable to the plants occurring on Azalea Hill.

EB-19 It appears that rare-plant surveys in 2018 were not done according to agency and CNPS protocols. (There have been previous surveys of the area.) The blooming period for Marin dwarf flax is from May through July. (Surveys are valid for one year.) Surveys did not extend through the blooming period of this federal and State-listed species, nor for other special-status species known to occur, or with a potential to occur within the project area. In my opinion, the habitat along LGR, supporting other annual serpentine endemics frequently associated with Marin dwarf flax, including Tiburon buckwheat and serpentine reedgrass (occurring on County and Town-owned properties on the Tiburon peninsula), likely supports the flax during favorable environmental conditions. An additional survey, which should also include at least Tiburon buckwheat, whose population drastically shrunk in 2018, should be conducted. This could be done during pre-construction surveys, if they coincide with the most likely blooming period of the species. In addition to mitigating for Marin dwarf flax, mitigation and monitoring plans for at least Tiburon buckwheat and Marin County navarretia should be developed and implemented.

EB-20 Portions of the LGR area is a nearly pristine serpentine plant community. Such a community supporting rare and endangered, endemic plant species, should be protected according to the District’s own policies stating “Protection of water quality is the overriding goal...Protecting the integrity of the watershed’s quality and reservoir capacity is best achieved by maintaining natural conditions on watershed lands to the greatest extent possible. .... control over land uses focuses on retaining land in their natural condition, allowing them to return to a natural condition, or actively restoring them. No activities will be allowed that jeopardize this resource.” (Board Policy No. 7, Mt. Tam Watershed Management Policy, BFFIP 2016). Making LGR a multi-purpose route contradicts this policy. As discussed above, the need to repair certain waterway crossings to prevent some sediment deposition from the LGR area (in 2016 not a serious problem, according to Mr. Swezy), can be done without creating a Class IV road. The need for emergency vehicle access within a 1.9-mile route does not appear to be a valid reason.

EB-21 It is well-known that it is very difficult to restore a native plant community, especially one that harbors rare and endangered species, due, in part, to the potential dearth of propagules. Two of the goals, as outlined in the BFFIP (2016) (MA#25), are the “re-introduction to MMWD lands of at least seven historical populations of special-status species and modification of at least four habitats for the species’ benefit,” indicating that the District wishes to protect and preserve its sensitive natural resources. Therefore, it does not seem sensible to destroy such plants and sensitive plant community in an area, where they are presently thriving naturally, such as along LGR and its vicinity!

EB-22 A thorough analysis of an alternative of developing an already existing route, the Azalea Hill Trail, into a multiuse trail for hikers, bikers and equestrians, and a persuasive justification for making the LGR into a multiuse route should be presented. It has come to my attention that mountain bikers would find the route over Azalea Hill acceptable, if it was made less steep. The Class VI road/multiuse route would also mitigate for the elimination of many miles of non-system trails on Azalea Hill. The existing Azalea Hill route with some reroutes and modifications, including switchbacks, should be a preferred alternative. - Furthermore, there is

EB-22 no explanation as to why one of the non-system trails to be decommissioned cannot be preserved and modified to make it suitable for bikers. It seems that at least one of these trails would be acceptable to these users, as it has become a social trail. (It is unclear if the social trails are only created by hikers.) An analysis of such a potentially suitable trail should be presented. Either of these options (Azalea Hill route or a modified social trail) would save the LGR corridor from destruction. - The RA (p. 19) states that the “network of non-system trails, some of which pass through sensitive serpentine and stream habitats, continue to have undesirable effects such as habitat fragmentation, disruption to wildlife movements, erosion ...” and the “Removal of this network of non-system trails would minimize these impacts and help restore many areas of Azalea Hill.” The same effects (impacts) as those outlined would pertain to the LGR corridor, except the latter is a nearly pristine area and would not be a restoration site with associated implementation problems.

EB-23 No environmental protection measures as outlined in RTMP (Chapter 3), or adaptive management actions, including best management practices (BMPs) will reduce to a less than significant level the impacts from construction and future use of a Class IV road in the LGR area, partly a pristine serpentine plant community, supporting several rare and endangered species, and other uncommon, serpentine-endemic plants. Avoidance of these species is not possible during construction, and the use by bikers and equestrians in the future will threaten/impact the sensitive resources presently existing. Construction of a new trail into previously undisturbed land, which invariably results in the introduction and spread of invasive weeds, is not justified, as there are existing routes, which, with modifications, could be made acceptable to all users, including mountain bikers. - Expectation of impacts outlined in the RA with even minimal use of the new route, are described as follows: “increased low-intensity recreational use of the trails would result in trampling of plants and wildlife, soil compaction, erosion, disturbance to wildlife (due to noise and motion), pollution, nutrient loading, and introduction of non-native invasive plant species” (MM BIO-9, p. 68). With expected increase in use (p. 109), and likely not of “low-intensity”, these impacts cannot be mitigated to a less than significant level.

This project has the potential to eliminate or severely impact a plant community and reduce the number, or restrict the range of rare and endangered plants considered mandatory findings of significance (CEQA Environmental Checklist). Unless the District eliminates the LGR portion, I find that the proposed Azalea Hill Restoration project will have a significant effect on the environment, including special-status species that cannot be mitigated and, therefore, an Environmental Impact Report (CEQA Guidelines Section 15073.5) should be prepared.

Thank you for the opportunity to comment on the Recirculated Amendment to the RTMP regarding the Azalea Hill Restoration project.

Eva Buxton  
Botanist  
Retired Environmental Consultant



## Basia Crane

**From:** Basia Crane [REDACTED]  
**Sent:** Friday, October 26, 2018 11:02 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Project

Dear Mr. Fulton,

In response to and in anticipation of sending in a comment on MMWD's issuance of *IS/Mitigated Negative Declaration for the Restoration of Azalea Hill*, I have a few questions that I would like to please get some clarification on, to better help me comment intelligently (especially because I have enjoyed the watershed my entire life).

On page 107 of the IS/MND it states:

*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?*

The IS/MND also refers to the work as "adopting and converting" existing roads such as Azalea Hill road, to provide additional routes for all users "with the primary goal of improving connectivity."

BC-1 | Also, what is referred to as Azalea Hill road appears to be a misnomer. As far as I can tell, this is merely a hiking trail, not a road. Is this simply the historical name given to the trail or does MMWD consider this a road?

The IS/MND also makes numerous references to the 2005 Mt. Tam RTMP and its EIR. On page 2.13 of that document it states.

*A few roads will be converted to trails. Azalea Hill Rd. will be converted to a trail, mainly to keep cyclists from continuing beyond the road and down onto the trail, or worse, creating new trails that damage the environment and stress limited enforcement resources. [Emphasis added]*

The IS/MND also talks about the need to create a new bicycle connecting route through the conversion of Azalea Hill Road. This infers that bicycles are already using this route, but illegally.

On page 20, it states:

*Azalea Hill is identified in Chapter 2 of the RTMP as an area proposed for changes. Azalea Hill Road is proposed to be converted to a trail, mainly to keep cyclists from continuing beyond the road and creating new trails that damage the environment and stress limited enforcement resources. In addition to being a*

*dead end, other undesirable characteristics include the steepness of the trail, the presence of special status plant species, and erosivity of serpentine soils. The RTMP proposed to reroute the Azalea Hill Trail to avoid steep and gullied areas, erosive serpentine soils, and sensitive habitats and convert the route to a Class VI (hiking and equestrian) trail. [Emphasis added]*

BC-2 | What I am unsure about after reading all the documents (the Oct. 2008 IS/MND, the 2005 RTMP and the 2005 Final Program EIR) is whether or not bicycles have ever been an approved use on any part of the existing Azalea Hill road / trail that will be completed and converted?

I ask this because on page 11 of the IS/MND, it states:

*The Azalea Hill Road and Trail provide the hiking and equestrian connection over the peak of Azalea Hill between Bullfrog Road and Bolinas-Fairfax Road. As such, there is no official bicycle or vehicle connection between Bullfrog and Bolinas-Fairfax Roads (Figure 2)." [Emphasis added]*

This says that introducing bicycles to this route, once the Azalea Hill Road conversion is completed, will be a new use.

BC-3 | So, can you please clarify for me whether or not bicycles are presently allowed as a use on the Azalea Hill Road or the other sections of the area that will become part of the Azalea Hill Road conversion? If so, can you please point me to information regarding how and when and by whom use by bicycles was approved?

Thanking you in advance for your assistance and understanding my request for a speedy response. Since the end of the public comment period is near, on November 9<sup>th</sup>, time is of the essence.

Basia Crane

**From:** Azalea Hill  
**Sent:** Monday, October 29, 2018 3:25 PM  
**To:** 'Basia Crane'  
**Subject:** RE: Azalea Hill Project

Greetings Basia,

Thanks so much for your interest in the Azalea Hill Restoration Project. I can definitely provide some clarification/context for the questions you've posited below. In the event my answers don't clear things up don't hesitate to reach out to me for a conversation at the number below.

- a) The current system route over Azalea Hill is composed of two separate segments; what's historically been called the Azalea Hill road and Azalea Hill Trail. The 2005 Road and Trail Management Plan (RTMP) identified the first 0.3 mile segment from the parking lot to the top of Azalea Hill as the Azalea Hill road and the remaining segment down to Bullfrog road as the Azalea Hill trail. The descriptions in the IS/MND, and in this email, follow that convention.
- b) You are correct in that the Azalea Hill road is more akin to a hiking trail than a road as it climbs away from the Azalea Hill parking lot. As you've pointed out, the RTMP proposed that the Azalea Hill road be converted from a road (which could support bicycle use) to a trail (which would only support hiking and equestrian use). The primary goal of that conversion was to keep bicycles from venturing up Azalea Hill road so they wouldn't be tempted to continue down to Bullfrog road via the Azalea Hill trail and damage sensitive resources. Consistent with the RTMP the district has since managed Azalea Hill road as a trail (we have not widened it to our design standard for roads). The proposed project would not diverge from the management approach of hiking and equestrian-only use over the top of Azalea Hill outlined in the RTMP and associated EIR. Instead, it would merely formalize this route, adopt some non-system segments to avoid impacting sensitive resources, and decommission 4.4 miles of social trails. Furthermore, the route over Azalea Hill was never "approved" for bicycle use subsequent to the RTMP. Section 4 on page 23 of the IS/MND specifically describes what's proposed for Segment 4, 5, & 6 of the project (see attached graphic). You'll notice it is labeled with a dashed line (Class VI Trail).
- c) Illegal use of trails by bicycles can be a problem especially where there's an aversion to an unsafe route (Bollinas Fairfax road) or where existing hiking trails already make that connection a feasible alternative. One of the goals of the project is to provide a multi-use connection to the Pine Mountain Area but do it in a way that capitalizes on existing routes (Liberty Gulch Road) and minimizes impacts to sensitive resources. As described on Page 23 of the IS/MND portions of the proposed Azalea Hill trail would be rerouted to areas that will have fewer impacts to sensitive resources. Those new sections would need to be "adopted" which is why we are describing them in the CEQA document. The trail adoptions along the Azalea Hill trail are not associated with any change of use. The project would provide a connection between Bullfrog

and the Azalea Hill parking lot by way of the existing Liberty Gulch road. This adopted Class IV road would be open to hiking, biking, equestrian, and district response vehicles (ATVs). Adoption of the Liberty Gulch Road will provide an environmentally cognizant connection for all users between Bullfrog and the Azalea Hill parking lot and reduce impacts to sensitive resources on Azalea Hill.

- d) I'd recommend you take a read through Section 3, which starts on page 21 of the IS/MND and Section 4, which describe in more detail what's proposed along the Liberty Gulch Road and Azalea Hill Trail, respectively. Overall, the proposed project would formalize two separate connections between Bullfrog and the Azalea Hill parking lot; the Azalea Hill Trail (hiking and equestrian-only) and Liberty Gulch Road (hiking, biking, equestrian, and district response vehicles).

Cheers,

Aaron

**Aaron Fulton, P.E.**

**Associate Engineer (Civil & Environmental)**



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**Paul da Silva**

**From:** Paul da Silva [REDACTED]  
**Sent:** Friday, November 09, 2018 11:48 AM  
**To:** Azalea Hill  
**Subject:** Proposed Trail

Dear Mr. Fuller --

I appreciate the opportunity to comment on the proposed Liberty Gulch Trail project. Environmental review, if done well, is an important way of protecting important features of our environment. The MMWD Mt. Tamalpais Road and Trail Plan is a good example of a document that expresses clear intent to minimize human environmental impact. On Page 1.2, it states clearly that its "overriding goal" is "protecting water quality and the integrity of the natural wildlands on the Watershed, while allowing limited, passive recreational access in the Watershed."

PdS-1 | The proposed trail alignment would fragment one of the most important serpentine habitats in the watershed, home to many rare species. It puts recreational use and protecting the natural wildlands second. Thus it clearly violates the intent of the plan. Thus it should be rejected in favor of another  
PdS-2 | alignment that does does not do such environmental damage.

Thank you.

Dr. Paul G. da Silva

Professor  
[REDACTED]  
[REDACTED]  
[REDACTED]

**Polly Elkin**

**From:** Polly Elkin [REDACTED]  
**Sent:** Thursday, November 08, 2018 1:28 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill/Liberty Gulch Road Project

PE-1 | Please consider an EIR for this very sensitive area. There are rare native plant species in this area, and once gone are gone forever.

Thank you,

Polly Elkin

**Bill Engelhardt**

**From:** Bill Engelhardt [REDACTED]  
**Sent:** Friday, October 19, 2018 3:39 PM  
**To:** Azalea Hill  
**Subject:** Comments on Azalea Hill plan

Dear Marin Municipal Water District,

I am very much in support of any option that would allow pavement-free mountain bike access to Pine Mountain Fire Road from Fairfax. The current access, via Bolinas-Fairfax Road, is dangerous because that road is very narrow, has many blind corners, and has no shoulder.

BE-1 I support the use of Liberty Gulch road as a way to create safer access. However, I would encourage the Water District to take a gentle approach to "upgrading" that road/trail. Rather than bulldozing the whole thing flat, as has been done in other areas of the watershed, I think that it would be better to leave the trail in as natural a state as possible. This will surely result in the creation of less sediment and will allow the trail to better blend with its natural surroundings. It will also make the trail more interesting for all users.

BE-2 In addition, I do not understand why the Azalea Hill Trail can not be made legal to mountain bikes. Horses and hikers are currently allowed on the trail. I do not believe that adding bicycle use will increase sediment or erosion in any measurable way.

I urge you to revise your current plan to include bicycle use of the Azalea Hill Trail. And, again, I would urge you to leave the trail in as natural a state as possible.

Thank you very much for all of your efforts thus far and for your consideration.

Bill Engelhardt

## Rowena Forest

**From:** Rowena Kyra Heiner Forest [REDACTED]  
**Sent:** Thursday, November 08, 2018 7:19 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill-Liberty Gulch Road Project

As a native of Marin County, lifelong hiker of Mt Tam, professional field botanist, and concerned environmentalist, I am opposed to the development proposed for the Azalea Hill-Liberty Gulch Road Project, for the following reasons:

- RF-1 • The Liberty Gulch road will fragment a large pristine area, contrary to standards set forth in the Road and Trail Management Plan. Habitat fragmentation cannot be adequately mitigated, therefore, the road proposal should be dropped.
- RF-1 • The route crosses many areas of serpentine that support numerous rare plants. Mountain bikers and equestrians should be routed to less sensitive areas.
- RF-2 • Mitigation and monitoring plans should be prepared for all special status plant species, not just the select species currently chosen by the District.
- RF-3 • The suggestion of relocating rare plants is unreasonable. The standard for successful relocation of annual and perennial plants is far too low: one population within 3 years.
- RF-4 • An Environmental Impact Report should be prepared because the mitigation measures proposed in the Initial Study/Mitigated Negative Declaration, will prove inadequate over the long term.

Sincerely,

Rowena Forest



## George Forman

**From:** George Forman [REDACTED]  
**Sent:** Sunday, October 28, 2018 4:39 PM  
**To:** Azalea Hill  
**Subject:** Comment on proposed Mitigated Negative Declaration for Azalea Hill project revision to RTMP

GF-1 | This project is long overdue, but unless there is unprecedented enforcement of the ban on mountain bikes, the notion that the relocated and upgraded Azalea Hill trail between Azalea Hill and Bullfrog won't be torn up by bicycles within one wet winter is an unrealistic fantasy. To see what will happen, one needs only look at what bikes have done to the Old Nail Trail, and are doing to the Little Carson, High Marsh, Lagoon Extension, Kent, Cataract, Helen Markt, Nora, Azalea Meadow, and even the long-closed Casey Cutoff and Swede George trails. What would really improve this plan would be to create a bike-legal trail that would permit a circuit of Kent Lake closer to lake level than the existing San Geronimo Ridge/Pine Mountain/Oat Hill/Old Vee/Alpine-Kent Pump Road (plus the Fairfax-Bolinas road and the Bolinas Ridge and Shafter Grade trails. Bikes have re-established the "New Paradigm" trail from near the crest of Pine Mountain down almost to Kent Lake that was, in theory, obliterated many years ago.

Rigorous enforcement must consist of more than mere sporadic issuance of citations, which mean nothing to the owners of costly bikes. There are three strategies that might have more effect: 1) make the citations moving violations that will be part of drivers' DMV records; 2) Immediately confiscate and, after notice and hearing, destroy bikes found in areas where they are prohibited, on the premise that bikes found on trails not open to bikes constitute instruments of crime akin to burglary tools, the crime being destruction of public property (in the form of trail damage); and 3) prosecute offenders for vandalism or destruction of public property, and if multiple riders are involved, felony conspiracy to commit vandalism or destroy public property.

These comments may seem harsh, but they are the result of observing the system-wide degradation of the quality of MMWD trail surfaces that I have observed over my 40+ years of experience on virtually every trail in the MMWD watershed. The damage done by bikes is easily identified, most frequently in the form of ruts slightly wider than a bicycle tire, absence of leaf litter due to skidding, and breakdown of trail edges where riders have put feet down in sketchy spots.

Please add my name and e-mail address to the list of "interested persons" to whom updates on the project will be sent.

George Forman

## Stephanie Freidman (sp?)

Voice message left with Aaron Fulton on November 9, 2018.

SF-1 | Ms. Freidman (spelling?) identified that numerous resources are present within the project area (serpentine soils and sensitive plants) that would be impacted by the project. Ms. Friedman requested that MMWD prepare an EIR.

## John Geisse

**From:** John Geisse [REDACTED]  
**Sent:** Friday, October 19, 2018 7:04 AM  
**To:** Azalea Hill  
**Subject:** Opening trails for biking

Dear Aaron Fulton

JG-1 | As an avid hiker and mountain biker and member of the Meadow club I would be a strong supporter for opening up these trails to bike use. Biking has become extremely popular in our open space and for good reason in Marin and responsible riders can always share the trail with runners and hikers and equestrians.

I also as an aging injured mountain biker with arthritis feel that electric assist bikes should also be allowed as they do not go any faster they are not motorized vehicles they only help some of us who need it up steep hills when necessary.

Thanks much

John Geisse MD

San Rafael

## Adi Girroir

**From:** ADI GIRROIR [REDACTED]  
**Sent:** Sunday, November 11, 2018 4:40 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill/Liberty Gulch Road Project

Dear Mr. Aaron Fuller,

I understand that MMWD has a proposal to redraw the current trails and roads surrounding Azalea Hill next to Alpine Lake.

As an active hiker on many Marin County trails I have seen how people tend to disregard signs that are posted to help preserve our native plants or the areas that contain serpentine. I have seen illegal trails that have developed despite postings asking people not to walk, bike or ride horses on them. I have seen signs that have the "no bikes" signage scratched out. I have seen people allowing their dogs to be unleashed in areas where it has been clearly posted to only allow leashed dogs. I have walked trails that have been so badly rutted that the bikers, horse riders and hikers by pass them and start new trails on the sides of these ruined trails. I have picked up numerous bags of dog poop left on the sides of trails.

AG-1 | I feel it is the responsibility of the MMDW to follow the standards set forth in the Road and Trail Management plan regarding Liberty Gulch road. Above all, an Environmental Impact Report should be prepared before constructing that 2-mile road through the pristine Azalea Hill habitat.

AG-2 | I have often taken out-of-town guests to this area in springtime to see the remarkable array of wildflowers. They are stunned with the beauty and the variety in this unique habitat. We need to protect and maintain the beauty that has blessed us here in Marin. Our environment should be first and foremost. Building new trails for bikers will not stop them from criss-crossing Azalea Hill with other illegal trails.

AG-3 | I don't have any answers on how to make people aware of how to respect the earth, but I definitely know that building new trails and roads to accommodate humans at the expense of this fragile and beautiful habitat is not the prudent way to go.

Sincerely,

Adi Girroir

**Marabeth Grahame**

**From:** Marabeth Grahame [REDACTED]  
**Sent:** Friday, November 09, 2018 8:53 PM  
**To:** Azalea Hill  
**Subject:** Liberty Gulch 3x Trail

To whom it may concern:

MG-1 | I have hiked a number of trails in Bullfrog/Azalea Hill area and am very disturbed that the Liberty Gulch corridor has been chosen for development. This area is currently tranquil and relatively untouched. Native bunch grasses can still be found in the meadows, large outcrops of serpentine host many rare and endangered plants. Along Alpine Lake, the way is difficult and rocky and large scale excavation and construction would be necessary to build a multi use trail/road in such a steep and hilly area. Any such development along the banks of Alpine Lake would displace large amounts of silt into the lake, destroy pristine native habitat and the subsequent increased traffic would further compromise this fragile habitat.

MG-2 | Reviewing the map, it is clear why the bikers want to develop this corridor. However, should we be developing our wild lands to offer shortcuts to cyclists? Or, if such a shortcut is so desirable, couldn't the trail/road climb up from Bullfrog to Azalea Hill through the non-native grasses and Doug fir forest along the Azalea Hill Trail, modified to avoid the serpentine zones?

MG-3 | At the very least, an EIR should be conducted before any action is taken. As it stands, it is a terrible idea to build a multi use trail in this area. Please reconsider.

Thank you,  
Marabeth Grahame  
Mill Valley

**Darla Jan Holst**

**From:** Darla Jan Holst [REDACTED]  
**Sent:** Wednesday, November 07, 2018 4:03 PM  
**To:** Azalea Hill  
**Subject:** No, no, no

DjH-1 | Construction of a 2-mile small vehicle road through pristine, un-fragmented habitat.

--

Darla Jan Holst

## Libby Ingalls

**From:** Libby Ingalls [REDACTED]  
**Sent:** Thursday, November 08, 2018 8:38 PM  
**To:** Azalea Hill  
**Subject:** Please do not build Liberty Gulch road

Dear Aaron Fuller:

LI-1 | It is shocking to me that you would consider fragmenting and destroying the habitat of a pristine area on the land you manage. Is this proper management of resources? I am an amateur botanist and love hiking on MMWD land, particularly near the reservoirs because of the wonderful spring wildflowers and biodiversity. So I strongly encourage you NOT to destroy beautiful habitat for a road, that may not be necessary anyway or could be directed elsewhere.

Thank you,

Libby Ingalls

San Francisco

## Martha Jarocki

**From:** Martha Jarocki [REDACTED]  
**Sent:** Thursday, November 08, 2018 4:20 PM  
**To:** Azalea Hill

**Subject:**Liberty Gulch Road expansion is a bad idea. Please protect rare habitat.

Hello Aaron Fuller, Associate Civil Engineer, MMWD

I would like to express my disapproval of the proposed new Liberty Gulch Road in the Azalea Hill area of Lake Alpine. This project, in a pristine habitat fostered by fragile, serpentine soils, is a gem — part of a fast disappearing part of our county. This is an area where visitors, bicycles and horses should be rerouted — not encouraged to trample through.

- MJ-1 | I don't see how this road project will comply with MMWD's own standards for the Road and Trail Management Plan. I don't understand how you can build a road without completing an EIR to understand the obvious impacts. A recent piece in the Independent Journal newspaper noted significant erosion at stream crossings of the old and unmaintained trail. Why would MMWD spend resources to maximize this trail/road when it is contrary to best practices for environmental stewardship, will be
- MJ-2 | expensive to build and maintain, and destroys rare and irreplaceable wildlife habitat?

I am confounded by this project. Please re-think this plan.

Martha Jarocki

## **Russ La Belle**

Phone conversation between Aaron Fulton and Mr. Russ La Belle on October 24, 2018.

RIB-1 | Mr. La Belle expressed concern regarding conflicting uses and potential safety issues with hikers, equestrian, and bikers sharing the project routes. Aaron Fulton described the design and mitigation measures that were integrated into the project including separation of Azalea Hill Trail route as equestrian and hiking only and Liberty Gulch as equestrian, hiking, and biking. Aaron Fulton clarified that hikers and equestrians would have a separate route free of bicycles along the existing Azalea Hill trail and that design features would be integrated into both routes to improve safety (speed-calming features, open sight lines, trail signage, etc.). Mr. Lubell reiterated his concern regarding safety issues.

## **Gretchen Levitt (sp?)**

Voice message left with Aaron Fulton on November 8, 2018.

GL-1 | Ms. Levitt (spelling ?) identified that numerous resources are present within the project area (serpentine soils and special status plants) that would be impacted by the project. Ms. Levitt requested that MMWD prepare an EIR to properly assess impacts to resources.



**Laura Lovett**

**From:** Laura Lovett [REDACTED]

**Sent:** Thursday, November 08, 2018 2:59 PM

**To:** Azalea Hill

**Subject:** Azalea Hill/Liberty Gulch Road Project

Dear Aaron Fuller,

LL-1 Please DO NOT approve the conversion of Liberty Gulch Road from an abandoned track into a vehicle accessible road. The MMWD identified this trail for decommissioning and closing; why are you not following your own advice?

LL-2 This path goes through un-fragmented and endangered serpentine habitat, which will most certainly get destroyed both by the construction project and by the bikers who will follow immediately thereafter.

LL-3 These bikers often do not even live in or pay taxes in Marin. Why are we accommodating them at the expense of important habitat? WE DO NOT PRIORITIZE BIKERS WHO RIP THROUGH THE LANDSCAPE OVER PRESERVING OUR BIOLOGY AND ECOSYSTEMS.

LL-4 The idea that this will make the bikers more aware of the local flora is absurd. They will roar through there on their way to someplace else; they are not looking at the landscape. The idea of moving the endangered plants to a different location is unreasonable; this is expensive and rarely works. The mitigation measures proposed for these effects are inadequate. All of this is caving under pressure to a group who wants a shortcut so they can tear through that region just as fast as possible. They will certainly not preserve it. Doing that is up to you. Please do the right thing for the environment and for all of the rest of us in Marin who value our beautiful native habitats.

Sincerely,

Laura Lovett

[REDACTED]

Board Member, Marin chapter

California Native Plant Society

## Fraser Muirhead

**From:** Fraser Muirhead [REDACTED]  
**Sent:** Thursday, November 08, 2018 9:20 AM  
**To:** Azalea Hill  
**Subject:** Trail Relocation

Dear Mr. Fuller:

FM-1 My attention has been called to a proposal to redraw a portion of the current trails and roads map of the Water District to allow building a road through the Azalea Hill area next to Alpine Lake. This alteration would further damage the environment there. It should be discarded.

FM-2 The reasons are that damage to a pristine area would occur; damage that cannot adequately be restored or even mitigated, that the damage would occur in an area with much serpentine soil and associated rare and even endangered plants, that these plants are not relocatable in any foreseeable time frame and that these concerns warrant much further evaluation.

I'm sure you, along with those of us who have enjoyed the mountain for many years, are committed to preserving to the fullest extent its treasures. For us and for our children and grandchildren!. Please drop this intrusive road plan.

Sincerely,

J. Fraser Muirhead, MD CM FRCS(C)

## Tim Murphy

**From:** Tim Murphy [REDACTED]  
**Sent:** Monday, October 29, 2018 9:55 AM  
**To:** Azalea Hill  
**Subject:** New Trails for mountain bikes

Hi,

TM-1 Please consider opening single track trails to mountain bikes. There are many bikers and the available trails are very limited in the Bay Area. We need more trails for skilled riders. In addition, would be great if we could open new trails limited only to bikers like many other parts of the country. We have the space - we need the will! And mountain bikers are great trail stewards, volunteering time and money to maintain them. Plus having dedicated trails will go a long way to keeping hikers and bikers separated. Of course there will always be trails we need to share. But opening up new trails would be great.

Thx,

Tim

## Susan Nawbary

**From:** Susan Nawbary [REDACTED]  
**Sent:** Thursday, October 18, 2018 3:29 PM  
**To:** Azalea Hill  
**Subject:** Azalea hill trails

It's not possible to legally ride Azalea Hill/Pine Mtn from the main MMWD/Lake Lagunitas area without riding on BoFax. Not everyone is comfortable riding on the road. Why should a small group of rich people have the opportunity to exclude all the majority of tax payers and water district customers?

The water district constantly falls back on safety without realizing that forcing all the users into a few trails create crowded unsafe situations.

SN-1

Time and time again we've asked the water district for more access without results and no real explanation. FYI, the compaction on trails by horses is far worse than bikes, and horses poop all over the place. Any user group can damage trails when they are wet; bikes shouldn't take the blame.

Please consider these comments when making your decision and understand that there is a desire for better access for bikes.

**Linda Nicoletto**

**From:** Linda Nicoletto [REDACTED]  
**Sent:** Friday, November 09, 2018 8:09 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill needs protection!!

Dear Mr. Fuller,

- LN-1 | The Liberty Gulch road will fragment a large pristine area, contrary to standards set forth in the Road and Trail Management Plan. Habitat fragmentation cannot be adequately mitigated, therefore, the road proposal should be dropped.
  - The route crosses many areas of serpentine that support numerous rare plants. Mountain bikers and equestrians should be routed to less sensitive areas.
  
- LN-2 |
  - Mitigation and monitoring plans should be prepared for all special status plant species, not just the select species currently chosen by the District.
  
- LN-3 |
  - The suggestion of relocating rare plants is unreasonable. The standard for successful relocation of annual and perennial plants is far too low: one population within 3 years.
  
- LN-4 |
  - An Environmental Impact Report should be prepared because the mitigation measures proposed in the Initial Study/Mitigated Negative Declaration (CEQA-speak), will prove inadequate over the long term.

PLEASE address these issues carefully and do the right thing for our environment. We are the keepers of the planet. Don't let biodiversity be compromised for any reason.

this is what we have and if we don't care for it we WILL LOSE IT!

Do the right thing,

PLEASE!!!!

Linda Nicoletto

## Ed Nute

**From:** Ed Nute [REDACTED]  
**Sent:** Friday, November 09, 2018 3:09 PM  
**To:** Azalea Hill  
**Cc:** Barbara [REDACTED]  
**Subject:** Azalea Hill/Liberty Gulch Road Project

Aaron Fuller, Associate Civil Engineer  
Marin Municipal Water District  
Email: [azaleahill@marinwater.org](mailto:azaleahill@marinwater.org)

Dear Mr. Fuller:

EN-1 As a member of the public as well as both the Marin Audubon Society and the Native Plant Society my wife and I strongly object to redrawing of the current trails and roads surrounding Azalea Hill next to Alpine Lake, and to constructing a 2-mile small vehicle road through pristine, unfragmented habitat. Much of this habitat has rare serpentine soils. MMWD has previously identified this route for decommissioning.

EN-2 The proposed Liberty Gulch road will fragment a large pristine area, contrary to standards set forth in the Road and Trail Management Plan and put significant habitat or rare serpentine adapted native plants at risk. The route crosses many areas of serpentine that support numerous rare plants. There is no way to mitigate for these plants since they are very difficult to propagate and very slow growing. Mountain bikers and equestrians should be routed to less sensitive areas.

EN-3 This type of habitat fragmentation cannot be adequately mitigated, therefore, the road proposal should be dropped. If this proposal is not dropped an Environmental Impact Report should be prepared because the mitigation measures proposed in the Initial Study/Mitigated Negative Declaration will prove to be inadequate over the long term.

Very truly yours,

Ed and Marcia Nute

## Dick O'Donnell

**From:** Dick O'Donnell [REDACTED]  
**Sent:** Thursday, November 08, 2018 8:17 PM  
**To:** Azalea Hill  
**Subject:** bike route

Dear Sir

EN-3 | As you know, the only argument for the proposed path is that there once was a road on those contours and that is not a persuasive argument. The valid arguments against the proposed path are too numerous to list...but one stands out: cyclists will not use the path...it is only one route when there are many cyclists coming from every direction...those coming up from Fairfax won't bother to ride over the hill to the bike path...they'll just take off at the first opportunity, just like those coming off the Pine Mt FR. Cyclists approaching from Mt Tam will take the path of least resistance...maybe that's where the path should be: on the already established road that ends at Bon Tempe Dam. The golf course won't let you?? Eminent domain. It's just an easement, say, no takings, and will save water users bundles and cost the golfers nothing.

Yrs

Dick O'Donnell

**Connor O'Hara Baker**

**From:** Connor O'Hara [REDACTED]  
**Sent:** Thursday, November 08, 2018 3:43 PM  
**To:** Azalea Hill  
**Subject:** Please Reconsider the Liberty Gulch Project

Hello,

CoB-1 | As a resident of Marin, an avid cyclist and hiker who frequently recreates in the Watershed, and a conservationist, **I respectfully urge you to seek alternatives to the proposed Liberty Gulch route that would cross areas of pristine serpentine community, fragmenting rare and sensitive plant habitat.**

CoB-2 | I am surprised, and a bit dismayed, that MMWD would consider fragmenting serpentine habitat, when the suggested mitigation is known to be inadequate. One established population within three years is too low a bar for successful relocation when it comes to rare plants.

CoB-3 | At the very least, an EIR should be prepared for this project, because the mitigation measures are insufficient to warrant a Mitigated Negative Declaration. '

CoB-4 | Please heed the concern of CNPS and those of us concerned about the preservation of increasingly rare and threatened plant communities.

Thank you for your time and thought on this matter.

Sincerely,

Connor O'Hara-Baker



**Brad Polvorosa**

**From:** Brad [REDACTED]  
**Sent:** Thursday, October 18, 2018 11:09 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Trail Project

Mr Fulton,

BP-1 | I would like to put in my 2 cents for any improvements to be "multi-use" and legal for all bikes, including e-bikes. As a user that both hikes and bikes, I see down the line my need to use an e-bike to access some of the amazing Marin lands we all share.

Sincerely,

Brad Polvorosa

## Brad Rippe

**From:** Brad Rippe [REDACTED]  
**Sent:** Friday, November 09, 2018 10:12 AM  
**To:** Aaron Fulton  
**Cc:** Matthew Sagues  
**Subject:** Azalea Hill project  
**Attachments:** RIPPE\_Azalea\_Hill.pdf

Hi Aaron,

Attached are my comments about the Azalea Hill projects. Please don't take any of this personally, I know you're in a difficult position. Actually I think the study and ideas in the report are intelligent and sound, its the Liberty Gulch road that has me very concerned.

At some point Id like to talk more about possible alternatives...

November 9, 2018  
Azalea Hill Proposal

Dear MMWD Board Members,

As a long time Mt Tamalpais hiker, runner, volunteer, biker, fisherman and historian, thank you for the opportunity to comment on the Azalea Hill road and trail projects.

The old Liberty Gulch road should be abandoned and the hillside it traverses restored to its original condition.

Reviewing the mitigated negative declaration (MND) for the Azalea Hill projects, it becomes apparent that this landscape is composed of a wide array of ecosystems, containing quite rare plant and animal communities spread over the entire study area. The study also maps the varied geology, and explains the high value of the serpentine ecosystem which encompasses a large percentage of this landscape.

The MND also curiously attaches importance to the Liberty Gulch road, which was constructed in 1903-1904 as a bypass around the poorly planned Tamalpais Dam and reservoir, which was fortunately never completed. Remnants of this dam are visible at low water levels along the eastern fork of Alpine Lake.

(The MND incorrectly dates the Liberty Gulch road to 1918, when Alpine Dam was built)

Currently there are 4 routes providing access between Azalea Hill and the Sky Oaks-Bon Tempe Dam areas:

- 1) Bolinas-Fairfax and Sky Oaks roads. (paved all the way!)
- 2) The multi-use trail along the eastern boundary of the Meadow Club golf course.
- 3) Numerous trails from Azalea Hill down to Bullfrog fire road.

The 4th route is the Liberty Gulch road, which terminates about 100 yards before the Tamalpais Dam location, and then becomes a narrow fishermans foot-trail for about 3/4 of a mile that connects to Bullfrog fire road at the Bon Tempe quarry. That trail has been in use since Alpine Dam was raised (for the second time) in 1942.

Rebuilding the Liberty Gulch road will do nothing to protect the delicate resource over which it traverses. Also, bulldozing and grading an entirely new road approx 3/4 of a mile right along the shoreline of Alpine Lake is antithetical to the mission of the water district, and is totally unnecessary. If constructed, this new road will severely compromise habitats, introduce new sediments as it slices through the extensive serpentine outcrop at the southern edge of Azalea Hill, and destroy the quiet fishermans trail. Introducing and concentrating more human activity along the delicate lakeshore makes no environmental sense.

BR-1

BR-2 | A far wiser, yet not perfect alternative is to focus on constructing a multi-use trail on the eastern side of Azalea Hill, perhaps routing over the summit for the incredible views, as proposed in the study, and through a series of engineered switchbacks, descend to Bullfrog fire road. This idea will avoid the delicate serpentine of the western and southern slopes of Azalea Hill, and maintain the quiet atmosphere along the shore of Alpine Lake. This solution would also result in a much shorter distance to travel from Azalea Hill to Bullfrog road: it's actually less than half the distance of Liberty Gulch road proposal. This translates to far less ongoing maintenance costs for the water district, a more direct route, and the elimination of duplicated costs of patrolling new direct access from the Bolinas-Fairfax road to the shore of Alpine Lake in a very isolated area.

The ongoing costs of maintaining an "improved" road along the Liberty Gulch route will be high, due to the fragile nature of serpentine, a lot of which, as you can see, and is noted in the MND, is continuously eroding into the Liberty Gulch creek below.

BR-3 | Restoring the hill to its pre 1903 state would significantly reduce this erosion, and avoid the concentrate of runoff through necessary new culverts along a new road, and allow the delicate plant and animal communities a chance to regenerate. The water district has successfully removed and restored many other trails on Tam.

Obviously my ideas need more study, but I think the MMWD should abandon the idea of re-using the Liberty Gulch road. Trying to find a new use for an old road that was ill conceived and poorly constructed over 115 years ago is not in the best interest of preserving the resource of our priceless watershed lands.

Thank You,

Brad Rippe  
[REDACTED]

## **Roger Roberts**

*The following comment was received at a public meeting held for the Proposed Project on October 11, 2018 as referenced in the Notice of Intention and IS/MND*

RR-1 | Mr. Roberts communicated his support for the project and the importance of preserving the Azalea Hill project area as it provides some of the best views and experiences in the watershed. Mr. Roberts requested that the project move forward carefully and that the district integrate post-project monitoring to ensure the project performs as designed and that additional social trails do not form.

**Mary Rotella**

**From:** Mary Anne Rotella [REDACTED]  
**Sent:** Wednesday, November 07, 2018 1:28 PM  
**To:** Azalea Hill  
**Subject:** Re: Comments to MMWD on the Azalea Hill/Liberty Gulch Road Project

As a Marin taxpayer, hiker and wild flower enthusiast I believe this project is unwise fiscally and environmentally. I find no good reason to build out an illegal and irresponsible bike trail in a pristine area of serpentine in our water shed. This area should be protected from further degradation and protected as a home to the many special species that can be found in such limited serpentine areas. If you have ever tried to grow native plants you would know how difficult it is and to attempt to transplant such rare plants is foolhardy. Pls find another route that does not cross such special and limited habitat or drop the plan entirely saving the county money and protecting clean water and rare plants. There are many great places for bikes and equestrians without endangering such a significant spot.

Thank you.

Mary Anne Rotella, [REDACTED]

**Nicholas Svenson**

**From:** Nicholas Svenson [REDACTED]  
**Sent:** Saturday, November 03, 2018 8:16 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Project

Hello Aaron,

I am a resident of Fairfax and I would like more information regarding the azalea hill project. Specifically, I would like to know which "non-system" trails the project would close. I use the smaller foot paths as I don't always want to hike on large roads sized for vehicles. Am I reading it right that those trails would be closed?

Also, what is the current status of the project and likelihood it will be approved?

Thank you,

Nick

**From:** Azalea Hill  
**Sent:** Monday, November 05, 2018 6:43 AM  
**To:** 'Nicholas Svenson'  
**Subject:** RE: Azalea Hill Project  
**Attachments:** Figure\_3\_Decommission\_Non-System\_Roads.pdf; Figure\_4\_Adopt\_Liberty\_Gulch\_Road.pdf

Greetings Nick,

Thanks for your interest in the Azalea Hill Restoration project and for taking the time to comment and provide input on the CEQA process. I've attached two graphics from the IS/MND which identify the social trails on Azalea Hill that would be decommissioned (Figure 3) and proposed routes (Figure 4). The current network of social "non-sanctioned" trails (green dashed lines in Figure 3) contribute sediment to adjoining waterbodies and have detrimental impacts to highly sensitive plant species associated with serpentine habitat. In an effort to reduce the impact of recreational trails on these sensitive resources the district is proposing to naturalize these areas and redirect users onto trails that are away from the most sensitive areas. The project would actually improve an existing but poorly marked hiking trail over the top of Azalea Hill so users would have a more distinct path. The this trail (dashed line at top of attached Figure 4) would not be a large road sized for vehicles. It would be a hiking path approximately 1 to 3 feet wide that would only be used by hikers and equestrians (however our user surveys indicate equestrian use in this area of the watershed is very low).

The second route that's part of this project is the Liberty Gulch Road adoption which goes along Alpine Lake between Bullfrog Road and Bolinas-Fairfax (solid brown line in Figure 4). The majority of this route is actually a road that was built in the early 1900s that would be rehabilitated with minor grading and drainage crossing improvements. Its average width would be approximately 4 feet. This would be just wide enough to facilitate district off-road vehicles (ATVs) in the event of an emergency and substantially smaller than the district's fire roads.

Let me know if this helps answer your question or if you need any additional information.

The district looks forward to considering your comments as we progress through the CEQA process. Our Board of Directors is currently scheduled to consider comments on the IS/MND on November 20, 2018 at 7:30 PM in the Board Meeting Room at 220 Nellen Ave, Corte Madera.

Regards,



**From:** Nicholas Svenson [REDACTED]  
**Sent:** Tuesday, November 27, 2018 11:03 AM  
**To:** Azalea Hill  
**Subject:** Re: Azalea Hill Project  
**Attachments:** Loop.JPG

Hi Aaron,

Thank you so much for your awesome reply. I certainly appreciate the proposed configuration of the new trail. My only comment (possibly too late) is that it looks like it will no longer be a loop. My son and I hike there and we take the fire road until it diminishes to a small foot path. We take this back to the road about 100' away, I highlighted the route (If I have my orientation correct) and it creates a nice loop - about 45 minutes. Attached.

Do you think there's anyway we can maintain the loop component of the hill? I am happy to help with organizing volunteers or possibly donation to make something like this be included. Thanks!!

Nick

NS-2

**From:** Nicholas Svenson [REDACTED]  
**Sent:** Tuesday, November 27, 2018 12:55 PM  
**To:** Azalea Hill  
**Subject:** Re: Azalea Hill Project

I realize now that what I highlighted is incorrect. I just walked it and will approximate what I mean.

**Lisa Wahl**

**From:** Lisa Wahl [REDACTED]  
**Sent:** Wednesday, November 07, 2018 5:44 PM  
**To:** Azalea Hill  
**Subject:** Relocating rare native plants?????

LW-1 | I'm opposed to the MMWD plan to construct a 2-mile small vehicle road through pristine, unfragmented habitat. My husband and I visit this area for bird watching but as a long-time native plant gardener, I can tell you that relocating rare native plants is a seriously flawed idea. Without the environment that they have selected, they tend to fail even in terms of new propagation, much less relocation.

Lisa Wahl

## Katherine Wing

**From:** Katherine [REDACTED]  
**Sent:** Friday, November 09, 2018 3:57 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Comments from Katherine Wing  
**Attachments:** Liberty Gulch Comments \_\_Katheirne Wing\_ 110118.pdf

Please see the attached document.

Dear Mr. Fuller:

KW-1 I am a resident of Kentfield and am writing on my own behalf to comment on the proposed Liberty Gulch Road Project. I oppose the construction of any new trail or road on the route of the old Liberty Gulch Road that violates the policy of the existing Road and Trail Plan. My reasons are outlined in the following paper. The Road and Trail Management Plan is a very well written document. Its principles are science-based and consistent with the MMWD's overall mission. I strongly recommend that the Road and Trail Management Plan NOT be amended and would be happy to elaborate on any of the issues I have raised.

Sincerely,  
Katherine Wing

## Arguments Against the Proposed New Liberty Gulch Vehicle Road

### What is the real proposal? -

MMWD plans to convert 1.2 miles of abandoned and overgrown road, as well as 0.7 miles of rarely visited non-system trail along the shores of Alpine Lake into a Class IV Vehicle Road. This type of road may be used for hiking, biking, horse riding and driving official vehicles.

On this map, the former Liberty Gulch Road is shown as a bold magenta line. The section of social trail proposed for conversion to Class IV road is the dotted magenta line that runs along the northern shoreline of Alpine Lake.

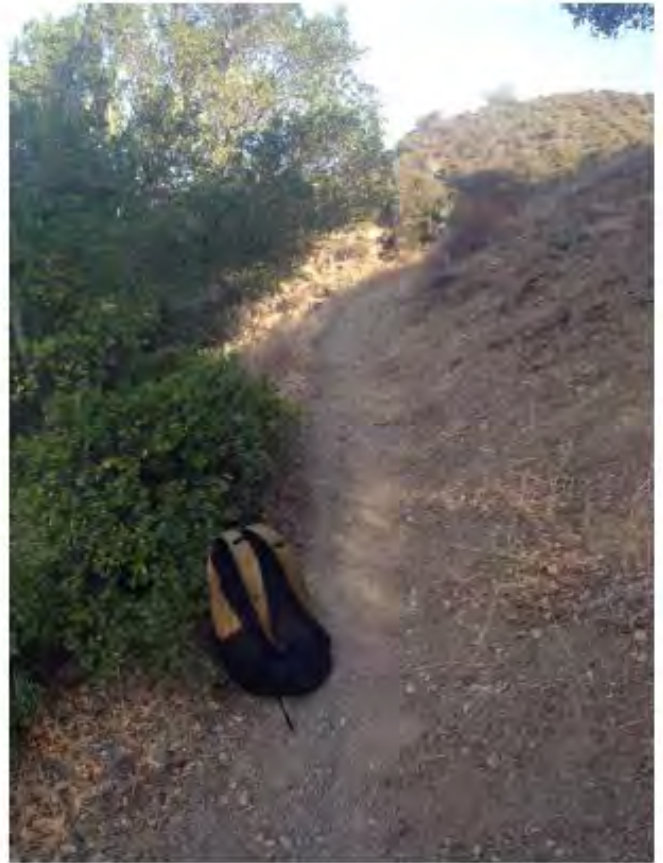
What is a Class IV road? Road Type: Small Vehicle, unpaved roads. Primary use for patrol and route and route connectivity. Unsurfaced.. Some sections only passable with small vehicles (i.e. ATV quads or small "bobcat" sized tractors). Limited truck and heavy vehicle traffic. [2.29 RTMP]

If completed there would be Class IV road from the foot of the Azalea Hill Trail to the Fairfax Bolinas Road.



**On the ground, you can see that the old Liberty Gulch Road is a road only in name.**

In the decades since it was abandoned, the old Liberty Gulch Road has collapsed in multiple places.



**In most sections, the old Liberty Gulch Road is now a footpath just 2' to 3' wide.**

Well established trailside plants, like the iris shown below, reduce the amount of erosion that occurred when it was a road.



With no human intervention, it has returned to chaparral.



**Natural revegetation has largely reclaimed what was once roadbed.**

Forests have sprung up along the former road.



And sensitive serpentine areas are slowly returning to their natural state.



**The “non-system trail” along the Alpine Lake shoreline isn’t your typical well-trammeled and damaged trail. It is actually a seldom used footpath along a pristine shore.**

**At present, the area around the old Liberty Gulch Road is a remote, quiet area of the Watershed.**

The proposed Liberty Gulch Vehicle Road would create over a mile of NEW road and will bisect what is now over one square mile of rarely visited otherwise unfragmented habitat..





## Who put the proposal on the table?

It was never MMWD's intention to put a Class VI Vehicle Route where none existed and none was needed. Although hundreds of trails were discussed in the Road and Trail Management Plan, Liberty Gulch was so insignificant that it wasn't even mentioned.

The only reason that an amendment to the RTMP is under consideration is that MCBC lobbied for it as part of its "3 Gap Initiative"

MCBC's explicit purpose of the new route is to make it more attractive to cyclists. By creating a linkage between the Lakes area and West Marin, MCBC expects it will drive a large, region-wide increase in route usage that will affect areas throughout the MMWD watershed, Mt. Tam State Park, County Open Space, and GGNRA land.



The justification for the new road is to let riders avoid 1.3 miles of "dangerous" road. Of all the roads in Marin that pose a traffic risk to riders,

this is the last to worry about. There is so little vehicle traffic on the Fairfax-Bolinas road that authorities routinely close it during fire season – and there's no one to care. Moreover, given that the distance that bikes currently ride on the Fairfax-Bolinas Road is only 1.3 miles, delay of auto traffic is a trivial problem.

Without question, Marin needs more safe bike routes, but if the public is going to pay for new multi-use trails, shouldn't the priority be routes that provide an alternative to driving for necessary trips to work, school, or stores, not recreational riders?

The attraction of the proposed Liberty Gulch Vehicle Road is that it would build a shorter, flatter route from MMWD land to the popular Pine Mountain Fire Road. While this might make sense for a utilitarian bike route, it isn't necessary on a purely recreational route.

Currently, bicyclists ride around the north side of the Meadow Club golf course.



They like the idea of a flat, short scenic route along the shore instead.



**Commendably, the existing RTMP is entirely consistent with MMWD policy that prioritizes environmental protection over recreational uses.**

The RTMP's whole purpose is to guide decision making when questions arise about how the roads and trails should be managed. If there is a conflict between the RTMP and a potential new trail, it is the trail that should be amended, not the plan.

The RTMP leaves no doubt about its goals. An amendment made to permit a route that would otherwise be prohibited utterly defeats the purpose of the RTMP and sets a dangerous precedent.

A few passages from the RTMP will confirm the document's intent.

*In the end, this plan, which is both a description of the official system of roads and trails and a detailed work plan on how to manage the roads and trails for the next quarter century, is a guide to further the protection of water quality in creeks and reservoirs, further the protection of environmentally sensitive habitats and special status species, and minimize road and trail related impacts on the Mt. Tamalpais Watershed. [Source: Preface, 1.1 RTMP]*

*Protection of water quality is the overriding goal for the management of the Mt. Tamalpais Watershed. Protecting the integrity of the watershed's water quality and reservoir capacity is best achieved by maintaining natural conditions on watershed lands to the greatest extent possible.*

*The Road and Trail Management Plan focuses on the overriding goal of protecting water quality and the integrity of the natural wildlands on the Watershed, while allowing limited, passive recreational access in the Watershed. [Source: RTMP 1.2]*

*The primary goals and objectives of the Plan are to protect water quality and to devise management practices for all the roads and trails.*

#### *Goals*

- 1. To improve water quality and minimize sediment into the creeks and reservoirs;*
- 2. To reduce the impact of the road and trail networks on wetlands and riparian areas, other environmentally sensitive habitats and special status plant and animal species; and*
- 3. To reduce the impact of the road and trail network on the Watershed's natural ecological functions. [Source 1.4 RTMP]*

#### *Assumptions*

- 1. The Plan is not a recreation plan. The District will not build new routes to accommodate expanded recreation. If anything, the amount of roads and trails will be reduced because the goal of the plan is to reduce impacts;*
- 2. The Plan will not reconsider or change the bicycle use or access policies within the Watershed; [Source RTMP 1.9]*

**MMWD already knows all the drawbacks of building new trails.**

*Roads and trails can have many undesirable effects on the environment. Roads or trails can cross or run along wetland or riparian areas. They can increase the number of visitors and intensify human use in seldom-visited areas. They can provide migration routes for non-native invasive plants into previously un-infested areas and facilitate the spread of Sudden Oak Death syndrome. They can fragment habitats (in some cases environmentally sensitive habitats) by creating migration or foraging barriers to some wildlife. They can physically remove habitat (i.e. grassland, shrubs, trees) or a portion of it (for example, 50 miles of trail, with a 3-foot trail corridor of disturbance, amounts roughly to 18 acres of lost or damaged habitat). Moreover, construction of roads and trails can disturb or destroy, directly or indirectly, plants or animals that are legally protected. Wetland areas, riparian areas, serpentine soils (which are fragile, erodible soils that can contain a host of endemic, rare and endangered species of plants), and active nesting or roosting areas, are all sensitive habitats that require protection in one form or another. Furthermore, an increase in the density and amount of human presence in previously untrammeled or seldom visited areas leads to an increase in the severity of effects as well as the proliferation of additional effects.*

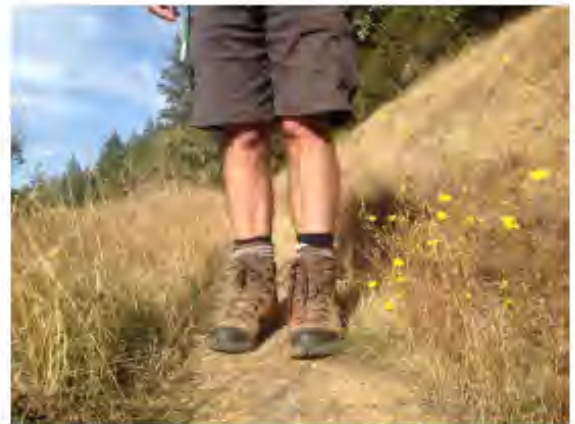
[Source 2.6 RTMP]

*The District inherited more roads and trails than it can effectively manage, the patrol and maintenance of the roads and trails represents a significant cost to the District. [Source: 2.7 RTMP]*

As a result, the recommendations from the outside consultants resulted in a plan in which:

*No non-system roads were adopted. [Source: 2.13 RTMP]*

The existing social trail between the end of LH Road is narrow and plants are preventing erosion.



Even a well-designed trail, like this section of the Azalea Hill Trail, destroys trailside plants and is more prone to erosion.



## **Sedimentation is no justification for the Liberty Gulch Project isn't needed to prevent sedimentation**

The Amendment of the RTMP erroneously suggests that there is a sedimentation problem caused by the old Liberty Trail Road

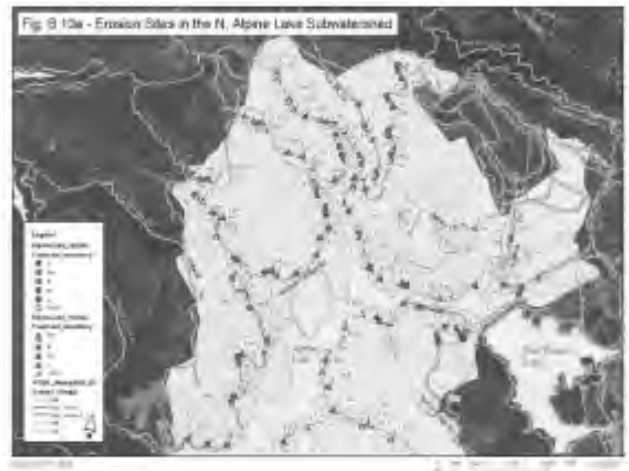
*Upon its completion, the project would prevent up to an estimated 219 cubic yards of sediment from entering Azalea Hill's creeks and Alpine Lake annually (or 4,380 cubic yards over 20 years)* [Source: Amendment of Mt Tam Watershed Road and Trail Management Plan – Restoration of Azalea Hill, p. 3]

In contrast, the original RTMP says that sedimentation is only a problem because theoretically it reduces reservoir storage capacity:

*For the creeks that flow into ... [Alpine Lake], the District is primarily concerned with: 1) water quality, because the reservoirs are part of the public water supply, and 2) with sedimentation, because it decreases the water storage capacity of the reservoirs and reduces their usable life....* [Source: 1.13 RTMP]

It doesn't take much math to show that any concern about loss of reservoir capacity is absurd. The fact is that at the rate of 219 cu. Yd./year, it would take 68,000 years to fill Alpine Lake

The original RTMP found many sources of erosion to be concerned about, but Liberty Gulch wasn't one of them.



**The bottom line is that the Liberty Gulch Project will be environmentally destructive, with no environmental justification.**

## Part II

### Matt Adams

*The comment was received at a public meeting held during the 30-day agency and public review period on October 11, 2018.*

*Mr. Adams reiterated the importance of the project from a connectivity standpoint and communicated his full support for the project.*

### Kyle Askerask (Sp?)

Voicemail left with Aaron Fulton on October 19, 2018.

Mr. Askerask (spelling?) voiced support for the Azalea Hill Project. Mr. Askerask identified significant safety issue for shared bicycle and vehicle use of Bolinas-Fairfax Road and indicated numerous close encounters with vehicles. Kyle supports the project and is excited to see MMWD involved in increasing bicycle safety by providing an alternative route where cars and bikes would be separated.

### Franklin Blackford

**From:** Franklin Blackford [REDACTED]  
**Sent:** Thursday, October 18, 2018 10:39 AM  
**To:** Azalea Hill  
**Subject:** Trail to Azalea Hill

The proposed trail from Bull Frog Fire Road to Azalea Hill is a great idea as it creates for mountain bikers a safe alternative route to get to the Pine Mountain Loop Trailhead without riding the Fairfax Bolinas Road.

Franklin

## Wayne Best

**From:** Wayne Best [REDACTED]  
**Sent:** Thursday, October 18, 2018 11:19 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill trail project

Aaron Fulton

I understand you are looking for feed back on the proposed plan to improve the trail on Azalea Hill. This would be a great idea. I have hiked the existing trail a few years ago and it needed some work.

To expand the trail to allow bikes would be a great leap in safety and trail access. Currently, bike have to get of the Fairfax road which has no bike lane. Having access around this road would greatly improve safety.

Please approve the plan to improve the trail and allow bikes on the new trail.

Wayne Best

## **Tom Boss**

*The comment was received at a public meeting held during the 30-day agency and public review period on October 11, 2018.*

*Mr. Boss reviewed how MCBC has been working with the District and various conservation groups from very early and commended all parties for the collaborative nature of the project and the adaptations that have been integrated to make it a positive project for all users and the environment.*

*Similar to Roger Roberts, Tom Boss and MCBC would support post-project monitoring and adaptive management to ensure the project performs as intended. Mr. Boss also pointed out that with so many young bicyclists in Marin County, the project is an excellent way to engage and grow their appreciation for the watershed and conservation.*

*Tom Boss indicated MCBC is fully supportive of project and looks forward to working with all parties to make it a success.*

## Joe Breeze

**From:** Joe Breeze [REDACTED]  
**Sent:** Thursday, November 01, 2018 12:44 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Gap Project

Hi Aaron,

I'd like to add my support to the Azalea Hill Gap Project.

Using the historic old road route will provide a much needed safer route for cyclists to get from Bon Tempe to Pine Mountain Truck Road, which today can only be accessed by the Bolinas-Fairfax Road, with its dangerous motorists. The environmental enhancements that this project will include many wise additions by MMWD. In all, a win/win for the environment, humans included.

Thank you for your help making this project a reality.

Sincerely,

Joe Breeze



## Jason Brooks

**From:** Jason Brooks [REDACTED]  
**Sent:** Thursday, October 25, 2018 8:21 PM  
**To:** Azalea Hill  
**Subject:** Support for Azalea Hill project

Hi Aaron- I'm a resident of Fairfax in Cascade Canyon and often ride or hike in the area behind us up towards and around Azalea Hill. I rode behind the golf course and to the lakes on Wednesday and will probably ride in that area again this weekend. For what it is worth I'm a big supporter of the planned trail and approach to Liberty Gulch Road and below Azalea Hill to create safer access around Alpine Lake. I'm sure you will have lots of feedback in both directions so as a resident, customer of MMWD and active user of the Water Shed I wanted to share my support for closing this gap in the trail network.

Thank you,

Jason Brooks

## Tom Burger

**From:** Burger [REDACTED]  
**Sent:** Thursday, November 08, 2018 9:39 PM  
**To:** Azalea Hill  
**Subject:** trails

Aaron,

I am writing in support of anything we can do to improve the mountain bike experience in the MWD lands. I am 67 have been riding for 7 years 42 years here in marin and love it even more riding whats available. Anything that could be done even in a small way to expand whats available would be greatly appreciated. Tom Burger

## Craig Burnett

**From:** Craig Burnett [REDACTED]  
**Sent:** Saturday, October 20, 2018 5:50 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill

Aaron,

I just wanted to let you know that I am very much in favor of the opening of new mountain bike trails in this region. We appreciate the efforts thus far and opening the trails to mountain bikers is a necessary improvement for the safety and enjoyment of the mountain bike community which is hungry for more "legal" trails in this supposed area where "Mountain biking originated." Currently we are forced to ride up a dangerous roads with no shoulder (riding up Bolinas Road past the golf course) to access the fire roads above. With cars zipping around the corners it can be a little dodgy at times.

We need more legal trails (other than just boring fire roads). Keep up the good work and lets get these trails opened for legal use. Many thanks!!

Craig Burnett

## Alex Burnham

*The comment was received at a public meeting held during the 30-day agency and public review period on October 11, 2018.*

*Mr. Burnham pointed out that the project is a win-win for all watershed user groups (hikers, bikers, equestrians) and the environment. Mr. Burnham communicated that the biggest benefit of the project is to get users off the Bolinas-Fairfax road and provide a safe connection for all users. The project will increase safety. Mr. Burnham is completely supportive of the project.*

## David Carbonell

**From:** David Carbonell [REDACTED]  
**Sent:** Thursday, October 18, 2018 12:58 PM  
**To:** Azalea Hill  
**Subject:** In favor of Azalea Hill project

To the MMWD land managers,

As an MMWD rate-payer, Marin county homeowner, recreational hiker, trail-runner, and cyclist, I'd like to express my support of the proposed Azalea Hill trail project.

The current situation denies access to people in our community who ride bikes, whether they are youths on high school teams or senior citizens seeking respite in our beautiful watershed. This exclusion exacerbates resentment among the user groups and increases tension. In addition, it forces cyclists onto a heavily-trafficked, windy road with no shoulder; this is not a safe situation for our citizens.

The proposed project enhances and retains the hiker/equestrian trail that already exists, while opening a sustainable multi-use trail that would give bike riders an opportunity to enjoy the watershed in this area, as well as connect to other bike-friendly trails and paths. This is a pragmatic and reasonable solution to user concerns in the area.

It has been far too long since MMWD has opened up any trails to access for bikes, and this is a long-overdue boon to a cycling community that has been underserved for decades. A small but vocal minority of detractors will try to spread fear, uncertainty, and doubt about this plan. Please scrutinize their arguments closely, as they are baseless and without merit. The community, myself included, is ready and eager to participate in the trail work and maintenance needed to make this happen.

David Carbonell

Azalea Hill Benefits:

- The project provides a safe alternative to the current bike route around the golf course and up Bolinas-Fairfax Road on a 1.3 mile stretch of windy road with no shoulder.
- The project enhances the existing hiker/equestrian trail and keeps it closed to bikes.
- The project decommissions 4.5 miles of social trail that fragment over 100 acres of Serpentine habitat.
- The project recycles a historic road to provide safe access for all trail users.
- The project allows for enhancements to the Liberty Gulch Road, which will prevent over 4,000 cubic yards of sediment from entering Azalea Hill's creeks or Alpine Lake over 20 years.
- The project can serve as a powerful vehicle to broaden awareness and appreciation of the rare plant and animal communities.
- The project is very thorough in its cataloging of native plants and suggested avoidance measures.
- The project is in an ideal place for interpretive features to celebrate the 100th anniversary of the Alpine Dam.
- Expanding the inclusiveness of the project by adding bicycle connectivity increases the chances of receiving grant funding and public donations for both the trail work and habitat restoration work.
- The proposed bicycle alignment will place cyclists at a location below the Azalea Hill Parking lot and current bike-legal trail to the top of the hill, which will eliminate the need for bike access to the top of Azalea Hill.
- Bicyclists are ready and willing to help with both the trail work and habitat restoration.

Dave Carbonell

## Rick Cerrick

**From:** rich cerick [REDACTED]  
**Sent:** Sunday, November 18, 2018 6:26 AM  
**To:** Azalea Hill

I strongly support MMWD's proposed Azale Hill project for the following reasons:

- The project provides a safe alternative to the current bike route around the golf course and up Bolinas-Fairfax Road on a 1.3 mile stretch of windy road with no shoulder.
- The project enhances the existing hiker/equestrian trail and keeps it closed to bikes.
- The project decommissions 4.5 miles of social trail that fragment over 100 acres of Serpentine habitat.
- The project recycles a historic road to provide safe access for all trail users.
- The project allows for enhancements to the Liberty Gulch Road, which will prevent over 4,000 cubic yards of sediment from entering Azalea Hill's creeks or Alpine Lake over 20 years.
- The project can serve as a powerful vehicle to broaden awareness and appreciation of the rare plant and animal communities.
- I support Mitigation Measure BIO-10 and BIO-13 which will ensure that the decommissioned trails will remain closed and that non-native plants do not spread in this area.
- The project is very thorough in its cataloging of native plants and suggested avoidance measures.
- The project is in an ideal place for interpretive features to celebrate the 100th anniversary of the Alpine Dam.
- Expanding the inclusiveness of the project by adding bicycle connectivity increases the chances of receiving grant funding and public donations for both the trail work and habitat restoration work.
- The proposed bicycle alignment will place cyclists at a location below the Azalea Hill Parking lot and current bike-legal trail to the top of the hill, which will eliminate the need for bike access to the top of Azalea Hill.
- Bicyclists are ready and willing to help with both the trail work and habitat restoration.

Sincerely,

Rich Cerick

## Nathan Cohen

**From:** Nathan Cohen [REDACTED]  
**Sent:** Saturday, October 20, 2018 9:29 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill project

Hello Mr. Fulton,

My wife and I wanted to voice my support for the proposed Azalea Hill connector trail. This proposal seems like a win-win for all user groups and the water district environment. Thank you for your hard work!

I strongly agree with the following points:

- The project provides a safe alternative to the current bike route around the golf course and up Bolinas-Fairfax Road on a 1.3 mile stretch of windy road with no shoulder.
- The project enhances the existing hiker/equestrian trail and keeps it closed to bikes.
- The project decommissions 4.5 miles of social trail that fragment over 100 acres of Serpentine habitat.
- The project recycles a historic road to provide safe access for all trail users.
- The project allows for enhancements to the Liberty Gulch Road, which will prevent over 4,000 cubic yards of sediment from entering Azalea Hill's creeks or Alpine Lake over 20 years.
- The project can serve as a powerful vehicle to broaden awareness and appreciation of the rare plant and animal communities.
- The project is very thorough in its cataloging of native plants and suggested avoidance measures.
- The project is in an ideal place for interpretive features to celebrate the 100th anniversary of the Alpine Dam.
- Expanding the inclusiveness of the project by adding bicycle connectivity increases the chances of receiving grant funding and public donations for both the trail work and habitat restoration work.
- The proposed bicycle alignment will place cyclists at a location below the Azalea Hill Parking lot and current bike-legal trail to the top of the hill, which will eliminate the need for bike access to the top of Azalea Hill.
- Bicyclists are ready and willing to help with both the trail work and habitat restoration.

Thanks,

Nathan and Susan

## Ken Cook

**From:** Ken Cook [REDACTED]  
**Sent:** Thursday, October 25, 2018 10:13 PM  
**To:** Azalea Hill  
**Subject:** Strongly support Azalea Hill plan THANK YOU

for developing it.

Ken Cook, President

Environmental Working Group

## Cortis Cooper

**From:** Cortis Cooper [REDACTED]  
**Sent:** Thursday, October 18, 2018 1:59 PM  
**To:** Azalea Hill  
**Subject:** proposed Mitigated Negative Declaration for the amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan for the Restoration of Azalea Hill

As the coach of a local middle-school mountain bike team, I know how tired my kids get of biking the same old trails. I've got 40 kids this year ages 11-14 who ride weekly and I'm always surprised at how few options we have. Please consider opening up some new trails for MTB. We need to keep these kids off video games and out in nature!

Cortis Cooper

## Paul Daro

**From:** paul daro [REDACTED]  
**Sent:** Wednesday, November 14, 2018 2:49 PM  
**To:** Azalea Hill  
**Subject:** Support for Azalea Hill trail project

Hello,

I am writing to voice my support for the proposed Azalea Hill project. I think the proposed enhancements will improve access for all users, including bicyclists, hikers, and equestrians. I would also like to thank the staff for the tireless work in running a very collaborative process to try to meet the needs of different users.

Regards,

Paul Daro



## Maximilian DeLaure

**From:** Maximilian DeLaure [REDACTED]  
**Sent:** Saturday, October 20, 2018 1:18 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Connector

Dear Aaron Fulton,

I wanted to express my enthusiastic support for the new multi-use connector to Azalea Hill. This will make a wonderful connector with great views where I can take my two daughters to Pine Mountain from Deer Park without using Bofax road. This connector is a natural one, and has been missing from our trail network. Thanks so much for working on making this happen.

Sincerely,  
Maximilian DeLaure

## John Denigris

**From:** John Denigris [REDACTED]  
**Sent:** Friday, October 19, 2018 10:31 AM  
**To:** Azalea Hill  
**Subject:** We need space

Thanks for considering azalea hill for a legal multi use trail.

## Nona Dennis

*The comment was received at a public meeting held during the 30-day agency and public review period on October 11, 2018.*

*Ms. Dennis reviewed her organization's struggle in evaluating the merits of the project. In general, MCL is supportive of the idea of decommissioning the social trails on Azalea Hill but recognizes that there are impacts associated with the project. Specifically, the project alignment will go through some very sensitive areas and that the District is counting on restoring decommissioned trails to offset impacts. MCL is primarily concerned with how the project is actually accomplished; how will the project integrate elements and monitoring that reduce the potential for trail migration: Will trail edges be adequately marked to keep users on trail and can the district adequately enforce the closure of the social trails that will be decommissioned?*

*Ms. Dennis communicated that MCL will read the mitigations closely to see how these two issues have been addressed in the revised document and provide comments on the document (See comments MCL-1 through MCL-9).*

## Albert DeSilver

**From:** Albert DeSilver [REDACTED]

**Sent:** Friday, October 19, 2018 2:46 PM

**To:** Azalea Hill

**Subject:** Azelea Hill

Dear Aaron and staff,

As a long time Marin County hiker and mountain biker, I am delighted to hear about the new cycling access in and around azalea hill. Thank you and your staff so much for supporting safe open bicycling access. This route will be essential to keeping us mountain bikers off a narrow winding road with no shoulder. I appreciate any and all efforts toward increased mountain bike access which is safe for other user groups but also increases fair equitable access for the Mountain Bike community. With gratitude and best wishes, Albert DeSilver, [REDACTED]

## Thomas Dodsworth

**From:** Thomas Dodsworth [REDACTED]  
**Sent:** Tuesday, November 06, 2018 11:06 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill project

Dear Aaron Fulton,

I'm thrilled to hear the MMWD is working on the Azalea Hill region connecting the Bon Tempe region to Azalea Hill via Liberty Gap. As an avid mountain biker and resident of the Park neighborhood of Fairfax I find the lack of a connection between these areas without pedaling on Bolinas Fairfax road challenging. As a conversationalist I dislike the social trails from Azalea Hill down to the Bon Tempe damn, as I know how fragile the serpentine soil and wildlife habitat is in this region. As a graduate of Humboldt State Universities Natural Resource Interpretation program I'm excited to see how MMWD highlights the area including the now almost 100yr old Alpine Lake/Damn area. I know the cyclist community is happy to see this connection come to fruition, and is dedicated to the restoration and trail building efforts that will be needed.

Thank you very much for your time.

Best,

Thomas Dodsworth

**Mark Elliott**

**From:** Mark Elliott [REDACTED]  
**Sent:** Monday, October 22, 2018 2:35 PM  
**To:** Azalea Hill  
**Subject:** Yes to Mountain Bike trail expansion in Marin

More mountain bike trails make for safe hiking trails.

## Ben Emmert-Aronson

**From:** Ben Emmert-Aronson [REDACTED]  
**Sent:** Monday, November 05, 2018 1:07 PM  
**To:** Azalea Hill  
**Subject:** Proposed Azalea hill/3 Gaps work

Dear Aaron and MMWD,

First let me thank you and the broader staff for the hard work that's going into these decisions. I know there are a lot of people who all have strong beliefs about what should happen, and I imagine you take more than your share of flack for what does happen. Thanks for your commitment to our shared outdoors!

I moved to the bay several years ago after visiting from Boston in February. It was on a road ride over Tam I got to that place where you can see the waves crashing on Stinson Beach down below, and said "Why would anyone live anywhere else?!?" 6 months later I lived here, and I feel truly blessed to have so much access to nature. I particularly love hiking and biking, both road and mountain, and so am grateful to see the eye to all trail users that this project holds.

I learned about the updates from MCBC, an organization I've been proud to be a part of. I think that a particular strength of bike organizations around the Bay is the shared focus on conservation of our shared resources. I know that as a mountain biker I do have an impact on our trails, and it's one of the reasons (besides the fun and camaraderie!) that I regularly join in trail work days, and look forward to help on this project too!

Thanks again for your work

Ben Emmert-Aronson

## Nick Fain

*The comment was received at a public meeting held during the 30-day agency and public review period on October 11, 2018.*

*Mr. Fain expressed his full support for the project. He described his observations of failed culverts and degraded conditions of Liberty Gulch road and need to start improvements immediately. Mr. Fain clarified that bikers prefer narrower trails so trail migration resulting from bicycle use is unlikely to be a problem but that a new and improve trail network through the project area with obvious and recognizable signage and design elements (fences, vegetation blocks, etc.) will greatly reduce the potential for trail migration associated with all user groups.*

*Mr. Fain communicated his full support for the project.*

## Terry Fernsworth

**From:** Terry Fernsworth [REDACTED]  
**Sent:** Friday, October 26, 2018 8:30 AM  
**To:** Azalea Hill  
**Subject:** Support for project

I support the Azelia Hill project. It will be good for the environment and good for the community.

Terry Fernsworth

## Damien Filiatrault

**From:** Damien Filiatrault [REDACTED]  
**Sent:** Thursday, October 18, 2018 1:49 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill

Hi,

I just wanted to weigh in and say that I support allowing mountain bikes on any new trail that happens on Azalea Hill.

Thanks,

-Damien

## Adam Fuchs

**From:** adam fuchs [REDACTED]  
**Sent:** Thursday, October 18, 2018 10:31 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Project

I am writing to express my support for the proposed trail improvements to Azalea Hill. This is a much needed connector to the Pine Mountain fire road and will increase safety for mountain bikers. Currently we have to ride up the windy and low-visibility Bolinas-Fairfax road in order to access the Pine Mountain loop. Having an all-dirt option will keep mountain bikes off the pavement and away from cars.

This is a great proposal and I fully support it as long as it remains multi-use.

Thank you,

Adam Fuchs



## Maureen Gaffney

**From:** Maureen Gaffney [REDACTED]  
**Sent:** Tuesday, October 30, 2018 10:04 AM  
**To:** Azalea Hill  
**Subject:** CEQA Comments Azalea Hill Project

Greetings Mr. Fulton,

Thank you for you and your agencies' work to create a multi-benefit habitat restoration and trail project on Azalea Hill. This has been long needed and desired by a broad coalition of users and interest groups. The following benefits would accrue from this project. We are proud of our environmental ethic here in Marin County, and this project will also make us proud of our capacity to bring sometimes disparate groups ("the enviros" and the bike advocates) together for a common purpose.

- The project decommissions 4.5 miles of social trail that fragment over 100 acres of Serpentine habitat.
- The project recycles a historic road to provide safe access for all trail users.
- The project allows for enhancements to the Liberty Gulch Road, which will prevent over 4,000 cubic yards of sediment from entering Azalea Hill's creeks or Alpine Lake over 20 years.
- The project can serve as a powerful vehicle to broaden awareness and appreciation of the rare plant and animal communities.
- The project is very thorough in its cataloging of native plants and suggested avoidance measures.
- The project is in an ideal place for interpretive features to celebrate the 100th anniversary of the Alpine Dam.
- Expanding the inclusiveness of the project by adding bicycle connectivity increases the chances of receiving grant funding and public donations for both the trail work and habitat restoration work.
- The proposed bicycle alignment will place cyclists at a location below the Azalea Hill Parking lot and current bike-legal trail to the top of the hill, which will eliminate the need for bike access to the top of Azalea Hill.
- Bicyclists are ready and willing to help with both the trail work and habitat restoration.

Best,  
Maureen Gaffney

## Andrew Galbraith

**From:** E. Andrew Galbraith [REDACTED]  
**Sent:** Monday, November 05, 2018 6:37 PM  
**To:** Azalea Hill  
**Subject:** I support the Liberty gulch trail

I am writing to express my strong support for the azalea hill and liberty Gulch trail projects. These projects will not only provide better, safer connectivity for bicycles to connect the lakes with pine mountain, but will also clean up the mess of social hiking trails on Azalea hill. This is a great project and I strongly encourage the water district to go forward with it as proposed.

Thank you,

Andrew Galbraith

## Scott Greenberg

**From:** Scott Greenberg [REDACTED]  
**Sent:** Tuesday, October 23, 2018 7:55 AM  
**To:** Azalea Hill  
**Subject:** in support of a new Azalea Hill my. biking trail

Hello Aaron,

Please note my support for a new trail that would mostly follow the existing trail and in parts an old road bed from Bullfrog Road near the Meadow Club Golf Course up to Bolinas Fairfax Rd at the top of Azalea Hill near Pine Mountain Fire Road. I strongly support this effort and greater legal access for mt. biking in Marin County. Thanks for your consideration.

Regards,

Scott Greenberg

**Lance Haag**

**From:** [REDACTED]  
**Sent:** Thursday, November 01, 2018 8:52 PM  
**To:** Azalea Hill  
**Subject:** CEQA comments on trail opening

Dear Aaron Fulton;

I'm writing to express my full support for moving ahead with the project to open Gulch road as a multi-use connector trail.

My name is Lance Haag and I live at [REDACTED] I am both an avid hiker and a cyclist. The proposed project makes a lot of sense for both groups as it should reduce the number of unofficial social trails in the area, provide a much safer route for cyclists than the paved road, and in fact it will also improve safety for motorists because cars passing cyclists are often across the centerline in blind corners creating great danger for other motorists.

I know it is difficult to pull a project like this off with all the obstacles thrown up by obstructionists and I commend your organization for bringing it this far along. Please finish the job!

Very best regards;

Lance Haag

## Dave Hannaford

**From:** Dave Hannaford [REDACTED]  
**Sent:** Thursday, October 18, 2018 12:13 PM  
**To:** Azalea Hill  
**Cc:** Debbie Hannaford; Rick Jones  
**Subject:** Azalea Hill bike trail

Attn Aaron Fulton,

I want to enter my opinion and also speak for my wife and 40 year old son. We are strongly in favor of improving the trail and road for use by hikers, runners, and bikers. We have participated in all 3 for many years. We are 34 year residents of Marin and love this area.

We have heard comments that the trail and road will cause damage and runoff of silt. It seems to us after hiking the route a couple of times in the past that it is more likely already producing erosion and runoff in its present condition. The conversion will improve it. The final portion of the trail is a prime example. We have watched the hillside slide gradually for years.

We also feel the connection of the lakes with the Pine Mountain area will help riders avoid the Fairfax Bolinas Road safety concerns.

This is an example of the responsible use of our water district lands. We feel that public use in a responsible way will fulfill the logical potential of such a valuable resource. People who believe that any human use of the district lands is a risk to wildlife and flora are living in a fantasy. With highways, roads, and towns in close proximity, it is fantasy to think the return to historic primitive conditions will occur. The wildlife research using the cameras is beginning to show a very optimistic outlook for our ability to have trails and animals too.

Please allow the project to be completed.

Thank You,

Dave, Debbie, and Cory Hannaford

## John Herschleb

**From:** John F. Herschleb D.D.S [REDACTED]  
**Sent:** Thursday, October 18, 2018 11:02 AM  
**To:** Azalea Hill  
**Subject:** support

I am a lifelong resident of Marin and one of the earliest cyclists on the MMWD roads (no foolin'!! We kids were riding our Schwinn Stingray bikes up there in the early 60's. We thought the treatment plant near Lagunitas was a spy headquarters...). As such, I would always be in support of accessibility for cyclists and, in particular, this project. Although I've never been on this stretch from the golf course up to Azalea Hill, I can't think of a better way to SAFELY accommodate making that climb without cars!!! Opening this area will help to culture more sense of appreciation and stewardship for the lovely lands surrounding the lakes.

I am in support of improving the access and trail conditions as a benefit to all users.

Many thanks,

John Herschleb, [REDACTED]

## Randy Hibbitts

**From:** Randy Hibbitts [REDACTED]  
**Sent:** Thursday, October 18, 2018 10:43 AM  
**To:** Azalea Hill  
**Subject:** Please allow mixed use including bikes on Azalea Hill trail project

To Whom it May Concern,

I am a hiker, trail runner, mountain biker and active voter and I encourage you to please plan to open the rehabilitated trail to include mountain bike use.

I know there are some very vocal opponents of opening any single track to mountain bikers in our area, but respectful shared usage has been a positive experience for the vast majority of trail users, many of whom, like myself, enjoy our trails for multiple recreational uses.

In addition to providing bikers with access to a single track trail (a rarity for bikers in our area), this particular trail will provide a useful connector to the Pine Hill area which will allow mountain bikers to stay off a stretch of pavement that is at times dangerous when drivers decide to test their skills on the S-turns.

All in all, I believe designating this trail as multi-use will be a win-win for nature-loving recreation.

Thank you for your consideration,

Randy Hibbitts

## Christian Hobbs

*The comment was received at a public meeting held during the 30-day agency and public review period on October 11, 2018.*

*Mr. Hobbs communicated his appreciation for the educational opportunities that the watershed provides especially when it comes to educating younger generations on the importance of protecting natural landscapes. Mr. Hobbs believes the project is an excellent opportunity to increase access and awareness of the district's mission and values. Mr. Hobbs communicated his full support for the project.*

## Richard Hoffman

**From:** Richard Hoffman [REDACTED]  
**Sent:** Saturday, November 03, 2018 2:39 PM  
**To:** Azalea Hill  
**Subject:** Trails

Hi Aaron,

I hope you are doing well.

I am in favor of the Azalea Hill trail for mountain biking. This will help give mountain bikers more official trails to ride on in the birthplace of mountain biking! I think having more legal single track trails will the overall trail harmony with hikers and bikers.

Please let me know if you have any questions and thanks for your consideration!

Richard



## Tyler Hogan

**From:** Tyler Hogan [REDACTED]  
**Sent:** Thursday, October 18, 2018 2:02 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Trail

Aaron,

I regularly mountain bike from Bullfrog Road to Pine Mountain Road, and strongly believe that the addition of a fire road and/or trail to bypass Bolinas Fairfax Road would greatly increase the safety for mountain bikers and hikers that travel this route. I have participated in trail work days in Marin, and would gladly volunteer my time to construct this route.

The Pine Mountain area is my favorite area of the MMWD Watershed. Because of the vastness of the area, not as many hikers frequent the area. I have nothing against hikers and am an avid hiker myself--I merely point this out because it would be advantageous to hiker-biker relations on the Watershed to encourage bikers towards this area, thereby reducing mountain bike traffic on the rest of the mountain.

I look forward to seeing this trail built!

Sincerely,

Tyler Hogan

## Jeff Ivarson

**From:** Jeff Ivarson [REDACTED]  
**Sent:** Thursday, October 18, 2018 2:03 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Single Track

Thank you for the opportunity to comment on this project. I support Azalea Hill Single Track project 100%. Thank you for all your hard work!

Best regards,

Jeff Ivarson

## Don Johnson

**From:** Don Johnson [REDACTED]  
**Sent:** Friday, October 19, 2018 3:05 PM  
**To:** Azalea Hill  
**Subject:** Fwd: Azalea Hill project support!

Hello I am writing in support of the Azalea Hill trail improvements especially the conversion of the Liberty Gulch trail for bike use. Getting rid of all social trails and improving the eroded part of Azalea are going to make this whole area is much more enjoyable. I particularly like the fact that I won't have to ride my bike on a large section of Bolinas Fairfax Road. Additionally if there are any opportunities for volunteer trail work I have 30 years of experience of working on local trails and I would like to help.

Thanks  
Donald Johnson

## Donald Johnson

*The comment was received at a public meeting held during the 30-day agency and public review period on October 11, 2018.*

*Mr. Johnson expressed his support of the project; specifically, to get bikes off Bolinas-Fairfax road.*

## Jim Johnstone

*The comment was received at a public meeting held during the 30-day agency and public review period on October 11, 2018.*

*Mr. Johnstone thanked the district for the opportunity to increase access for bikes and providing additional opportunities to use the watershed without having to navigate Bolinas-Fairfax road.*

## Rick Jones

*The comment was received at a public meeting held during the 30-day agency and public review period on October 11, 2018.*

*Rick Jones pointed out the benefits of the project from an environmental and safety perspective; noting that the project is a win-win. Mr. Jones communicated his full support for the project and offered to assist the district in any way possible.*

## Jake Kaplove

**From:** Jake Kaplove [REDACTED]  
**Sent:** Thursday, October 18, 2018 11:00 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Trail Project- support mountain bikes

Hi,

I am writing to support mountain bike access for the Azalea Hill Trail Project. I have lived in the San Francisco Bay Area my whole life (since 1990) and I am a proud nature lover and mountain biker. Mountain biking is a way for me to get outside, enjoy the beauty of nature and have fun. I believe that these are the goals for any any trail project: to open up opportunities for people to be outside and enjoy it. Mountain biking is a safe and enjoyable activity for the outdoors.

Please support mountain bike access for the Azalea Hill Trail Project. Please support the Mitigated Negative Declaration for the amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan for the Restoration of Azalea Hill.

Thank you!

-Jake

## Christopher Keiser

*The comment was received at a public meeting held during the 30-day agency and public review period on October 11, 2018.*

*Mr. Keiser described his use of MMWD district lands (hiking, biking, and running) and specifically the Azalea Hill and Liberty Gulch project area. He communicated his support for the project.*

## Tom Lyons

*Voicemail left with Aaron Fulton on October 23, 2018.*

*Mr. Lyons voiced support for Azalea Hill Project. Tom believes the project includes fantastic preservation benefits for the area. He also believes that access to the northwest side of the Azalea Hill ridge is viable for the biking community and that there is spectacular biking in that area that people should have access to. Tom thanked MMWD for outreach and collaboration with the stakeholders.*

**Bill Melton**

**From:** Bill Melton [REDACTED]  
**Sent:** Thursday, November 01, 2018 12:29 PM  
**To:** Azalea Hill  
**Subject:** Azalia Hill Project

MMWD,

First of all want to thank you for all of the hard work you put in to maintain our beautiful open space land in Marin. I also want to express my support for the Azalia Hill access project. As an avid mountain biker and asst. coach of the Drake HS Mountain bike team I feel this project would provide safer access between Mt Tam watershed and the Pine Mountain area. We regularly take kids around the golf course and then up Bolinas Road to the Pine Mtn loop and this presents a dangerous route on a road with limited shoulder.

I also understand that this project will also provide enhancements to the Liberty Gulch road and prevent potential sediment from entering the lake.

Thank you!

Bill Melton

## Charles Merrill

**From:** [REDACTED]  
**Sent:** Friday, October 19, 2018 10:16 PM  
**To:** Azalea Hill  
**Subject:** I support the Azalea Hill realignment

Hello,

I strongly support the proposed Azalea Hill realignment. I applaud all parties for the process thus far. I have enjoyed hiking, running and riding in the district for almost 50 years. I'm out there several days a week. I am happy about the sedimentation prevention and the decommissioning of the patchwork of social trails.

The Azalea Hill realignment will provide a much needed safe alternative for cyclists to the dangerous narrow shoulders of Bolinas-Fairfax road.

I look forward to volunteering to help build the Azalea Hill project.

Best regards,  
Charles Merrill

## Walt Meservey

**From:** Walt Meservey [REDACTED]  
**Sent:** Tuesday, November 06, 2018 8:22 AM  
**To:** Azalea Hill  
**Subject:** Proposed Liberty Gulch Road work

Dear Mr. Fulton,

I have been a San Anselmo homeowner and mountain biker for the past three decades, and I still ride the Pine Mountain loop on Thanksgiving and at other times. I'm very grateful that I am able to ride my bike and hike in the MMWD (unlike the situation within the San Francisco Water District).

I think that developing the former Liberty Gulch Road into a shared-use trail open to bicyclists is a wonderful idea. From a public safety perspective, this bypass to the Bolinas-Fairfax Road will give bicyclists a safer way of getting to the top of Azalea Hill, and will not displace any hikers on the other trails. Moreover, any stabilization work on Liberty Gulch that reduces sedimentation into Alpine Lake is also good for everyone.

Thanks for giving time and attention to this project. I hope that it is implemented.

Sincerely,

Walt Meservey

## Josh Mooney

**From:** Josh Mooney [REDACTED]  
**Sent:** Friday, November 09, 2018 1:24 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Mountain Bike corridor

Hi,

I'd love to see Azalea Hill added as a legal mountain bike connection between the Tam watershed and Pine Mountain. I'm excited for the connection and support the environmental enhancements as well. This is a major missing piece to epic riding.

Thanks to the staff for their good work on this to date. I hope we see a collaborative evolution of this project. Adding bicycle connectivity increases the chances of receiving grant funding and public donations for both the trail work and habitat restoration work.

Here's to the future of Azalea Hill!

Josh

## Gerry Morgan

**From:** Gerry Morgan [REDACTED]  
**Sent:** Saturday, October 20, 2018 10:52 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill project

To Aaron Fulton:

I am a relatively recent replant back in the Bay Area returning from Colorado. But I had never lived in Marin County. We are so lucky to live here, and a major component of that is the immense pleasure I and my riding community enjoy from the variety of close, safe and exhilarated trails. Thank you for considering opening up Azalea Hill for riding and other activities. It would allow our squad to ride safer without having to use the current bike route around the golf course and up Bo-Fairfax Road (with no shoulder). Otherwise I under the benefits would include:

- The project recycles a historic road to provide safe access for all trail users.
- The project allows for enhancements to the Liberty Gulch Road, which will prevent over 4,000 cubic yards of sediment from entering Azalea Hill's creeks or Alpine Lake over 20 years.
- The project is in an ideal place for interpretive features to celebrate the 100th anniversary of the Alpine Dam.
- Expanding the inclusiveness of the project by adding bicycle connectivity increases the chances of receiving grant funding and public donations for both the trail work and habitat restoration work.
- The proposed bicycle alignment will place cyclists at a location below the Azalea Hill Parking lot and current bike-legal trail to the top of the hill, which will eliminate the need for bike access to the top of Azalea Hill.
- Bicyclists (including me!!!) are ready and willing to help with both the trail work and habitat restoration.

Thank you for your consideration!

Gerry Morgan



**Sean O'Day**

**From:** Sean O'Day [REDACTED]  
**Sent:** Friday, October 19, 2018 3:49 PM  
**To:** Azalea Hill  
**Cc:** Sean O'Day  
**Subject:** Azalea Hill Trail Project

Dear Aaron Fulton,

Please note my support for the Azalea Hill bike access trail project. I have been riding in Marin since 1991, and been a home owner since 1995. I have ridden from my home in Corte Madera to the Pine Mt Trail Head over a hundred times and dreamed of a day when I did not have to get on the Bolinas-Fairfax road. I appreciate all the improvements and increased bike access over the past 25 years and look forward to future projects such as this.

Know that I am happy to support this project any way I can.

Thanks,

Sean O'Day

## Erik Page

**From:** Erik Page [REDACTED]  
**Sent:** Friday, October 19, 2018 3:20 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill comments

Dear Mr. Fulton,

I live in Fairfax up by the Meadow Club - just minutes walk away from the bottom of the proposed trail. **I am strongly in favor of the proposed project** and have been watching this proposal advance with great excitement and much anticipation. I have attended a few MMWD board meetings specifically to hear about this project...

I am a mountain biker and I ride up and down Bolinas Rd between my house and the Pine Mt trailhead several times a week. Invariably, this part of my ride is both the least enjoyable and more dangerous. I don't want to be on that road and the cars don't want me there either. I am extremely excited about the prospect of being able to access the SG Ridge without needing to touch asphalt (technically I suppose I will need to touch if briefly when I cross Bolinas Rd at the top - don't worry about putting in a bridge or tunnel for me, I can deal with it ;- ) ).

This project seems like a real environmental boon too by replacing many of the "trails to nowhere" on Azalea hill and utilizing the old abandoned road for the new trail. I have hiked the existing road/trail and I do hope that some of the rocky and wild aspects can be maintain as these are much more interesting and fun to ride bikes on (or to hike on!) and they also make for a trail that blends in with the environment more than a 5 foot wide flattened section of trail. But I will be grateful to have this car-less connector in whatever form it ultimately takes.

Thank you for your work on this and for your consideration of my comments.

-erik

## Blair Peterson

**From:** Blair Peterson [REDACTED]  
**Sent:** Monday, October 29, 2018 2:07 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Trail Project Feedback

Hello,

I am a frequent visitor to the Azalea Hill area. I hike, mountain bike and road bike there. I fully support the plan to improve the Azalea Hill Trail, and especially the environmental and access improvements to the old Liberty Gulch Road. The latter would provide a safe, enjoyable, car-free connector between the "Lakes" and Pine Mountain-- something that has been missing for a long time.

Thank you,

Blair Peterson

## Richard Peterson

*The comment was received at a public meeting held during the 30-day agency and public review period on October 11, 2018.*

*Mr. Peterson communicated his full support for the project and specifically called attention to the benefits to the bicycle community by providing an off road alternative to Bolinas-Fairfax road. Mr. Peterson also provided anecdotal evidence and his own observations of recent trail decommissioning work along the Camino Alto trail where Marin County Parks efforts have been successful in keeping people out of restored areas. Mr. Peterson also supports post-project monitoring to ensure the project performs as designed.*

## Mathew Pope

**From:** Matthew Pope [REDACTED]  
**Sent:** Thursday, October 18, 2018 11:11 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill trail plan

Hello, I'm writing in support of the proposed adoption of Liberty Gulch Road as a multi-use trail open to cyclists. I live in San Anselmo and frequently ride and hike with my wife and kids in the areas of Bon Tempe/Alpine Lake/Lake Lagunitas and across Bolinas-Fairfax Road on Pine Mountain. The proposed plan addresses an important connectivity need that would allow cyclists to avoid Bolinas-Fairfax Road when linking the two areas.

Given the fact that this route already exists it seems like a sensible plan to adopt and improve the existing trail/road. It also addresses an important desire among off road cyclists for legal access to single-track trails, none of which currently exist (to my knowledge) on the vast MMWD lands. I hope that MMWD takes advantage of this opportunity and acknowledges the type of trail experience that cyclists are looking for, which is a rugged, technical trail experience and not a wide, smoothly graded fireroad experience under the name of a trail. The existing nature of the trails should be maintained.

In light of the fact that there is an existing Class VI route for equestrians between the same two areas, the Liberty Gulch project seems like a missed opportunity for a "hike/bike only" designation. However, I strongly support the project as long as it provides a true and rugged single-track experience that is open to cyclists.

I sincerely hope that MMWD will follow through on this project and have the courage to stand up to the very small but vocal minority of users that will oppose any plan to increase single-track access to cyclists in Marin county. The cynic in me expects that the Footpeople, Audubon Society, and Marin Horse Council are preparing litigation to stop the project as I type this. I hope the water district recognizes the small number of voices represented by these groups and the reality of the peaceful co-existence between bikes and other users on trails all over Marin, the rest of the bay area, and beyond.

Best regards,

Matt Pope

## Chris Pincetich

**From:** Chris Pincetich [REDACTED]  
**Sent:** Friday, November 09, 2018 8:23 PM  
**To:** Azalea Hill  
**Subject:** Support for cycling access Azalea Hill CEQA comment

To Whom it Concerns,

I am writing to support the proposed Azalea Hill modifications and thank the County staff for the great work and commitment to environmental stewardship. The proposed road is needed to allow access across the trail network to cyclists. I live and work in Marin County and cycle for transit and recreation, and rely on safe routes off-road to avoid dangerous drivers on West Marin roads and HWY 1. Since the County and Coastal Commission continues to insist on narrow roadways with minimal to no shoulders, off-road riding is the safest cycling alternative, and it's critical to my recreation needs that provide physical and mental fitness.

I'm a professional environmental planner, and I see how the plan reduces the opportunities for invasive plant species to infiltrate the ecosystem. This is the correct environmental document. I support heavy efforts to remove invasive plants such as french broom, and I support efforts to protect native plants too! Road construction must be accompanied by qualified professional botanists to oversee monitoring, relocation, and other mitigation actions. I hope the County takes every effort to preserve rare plants, steward their relocation and propagation, and increases collaboration with local trail users of all types to support their needs.

Thank you!

Cheers,

Chris

## Rob Reed

*The comment was received at a public meeting held during the 30-day agency and public review period on October 11, 2018.*

*Mr. Reed thanked the district for the opportunity to use the watershed for health and recreation activities. Mr. Reed indicated his support for trail decommissioning, additional signage, and other design elements so that he and his riders can ensure they are on appropriate trails. Overall, Mr. Reed communicated his support for the project.*

## Joe Ramos

**From:** Joe Ramos [REDACTED]  
**Sent:** Thursday, November 01, 2018 3:05 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill

Hi Aaron,

I am a mountain biker and member of Meadow Club for years, and live in Kentfield. I have always dreaded the stretch of road on Bolinas from the Meadow Club to the Pine Mountain entrance. I had a friend 15 years ago get her ear ripped off by a car in that location.

I am so excited, if this passes, to be able to access Pine Mountain without having to go on the road!

You have my support!

JOE RAMOS

**Jim Rose**

**From:** thejimrose [REDACTED]  
**Sent:** Thursday, October 18, 2018 11:26 AM  
**To:** Azalea Hill  
**Subject:** New trails for mountain bikes please!

Hi Aaron - Wanted to offer my comment that as a homeowner in San Rafael and biker of mountains I'm 100% for any extension of the trail network in Marin.

thanks!

jim rose

## Erik Schmidt

**From:** Erik Schmidt [REDACTED]  
**Sent:** Friday, October 19, 2018 11:36 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill MND Public Comments

Dear MMWD — Thank you for the opportunity to review and comment on the Initial Study/Mitigated Negative Declaration for the Azalea Hill Restoration project. I want to commend the District for its vision and careful planning and analysis in developing this much-needed project. As a regular visitor to MMWD lands, including the Azalea Hill area, I have been aware of the proliferation of informal foot trails throughout this sensitive habitat, the badly eroding primary Azalea Hill trail, and the complete lack of a bike-legal trail link from the Lakes area to the Pine Mountain area. This project proposes to address all three issues, and to do so in an environmentally sensitive way. I believe the project will have only short term, minor impacts thanks to its design and the included mitigation measures. The needs of hikers, equestrians and cyclists will be accommodated and access greatly improved, multiple sources of sediment will be treated, and a network of social foot trails that greatly impact serpentine and other rare habitats will be decommissioned (an impressive total of 4.4 miles, illustrated in Figure 3 of the MND).

It is not often that a water district project can achieve so many important goals, and benefit so many user groups and natural resources. I urge the Board to approve the MND and to seek funding from a variety of grant sources to implement this project. I look forward to supporting the project as it moves forward, and eventually, to enjoying both the improved Azalea Hill Trail and Liberty Gulch Multi-use Trail as I hike and bike on MMWD lands with my family. Again, thank you for planning and designing such a thoughtful, progressive project that will have so many positive effects.

Erik Schmidt



## Ray Scruggs

**From:** Ray Scruggs [REDACTED]  
**Sent:** Friday, October 26, 2018 12:15 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill bicycle trail connect to San Geronimo Ridge Trail

Hello Aaron Fulton,

I was encouraged by the Marin County Bicycle Coalition (MCBC) to send an email to you.

Please help to produce the bicycle access trail connection or bypass from the Meadow Club Golf Club to the top of Azalea Hill to access the San Geronimo Ridge Trail.

The Meadow Club Golf Club to the top of Azalea Hill road access from the when riding a bike up hill is very dangerous having no shoulder and many blind corners and many dangerous neglectful drivers.

As a frequent bicycle trail rider for more than 35 years, I well know this off road connection has been a topic known to the MMWD for more than 20 years. So I expect continued neglect of this safety issue. Hopefully a younger generation less resistant to democracy has position now within MMWD. So I write again to appeal to hopefully more careful people now days within MMWD for safety.

Thank you very much,

Ray

## James Sievert

**From:** James Sievert [REDACTED]  
**Sent:** Thursday, October 18, 2018 4:18 PM  
**To:** Azalea Hill  
**Subject:** Bike access on Azalea hill

I am excited to hear that the gap may be closed in the bike trail network. Access to Pine mountain is only possible on the road from the golf course. A connecting dirt road or trail would be amazing. I'm glad to hear that this improvement would also benefit the nature.

Thank you for your work on this project and I hope to help on a trail building day soon!

## Brooke Smith

**From:** Brooke Smith [REDACTED]  
**Sent:** Friday, November 02, 2018 3:08 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Gaps Project

Hello Aaron,

I wanted to thank MMWD for recent efforts to improve mountain bike trail access. I want to express my support for the Azalea Hill project. My favorite bike ride is to mountain bike from my house in east Marin out to west Marin, via the bike paths to Phoenix lake and fire roads to Fairfax-Bolinas. It would be really great if there was a mountain bike route that connected Lagunitas Lake to Bon Tempe to Alpine to Kent lakes, and that connected up with Bolinas Ridge. This would help mountain bikers avoid Fairfax-Bolinas road. I think it might be possible to have a mostly dirt and car-free route between east and west Marin. There have been too many road cyclist injuries and/or deaths riding between east and west Marin. I perceive most road routes between east and west Marin as unsafe (e.g. Highway 1, Lucas Valley Rd, and parts of Sir Francis Drake). I believe that mountain biking is much safer and something that families can do together (especially the flatter routes). Mountain biking in Marin is also a great way to avoid parking challenges at many of the local open space, lake and beach areas. When I hike, I need to drive my car to the trailhead, but I can mountain bike from my house to many trailheads and keep going. I prefer riding on wider fire roads and wider single track trails (wide enough for two bikes to easily pass each other, without stopping).

Thanks,

Brooke

## Karl Spurzem

**From:** Karl Spurzem [REDACTED]  
**Sent:** Saturday, November 03, 2018 6:48 PM  
**To:** Azalea Hill  
**Subject:** Support for the Azalea Hill Project

I am a strong supporter for the Azalea Hill Project. I have been a mt. bike rider in MMWD lands since the early days of the rush into mt. biking which was 30 years ago. I have ridden from Bon Tempe across Bullfrog on my way to Pine Mountain more than I can remember. The stretch of asphalt to the trailhead has always been a dangerous part of the ride. The road is just too narrow and everyone speeds, no matter what.

I follow MCBC closely and have for years. Their work to improve relations between hikers/bikers/horse has been effective over the years given their influence over mt bikers and their behavior. I am confident that those of us who are more than just weekend riders who rarely make it past 5 Corners will be respectful of the multi-use aspects of the trail.

The positive environmental aspects of completing the construction are very worthwhile.

Thanks to the staff for their effort and support to try and get this project over the finish line.

Karl Spurzem (Marin Resident in Corte Madera for 30 yrs and avid 59 yr old mt biker)

Corte Madera, CA

## Chris Stein

**From:** Chris Stein [REDACTED]  
**Sent:** Tuesday, October 30, 2018 3:29 AM  
**To:** Azalea Hill  
**Subject:** In support of opening Azalea hill to mountain bikes

Dear Mr. Aaron Fulton,

I've been mountain biking in Marin County since I was a high schooler, which means I've spent a lot of time on Fairfax-Bolinas Road climbing up to popular trails on both San Geronimo and Bolinas Ridges. I support the Mitigated Negative Declaration for the amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan for the Restoration of Azalea Hill as a matter of safety. By opening a portion of Azalea trail to mountain bikes, this would mean that there are less cyclists on the windy and hazardous curves of the Fairfax-Bolinas Road. This will increase safety for both cyclists and motorists alike, and decrease congestion on the road. I urge the MMWD to pass this amendment.

Sincerely,

Chris Stein

## Scott Stoneback

**From:** Scott Stoneback [REDACTED]  
**Sent:** Saturday, October 20, 2018 9:13 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill bike trail supporter

Hi, I believe that any thoughtful addition of bike legal trail is a worthwhile cause. I am glad to hear that MMWD is thinking about the needs of all trail users.

A trail over an old, historic road seems like a no-brainer to me. The land has already been modified, it is silly not to use it to its potential. Of course, that means building out the trail responsibly. Many cyclists are eager to provide the volunteer labor to help get projects like this done.

Sincerely,

Scott Stoneback

## Joe Stranzl

**From:** Joe Stranzl [REDACTED]  
**Sent:** Thursday, October 18, 2018 12:22 PM  
**To:** Azalea Hill  
**Subject:** Full Support

My 2 sons & I are in full support of new Azalea Hill trail open to bikes/all. When it's go time, we'll plan to pitch in on trail days. Let's do this (before it's too late). Thx Joe Stranzl

## Eric Stromberg

**From:** Erik Stromberg [REDACTED]  
**Sent:** Friday, October 19, 2018 9:30 PM  
**To:** Azalea Hill  
**Subject:** Asales hill trail

Hi,

This segment of trail adds tremendous value to the trail network. I fully support this link. It will reduce user conflicts and help protect the sensitive habitat of a Adele's hill.

Thank you,

Erik Stromberg

## Jared Tanamachi

**From:** Jared T. [REDACTED]  
**Sent:** Thursday, October 18, 2018 12:39 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Trail Project

Aaron-

As a local mountain biker and hiker, I endorse this trail project. Currently the only way to connect the golf course to Azalea hill is to ride up (or down) Bolinas-Fairfax road. While cyclists have every right to be on the road, we all know that having both users on the road can create tension. This dangerous situation can be remedied if we have a dirt connector between these two trailheads.

I firmly believe that any action that can be taken to alleviate car/bike interactions will have only positive outcomes. Bike paths and trails can make things safer for everyone.

Thank you for your work.

Jared Tanamachi

Fairfax resident

## Sharon Tilley

**From:** Sharon Tilley [REDACTED]  
**Sent:** Saturday, October 20, 2018 8:18 AM  
**To:** Azalea Hill  
**Subject:** Support for Azalea Hill bike trail

Dear Mr. Fulton,

I'm emailing to express my support for the proposed new 1.3 mile trail connector on Azalea Hill. Our entire family mountain bikes, and my two teenage sons say the closest they've ever come to a disastrous accident is when a car speeding down BoFax nearly sideswiped them as they were riding down to connect to trails. This trail addition will have a meaningful positive impact on biker and driver safety.

Thank you,

Sharon Tilley  
[REDACTED]

## Jeffrey Vickers

**From:** Jeffrey Vickers [REDACTED]  
**Sent:** Monday, November 05, 2018 10:40 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Project

Dear MMWD,

I am a resident of San Geronimo and hike and bike the watershed extensively.

Thanks for making this project a possibility for those of us who love the watershed and use it regularly. I personally think that the Azalea Hill Project will be a fantastic addition/asset to the area. Users like me will long enjoy the benefits of this project for years to come.

Adding a safe alternative to riding the road to reach the Pine Mtn. loop is huge. So many motorists are in a huge hurry to get to that parking lot, so adding this alternative will most likely result in fewer traffic incidents and possibly save a life or two.

The other great thing about this plan is that it gets rid of the crazy-maze of social trails up there and will also keep my equestrian friends happy since they won't have to share the trail with those of us who ride mountain bikes.

I would also like to add that I am ready to help out with building the trail if volunteers are needed. I spent 11 Saturdays working on the 680 trail when it was under construction and often help out with work on Bill's Trail on Mt. Barnabe, so I have trail building experience.

Thanks again,

Jeff Vickers



## Christian Vigeland

**From:** Christian Vigeland [REDACTED]  
**Sent:** Friday, October 26, 2018 3:46 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Trail Project

To Whom It May Concern,

I am writing to express my strong support for the Azalea Hill trail project. As someone who loves the outdoors and regularly hikes, runs and mountain bikes on the trails and fire roads around Marin, I see this as a critical connection point between two popular riding and hiking areas. It's an opportunity to create a safer alternative to forcing bikes up Bolinas-Fairfax road, and mitigates any trail conflict issues by keeping the existing hiker routes closed to bikes.

I would be thrilled to see this get built and I would use it regularly. I would also happily help in the building effort.

Best,

Christian Vigeland

## Craig Vigor

**From:** Craig Vigor [REDACTED]  
**Sent:** Thursday, November 01, 2018 12:46 PM  
**To:** Azalea Hill  
**Subject:** support for Azalea Hill Project

Dear Aaron Fulton,

I'm an enthusiastic supporter of the Azalea Hill project proposed to fill this big gap in the Marin Trail Network, and its environmental enhancements.

## John Vipiana

**From:** John Vipiana [REDACTED]  
**Sent:** Thursday, November 01, 2018 2:40 PM  
**To:** Azalea Hill  
**Subject:** Support for Azalea Hill

Dear Aaron,

I am stoked to see this project move forward. There are so many reason to move forward with this project. I'll just hit you with a few:

The current spider web of trails causes way too much erosion. The project will remove over 4 miles of unsustainable social trails that break up over 100 acres of Serpentine habitat. I believe this is expressed in Mitigation Measure BIO-10 and BIO-13. The trail reuses and enhances Liberty Gulch Road. As your work shows, the new trail will dramatically reduce sedimentation by as much as 4,000 cubic yards of sedimentation.

The Azalea Hill project will enhance access for ALL users. I love this! Yes, we can all get along. This improved access will create a safe route from Fairfax to Pine Mountain. As a high school coach of 12 years, I've fretted much when riding up Bo-Fax road with groups of high school rider. This will give us a safe way to access Pine Mountain.

Thank you for all your work on this project. I appreciate you and MMWD pushing this project forward.

THANK YOU,

John Vipiana

## Zachary Warnow

**From:** Zachary Warnow [REDACTED]  
**Sent:** Friday, October 19, 2018 3:32 PM  
**To:** Azalea Hill  
**Subject:** My thoughts on Azalea Hill trail changes

Hi Aaron and team,

I'm a father, hiker, mountain biker, nature lover, and Fairfax resident. I'm writing to express my strong support for the proposed trail changes that would open Liberty Gulch Road to bikes. I appreciate all of the work done up to this point by the staff and other collaborators and feel like this proposal strikes the perfect balance between conservation interests and those of hikers, bikers, and equestrians. The current bike route around the golf course and up Bo-Fax road is unsafe for bikers and an alternative is needed to connect the Mt Tam area and the Pine Mtn area.

As the sport of mountain biking continues to grow, land and water managers should continue to take the needs of this expanding user group into consideration.

Thanks for your work on this issue and I hope you all make the right decision.

Sincerely,

Zachary Warnow

## Boyd Watkins

*Phone conversation with Aaron Fulton on November 1, 2018.*

*Mr. Watkins described his understanding of the project benefits and identified his support for the project.*

## Jeff Weidner

**From:** Jeff Weidner [REDACTED]  
**Sent:** Thursday, October 25, 2018 9:45 PM  
**To:** Azalea Hill  
**Subject:** Support for Azalea hill via Liberty Gulch road bike route project

I support the enhancement of the Liberty Gulch Road for bike use. This will be much better and safer than the current requirement to go around the golf course and up Bolinas-Fairfax road which is dangerous due to the narrow road and high-speed cars.

Jeff Weidner, [REDACTED]

Of course, there are many other benefits, too:

- The project provides a safe alternative to the current bike route around the golf course and up Bolinas-Fairfax Road on a 1.3 mile stretch of windy road with no shoulder.
- The project enhances the existing hiker/equestrian trail and keeps it closed to bikes.
- The project decommissions 4.5 miles of social trail that fragment over 100 acres of Serpentine habitat.
- The project recycles a historic road to provide safe access for all trail users.
- The project allows for enhancements to the Liberty Gulch Road, which will prevent over 4,000 cubic yards of sediment from entering Azalea Hill's creeks or Alpine Lake over 20 years.
- The project can serve as a powerful vehicle to broaden awareness and appreciation of the rare plant and animal communities.
- I support Mitigation Measure BIO-10 and BIO-13 which will ensure that the decommissioned trails will remain closed and that non-native plants do not spread in this area.
- The project is very thorough in its cataloging of native plants and suggested avoidance measures.
- The project is in an ideal place for interpretive features to celebrate the 100th anniversary of the Alpine Dam.
- Expanding the inclusiveness of the project by adding bicycle connectivity increases the chances of receiving grant funding and public donations for both the trail work and habitat restoration work.
- The proposed bicycle alignment will place cyclists at a location below the Azalea Hill Parking lot and current bike-legal trail to the top of the hill, which will eliminate the need for bike access to the top of Azalea Hill.
- Bicyclists are ready and willing to help with both the trail work and habitat restoration.

--

/JeffW

## Avery Whitmarsh

**From:** Avery Whitmarsh [REDACTED]  
**Sent:** Friday, October 19, 2018 3:47 PM  
**To:** Azalea Hill  
**Subject:** Support for Azalea Hill trail project

Dear Aaron,

I'm writing to voice my support for the Azalea Hill bike connection project. I have ridden the stretch of Fairfax-Bolinas road many times to access the Pine Mountain area and would love to see this project in place.

Thank you for your support and consideration of this project!

Avery

## Charles Wong

**From:** C. Wong [REDACTED]  
**Sent:** Thursday, October 18, 2018 11:01 AM  
**To:** Azalea Hill  
**Subject:** Azalea Hill Restoration

I think it would be valuable for everyone in our community to create more options for mountain bikers and hopefully reduce overall conflict that shouldn't exist but does do to lack of access.

Thank you,

Chuck

Mill Valley

## Matt Woodbury

**From:** Matt Woodbury [REDACTED]  
**Sent:** Friday, October 19, 2018 3:06 PM  
**To:** Azalea Hill  
**Subject:** Azalea Hill and MCOSD's Region 5 Trail Designation projects.

Aaron:

I'm writing to support the Azalea Hill and MCOSD's Region 5 Trail Designation projects.

I'm a 66yr old guy who takes great pleasure in riding off road and taking in the beautiful landscapes in the Bay Area.

I can't express how pleased I am that these expanded opportunities are getting serious review and consideration and thank all who are working on this effort.

The more trails, the less congestion and ultimately the better the riding experience.

The opening of the trails will have minimal impact overall on the land (grazing is exponentially worse) and the people who live, work, and re-create will be better served.

The less time I spend accessing trails by riding on roads, the happier (and safer) I am.

I believe most mountain bikers have a connection with the back country and will respect and preserve the trails available.

The work by the local non-profits to maintain trails in Marin is well documented.

We need to bring along youngsters and engage them in the efforts – someday I'll be too old for trail work.

Thanks for your efforts and know that I'm 110% in support of these projects.

Regards,

Matt Woodbury

## References:

- Frazzell et al, 2009. University of California Division of Agricultural and Natural Resources. Facts about Serpentine Rock and Soil Containing Asbestos in California. August, 2009
- Franklin et al, 2002. What is Habitat Fragmentation. Studies in Avian Biology No. 25:20-29. 2002
- Jordan, 2000. Ecological Impacts of Recreational Use of Trails: A literature Review. The Nature Conservancy, Cold Spring Harbor, New York.
- Patterson, 1990. Sensitive Plant Survey of the Marin Municipal Water District
- PWA, 2003. "Summary Report, Road and Trail Inventory and Assessment, Erosion Prevention Implementation Plan, Mt. Tamalpais Watershed, Marin Municipal Water District, Marin County. Prepared by Pacific Watershed Associates, 2003.
- RTMP, 2005. Mt. Tamalpais Watershed Road and Trail Management Plan. July, 2005

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# **Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan – Restoration of Azalea Hill**

**MMWD Mt. Tamalpais Watershed, Unincorporated Marin County**

**Initial Study/Mitigated Negative Declaration – Appendix F**

**Mitigation, Monitoring, and Reporting Program**



## Appendix F - Mitigation Monitoring and Reporting Program

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The California Environmental Quality Act (CEQA) requires a lead public agency to develop a mitigation monitoring and reporting plan or program (MMRP) when making any necessary findings for a Final Environmental Impact Report (EIR) or when approving a Mitigated Negative Declaration. The intent of the MMRP is to verify or document the required mitigation measures presented in the Mitigated Negative Declaration are implemented. An amendment to CEQA, effective in 1989 as a result of Assembly Bill (AB) 3180 requires that a public agency adopt a plan for monitoring and reporting of the implementation of mitigation measures required of a project. Specifically, as stated in California Public Resources Code Section 21081.6(a)(1):

*[T]he public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation. For those changes which have been required or incorporated into the project at the request of a responsible agency or a public agency having jurisdiction by law over natural resources affected by the project, that agency shall, if so requested by the lead agency or a responsible agency, prepare and submit a proposed reporting or monitoring program.*

The following table lists each mitigation measure included in the Final Initial Study and Mitigated Negative Declaration (IS/MND) for the Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan for the Restoration of Azalea Hill and the Final Program Environmental Impact report for the Mt. Tamalpais Road and Trail Management Plan (RTMP). Mitigation measures from both documents apply to the Proposed Project.

Mitigation measures are ordered according to the “Environmental Factors Potentially Affected” section of the Final IS/MND (Aesthetics, Agricultural and Forest Resources, Air Quality, etc.) as shown in the table of contents below. Mitigation Measures included in the IS/MND for the Amendment of the Mt. Tamalpais Watershed Road and Trail Management Plan – Restoration of Azalea Hill are presented first, followed by related mitigation measures from the program level RTMP FEIR, and then the remaining RTMP FEIR mitigation measures that apply and will be implemented. The source of each Mitigation is labeled (RTMP or IS/MND) and the specific action and required timeline are identified.

Implementation and adherence to all mitigation measures is the responsibility of the Marin Municipal Water District (“district” or “MMWD”).

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**1. Aesthetics** - The project would not result in significant adverse impacts related to Aesthetics. No mitigation is required.

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**2. Agriculture and Forest Resources** - The project would not result in significant adverse impacts related to Agriculture and Forest Resources. No mitigation is required.



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Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<b>3. Air Quality</b>			
<b>IS/MND Mitigation Measure AIR-1.</b> During construction activities, the district shall require its personnel and any construction contractor(s) assigned to the project to implement a dust abatement program that includes, but is not necessarily limited to the following BAAQMD-recommended measures as needed, to control dust:			
<ul style="list-style-type: none"> <li>• All haul trucks transporting soil, sand, or other loose material off-site shall be covered.</li> <li>• All visible mud or dirt tracked out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping shall be prohibited.</li> <li>• Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations).</li> <li>• All construction equipment shall be maintained and properly tuned in accordance with manufacturer’s specifications.</li> </ul>	<p>The district will include dust and exhaust control measures in the project contract documents, which will require any construction contractor to adhere to BAAQMD requirements. Daily inspections during construction will be performed by district staff to confirm implementation of the prescribed mitigation measures.</p> <p>If work is performed by the district’s construction crews all work will adhere to BAAQMD requirements and best management practices identified in <b>IS/MND Mitigation Measure AIR-1.</b></p>	Construction Period	
<b>RTMP Mitigation Measure 3.4-A.1.</b> MMWD will require its staff or contractors to implement, as appropriate, the BAAQMD’s basic control measures for emissions of dust during construction, including:			
<ul style="list-style-type: none"> <li>• Water all dry active construction areas at least twice daily.</li> <li>• Cover all trucks hauling soil, sand, and all loose materials, or require trucks to maintain at least two feet of freeboard.</li> <li>• Apply water as needed to all unpaved access roads, parking areas, and staging areas or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more).</li> <li>• Enclose, cover, or water twice daily the exposed stockpile of excavated material.</li> <li>• Limit traffic speeds on unpaved roads to 15 mph.</li> <li>• Replant vegetation on fill slopes as soon as feasible.</li> <li>• Suspend excavation and grading activities when winds (instantaneous gust) exceed 25 mph</li> </ul>	<p>The district will include dust and exhaust control measures in the project contract documents, which will require any construction contractor to adhere to BAAQMD requirements. Daily inspections during construction will be performed by district staff to confirm implementation of the prescribed mitigation measures.</p> <p>If work is performed by the district’s construction crews all work will adhere to BAAQMD requirements and best management practices identified in <b>RTMP Mitigation Measure 3.4-A.1.</b></p>	Construction Period	

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Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<b>4. Biological Resources</b>			
<b>IS/MND Mitigation Measure BIO-1.</b> Prior to the commencement of construction activities, the district will commission or conduct protocol-level surveys for special status plant species. The survey area will include all areas in which construction would occur during that construction season, as well as all adjacent areas that could be disturbed. The surveys will be timed to correspond with the blooming period of the target species to facilitate identification. Given the number of annual special status plant species in the area, and that the distribution of such species changes annually, the surveys will be considered valid until the following spring. The following shall then be implemented:			
<ul style="list-style-type: none"> <li>All special status plants and/or boundaries of the population(s) will be flagged.</li> </ul>	For each project phase, the district botanist will survey the work area and flag boundaries of special status plants prior to construction equipment mobilization.	Pre-Construction	
<ul style="list-style-type: none"> <li>All Marin western flax plants (or other state or federally listed plants) will be avoided, and all work will be avoided within 500 feet of any Marin western flax or other state or federally listed plant population when the plant is above ground (late May-July). <ul style="list-style-type: none"> <li>In instances where a 500-foot buffer cannot be accomplished, the district should consult with the California Department of Fish and Wildlife on appropriate buffer distances and any potential additional protective measures such as additional species monitoring or installation of fences and signage to dissuade users from going off trail.</li> </ul> </li> </ul>	<p>The district botanist will survey the work area and establish 500-foot buffers around Marin western flax or other state or federally listed species that are identified. Daily inspections during construction will be performed by district staff to confirm work does not occur within established buffers.</p> <p>If the project is implemented by the district, the district's construction crew supervisor shall coordinate with the district botanist to establish and confirm work limits.</p>	Pre-Construction	
<ul style="list-style-type: none"> <li>No trail improvements/construction activities will occur within the trail segment in which several Marin western flax plants were observed in 2018. To accomplish this, a district botanist shall survey the area immediately before construction (between May and July when Marin western flax is flowering), identify, and mark the portions of the trail supporting Marin western flax. The construction team shall be instructed that no trail improvements or disturbance is permitted in that section of the trail.</li> </ul>	<p>Construction will not be permitted within botanist-established Marin western flax buffers. The district will include work area restrictions in the construction contract documents which will require avoidance. Daily inspections by district staff will be performed to ensure compliance with work limits.</p> <p>If the project is implemented by the district, the district construction crew supervisor shall coordinate with the district botanist to establish and confirm work limits.</p>	Construction Period	
<ul style="list-style-type: none"> <li>If a special status plant species, other than Marin western flax (as all Marin western flax will be avoided, see above) are found in the project's disturbance boundary during preconstruction surveys, the plants will be avoided to the degree practicable. Removal of special status plants will be required from within Liberty Gulch Road. Flagging and/or fencing shall be placed near any identified special status plants that can be avoided during construction to prevent incidental disturbance.</li> </ul>	The district's construction contract documents will include procedures for removing any special status plants identified in pre-construction surveys. The procedures will require the contractor to request district botanist approval before the specific plants/area is disturbed. The contractor will be	Construction Period	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
	<p>required to modify construction activities, to the extent practicable, to minimize impacts as directed by the district botanist. Daily inspections by the district will be performed to ensure compliance with work limits.</p> <p>If the project is implemented by the district, the district construction crew supervisor shall coordinate with the district botanist to establish acceptable work limits to minimize impacts and avoid special status plants.</p>		
<ul style="list-style-type: none"> <li>• Supplement to RTMP Mitigation Measure 3.2-B.2. If avoidance is not practicable, then a rare plant mitigation and monitoring plan shall be designed and implemented for all special-status plants affected. At a minimum, the plan shall include the following elements: <ul style="list-style-type: none"> <li>a) For annual species, stockpile the topsoil from areas containing special-status plants and re-dress the site with topsoil from the area as directed by the district botanist. See Mitigation Measure HAZ-1 regarding limited wetting of topsoil horizons to maintain seed viability. Seed may also be collected from plants that will be removed or from other populations of the species on Azalea Hill and those seeds shall be redistributed in the project vicinity as directed by the district botanist.</li> <li>b) For perennial species, seed collection may be augmented by transplanting entire plants or cuttings, as directed by the district botanist.</li> <li>c) Suitable sites shall be identified and prepared for redistribution of seeds, topsoil, or transplants. The plan shall outline required site preparation activities.</li> <li>d) Transplantation methods shall be completed with as little physical disturbance as possible to the individual, and at the time when the individual is photosynthetically inactive or dormant. The transplantation site shall be of the same quality habitat and having similar physical characteristics and soil type as the site the transplanted plant originated from.</li> <li>e) The rare plant mitigation and monitoring plan shall maintain pre-project rare plant populations by replacing all affected rare plants via seeding or transplanting (relocating). The success criteria for seeded and relocated plants shall be full replacement at a 1:1 ratio [number of plants established = number of plants impacted] after</li> </ul> </li> </ul>	<p>The district will develop a rare-plant mitigation and monitoring plan for all special-status plants disturbed during construction.</p>	<p>Construction Period</p>	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p>five years, accounting for annual variability as measured by reference populations near the project area or in similar environmental (soil, aspect, elevation, etc.) conditions. Both impacted and reference populations should be monitored prior to the commencement of construction activities to provide a baseline comparison that should be used for evaluating post-construction success. Monitoring surveys of the seeded or transplanted areas shall be conducted for a minimum of five years, and weeding shall be conducted as needed. Monitoring of the populations shall be timed to correspond with the blooming period of the target species to facilitate identification.</p> <p>f) Contingency measures should be included in the rare plant mitigation and monitoring plan if it appears the success criterion will not be met after five years. Such measures will include: evaluating the environmental or other characteristics affecting plant survival and implementing corrective measures, which may include additional seeding and planting; altering or implementing weed management activities; or, introducing or altering other management activities. Monitoring efforts shall continue for a minimum of five years and until the relocated individuals have met the success criteria. The rare plant mitigation and monitoring plan shall be developed in consultation with California Department of Fish and Wildlife, and with United States Fish and Wildlife Service for federally-listed plants, prior to the start of local construction activities. Annual monitoring reports shall include photo-documentation, planting specifications, a site layout map, descriptions of materials used, monitoring methods and results, justification for any deviations from the monitoring plan, and recommendations for management or maintenance to improve plant survival.</p> <p>g) Annual monitoring surveys for special-status plant populations shall be mapped, documented, and reported to the CNDDDB.</p>			
<p><b>RTMP Mitigation Measure 3.2-A.1.</b> Prior to finalizing construction plans for each project, a qualified botanist will survey the area to be disturbed for Marin dwarf flax, Mason's ceanothus, Baker's larkspur, Santa Cruz tarplant, white-rayed pentachaeta, Hoover's semaphore grass, and other Federal or State listed plant species, unless the area has been previously surveyed by the MMWD Vegetation Ecologist.</p>	<p>The final project routes have been surveyed for special status plants. See <b>IS/MND Mitigation Measure BIO-1</b> for additional pre-construction surveys and mitigation actions that will be completed to reduce impacts to special status plants.</p>	<p>Design</p>	<p>Design Phase (Project-wide) – Completed June, 2018 - AW</p>

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p><b>RTMP Mitigation Measure 3.2-A.2.</b> All projects will be designed to avoid any Marin dwarf flax, Mason's ceanothus, or other Federal or State listed plant species (if subsequent surveys find these species on the Watershed).</p>	<p>Project designs will avoid known (previously surveyed) locations of Marin Dwarf flax, Mason's ceanothus and other federal or State-listed plants. Supplement to this measure, implementation of <b>IS/MND Mitigation Measure BIO-1</b> will ensure any population or individual Marin dwarf flax, Mason's ceanothus, or other Federal or State listed plant species, not previously identified, are identified and flagged prior to construction and avoided during each construction phase.</p>	<p>Pre-construction</p>	<p>Design Phase (Project-wide) – Complete October, 2018 - AF</p>
<p><b>RTMP Mitigation Measure 3.2-A.3.</b> For projects near known populations of <i>Marin dwarf flax, Mason's ceanothus, or other Federal or State listed plant species</i>, the individual plant will be identified for protection with flagging and construction monitoring will occur to ensure that there will be no adverse impacts to the populations.</p>	<p>Implementation of <b>IS/MND Mitigation Measure BIO-1</b>, which includes pre-construction surveys which would identify any Marin dwarf flax, Mason's ceanothus, and other Federal or State listed plant species within the construction limit, flag them for protection, and complete construction-period monitoring to ensure protection. Furthermore, all Marin dwarf flax will be avoided. Therefore, <b>IS/MND Mitigation Measure BIO-1</b> is more protective than this measure. Implementation of <b>IS/MND Mitigation Measure BIO-1</b> would fulfill the requirements of <b>RTMP Mitigation Measure 3.2-A.3.</b></p>	<p>Pre-construction &amp; Construction</p>	
<p><b>RTMP Mitigation Measure 3.2-B.1.</b> Project sites not yet surveyed for Special Status Species shall be surveyed prior to final project design.</p>	<p>The final project routes have been surveyed for special status plants. See <b>IS/MND Mitigation Measure BIO-1</b> for additional pre-construction surveys and mitigation actions that will be completed to reduce impacts to special status plants.</p>	<p>Pre-construction</p>	<p>Design Phase (Project-wide) – Completed June, 2018 - AW</p>

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p><b>RTMP Mitigation Measure 3.2-B.2.</b> To the maximum degree feasible, projects will be designed and constructed to avoid eliminating other Special Status Species of plants. Where avoidance of these Special Status Species of plants is unavoidable, then MMWD shall reestablish the plants that are eliminated. Efforts should be made to collect and preserve propagules from the affected population for later reintroduction. Reintroduction can occur near the disturbed area or in other suitable habitat where the species would benefit from reintroduction (e.g., on decommissioned roads and trails or, for reroutes, the old trail/road that is being abandoned, if there are suitable soils and habitat).</p>	<p>Per <b>IS/MND Mitigation Measure BIO-1</b>, plant re-establishment is required for all special status plants that cannot be practicably avoided during design or construction. <b>IS/MND Mitigation Measure BIO-1</b> requires a rare plant mitigation and monitoring plan which includes additional requirements, survival metrics, and conditions that are more protective than this measure. As such, implementation of <b>IS/MND Mitigation Measure BIO-1</b> will fulfill the requirements of <b>RTMP Mitigation Measure 3.2-B.2</b>.</p>	<p>Pre-construction &amp; Post-construction</p>	
<p><b>RTMP Mitigation Measure 3.2-C.1.</b> When decommissioning roads, MMWD shall survey the areas to be disturbed for Special Status Species. Areas supporting such plants will not be included in fillslope/cutbank decommissioning unless such decommissioning is critical to repair potentially failing fillslopes that would deposit sediment into streams or decommissioning is essential to closing the route or to restoring the integrity of the habitat, and revegetation of such species is feasible.</p>	<p>Routes identified for decommissioning have been surveyed for special status plants. Additional pre-construction surveys will be completed in accordance with <b>IS/MND Mitigation Measure BIO-1</b> immediately before any decommissioning activities. The extent of decommissioning activities will be adjusted/reduced based on the presence/absence of special status plants, criticality of reducing erosion processes at each site, and importance of closing a particular route for overall habitat integrity and revegetation efforts.</p>	<p>Pre-construction and Construction</p>	
<p><b>RTMP Mitigation Measure 3.2-D.1.</b> The area where the new trail section for the Potrero Meadow Trail, Laurel Dell to Barth's Retreat Trail, and Azalea Hill Trail could be constructed will be surveyed for the presence and location of Special Status Species of plants.</p>	<p>The proposed Azalea Hill project site has been surveyed for special status plants and integrated into the Proposed Project design. Additional pre-construction surveys will be completed in accordance with <b>IS/MND Mitigation Measure BIO-1</b>.</p>	<p>Pre-construction</p>	<p>Design Phase (Project-wide) – Complete June, 2018 - AW</p>



Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p><b>RTMP Mitigation Measure 3.2-D.2.</b> To the maximum degree feasible, the location for the new trail shall be selected to avoid destruction of Special Status Species of plants. Where avoidance is not feasible, then revegetation per <b>RTMP Mitigation Measure 3.2-B.2</b> shall apply.</p>	<p>The final project routes have been selected to avoid impacts to special status plants to the maximum extent practicable based on a project-wide rare plant survey conducted in June 2018.</p> <p>In addition to <b>RTMP Mitigation Measure 3.2-B.2</b>, <b>IS/MND Mitigation Measure BIO-1</b> requires development of a rare-plant mitigation and monitoring plan for special status plants impacted by the project. As such, implementation of <b>IS/MND Mitigation Measure BIO-1</b> will fulfill the requirements of <b>RTMP Mitigation Measure 3.2-D.2</b>.</p>	Pre-construction	Design Phase (Project-wide) – Complete October, 2018 - AF
<p><b>RTMP Mitigation Measure 3.2-D.3.</b> The Azalea Hill Trail reroute shall be rerouted to avoid the stand of serpentine chaparral. The non-system trail that proceeds south of the Azalea Hill Trail shall be decommissioned.</p>	<p>The final trail routes are identified in the Proposed Project and avoid areas mapped as serpentine chaparral. The Proposed Project includes decommissioning the southern extent of existing Azalea Hill Trail (social trails).</p>	Pre-construction	Design Phase (Project-wide) – Complete October, 2018 - AF
<p><b>IS/MND Mitigation Measure BIO-2.</b> The district or district’s contractor shall protect special status plant species from incidental harm due to construction equipment and spread of weeds by implementing the following:</p>			
<ul style="list-style-type: none"> <li>All construction personnel must attend a biological resources training to be provided by the district (see <b>RTMP Mitigation Measure 3.2-B.3</b>). The training shall address the importance of botanical resources specific to Azalea Hill and techniques for avoiding impacts.</li> </ul>	All construction personnel will attend a mandatory pre-construction biological resource training.	Pre-Construction	
<ul style="list-style-type: none"> <li>The number of vehicles on site will be minimized to reduce the potential for disturbance and ensure adequate space to park and maneuver within designated areas.</li> </ul>	The district will limit contractor and district vehicles accessing the site to only those necessary.	Construction	
<ul style="list-style-type: none"> <li>All vehicle routes, staging, parking, and turnaround areas will be marked and vehicle operation in unmarked areas will be prohibited.</li> </ul>	<p>Approved access routes and staging areas will be delineated on the project design plans. The district’s construction contract documents will require the contractor to mark approved turnaround and vehicle operation areas and adjust based on botanist flagged plant populations. Daily inspections by district staff will be performed to ensure compliance.</p> <p>If the project is implemented by the district, the</p>	Construction	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
	district construction crew supervisor shall demarcate access routes, staging areas, and turnarounds.		
<ul style="list-style-type: none"> <li>Additional visual or physical barriers (fencing, signs, stakes, marking paint, or flagging) will be installed, as needed, to ensure vehicle compliance with approved vehicle routes, staging, parking, and turnaround areas.</li> </ul>	<p>The district's construction contract documents will require contractor to mark approved turnaround and vehicle operation areas and install additional visual barriers as directed by the district. Daily inspections by district staff will be performed to ensure compliance.</p> <p>If the project is implemented by the district, the district construction crew supervisor shall demarcate access routes, staging areas, and turnarounds.</p>	Construction	
<ul style="list-style-type: none"> <li>All vehicles and equipment must be cleaned of soil, seeds, and vegetative material prior to entering the project site; inspection and cleaning measures (washing, steaming, air blast, brushing/scrubbing, vacuuming) should be applied to material transport beds, buckets and blades, radiators, grills/filters, tires/axels and differentials, within slashing mulching and ripping equipment, chassis and body, between dual wheels, ledges and frames, inside drivers cab, and mudguards.</li> </ul>	<p>The district's construction contract documents will require all vehicles entering the work area to be cleaned of soil, seeds, and vegetative material. Daily inspections by district staff will be performed to ensure compliance.</p> <p>If the project is implemented by the district, the district construction crews will clean all equipment and vehicles used at other locations within the watershed.</p>	Construction	
<ul style="list-style-type: none"> <li>Erosion control materials shall be composed of coconut/coir fiber, or other 100% biodegradable certified weed-free materials, as approved by the district botanist.</li> </ul>	<p>The district's construction contract documents will require only 100% biodegradable weed free materials. Whether contractor or district provided, erosion control materials will be reviewed and approved by district botanist prior to purchase.</p>	Pre-construction	
<ul style="list-style-type: none"> <li>All open bed vehicles carrying a load of material (unconsolidated fill, erosion control material, etc.) shall be covered to prevent the dispersal of weed seeds.</li> </ul>	<p>The district's construction contract documents will require all vehicles carrying soil, rock, and materials to be covered. Daily inspections by district staff will be performed to ensure compliance. If the project is implemented by the district, the district construction crews will cover all loaded vehicles transporting materials.</p>	Construction	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<b>RTMP Mitigation Measure 3.2-B.3.</b> The district will conduct regular training for its permanent and seasonal construction crews in Special Status Species and environmentally sensitive habitats so they are more likely to prevent accidental environmental impacts to these resources. (see <b>RTMP Mitigation Measure 3.1-B.14.</b> )	All construction and maintenance personnel will be required to attend mandatory pre-biological resource training. Also see <b>IS/MND Mitigation Measure BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, and BIO-9.</b>	Construction	
<b>RTMP Mitigation Measure 3.2-B.4.</b> The district shall monitor construction to ensure that plants scheduled for avoidance are protected during the construction process.	Daily inspections by the district will be performed to ensure compliance with work limits and avoidance of flagged special status plants.  If the project is implemented by the district, the district construction crew supervisor shall coordinate with the district botanist to establish acceptable work limits to minimize impacts and avoid special status plants. Also see <b>IS/MND Mitigation Measure BIO-2.</b>	Construction	
<b>RTMP Mitigation Measure 3.2-B.5.</b> The district will retain records of all surveys and the locations of all special status plants identified at project sites so that these plants can be avoided during construction of any future projects in the area. Roadside plants that could be harmed by normal maintenance activities shall be flagged or otherwise marked so that equipment operators and other staff are aware of their presence and avoid them.	All special status plant surveys performed by the district will be retained in electronic form to facilitate future avoidance.	Pre-construction and Post-construction	
<b>RTMP Mitigation Measure 3.2-I.1.</b> Invasive exotic weed populations in and adjacent to project sites will be treated prior to any soil disturbing activities to minimize the seed dispersal of those plants. Sites where imported gravel or other fill materials are installed or stored should be mapped and monitored to prevent the introduction of new weeds.	The district will treat (hand removal) invasive exotic weeds prior to mobilization.	Pre-construction	
<b>RTMP Mitigation Measure 3.2-I.2.</b> MMWD shall monitor project sites and remove new exotic weeds spread into the site area by project construction.	The district will monitor each construction phase after implementation and remove exotic weeds spread into the project area. <b>IS/MND Mitigation Measure BIO-10</b> includes additional requirements for long-term monitoring and adaptive management actions that are required to prevent the spread and establishment of exotic weeds associated with the project.	Post-construction	
<b>RTMP Mitigation Measure 3.2-I.3.</b> Monitoring and/or treatment of these sites shall occur quarterly, or until it has been determined that there is no longer a risk of an unintentional release of an invasive, exotic species.	The district will monitor each construction phase after implementation and remove exotic weeds spread into the project area.	Post-construction	
<b>IS/MND Mitigation Measure BIO-3.</b> While it is unlikely that California red-legged frog occurs in the study area, the following measures will be implemented to further ensure that the species is not harmed by the Proposed Project:			

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<ul style="list-style-type: none"> <li>Before any construction activities begin on the site, a qualified biologist shall conduct a biological training session for all construction personnel. At a minimum, the training shall include a description of the California red-legged frog and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if a California red-legged frog is observed in the construction area and the biologist must be immediately notified.</li> </ul>	All construction personnel will attend mandatory pre-construction biological resource training.	Pre-Construction	
<ul style="list-style-type: none"> <li>A qualified biologist shall survey the work sites within 500 feet of Bon Tempe Creek or Alpine Lake or any other work sites containing or adjacent to standing water and saturated soils within 48 hours of the onset of construction activities for California red-legged frog. If California red-legged frogs are found, construction activities will be delayed until the USFWS is notified and guidance is provided on how to proceed.</li> </ul>	A pre-construction survey of work sites with potential to support red-legged frog habitat will be performed by a qualified biologist.	Pre-Construction	
<b>IS/MND Mitigation Measure BIO-4.</b> While it is unlikely that foothill yellow-legged frog occurs in the study area, the following measures will be implemented to further ensure that the species is not harmed by the Proposed Project:			
<ul style="list-style-type: none"> <li>The biological training session to be provided to construction personnel (see <b>IS/MND Mitigation Measure BIO-3</b>) shall also address the potential presence of foothill yellow-legged frog. At a minimum, the training shall include a description of the foothill yellow-legged frog and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if a foothill yellow-legged frog is observed in the construction area and the biologist must be immediately notified.</li> </ul>	All construction personnel will attend mandatory pre-construction biological resource training.	Pre-Construction	
<ul style="list-style-type: none"> <li>A qualified biologist shall survey the work sites within 25 feet of Bon Tempe Creek or any other work sites containing or adjacent to standing water and saturated soils within 48 hours of the onset of construction activities for foothill yellow-legged frog. If foothill yellow-legged frogs are found, construction activities will be delayed until the frog leaves the construction zone on its own or until a biologist in possession of all required permits moves the frog(s) to an area outside of the construction zone. Temporary exclusionary fencing (designed to prevent frogs from entering the work area) will then be installed under the guidance of a qualified biologist to prevent the relocated frog(s) from re-entering the work site.</li> </ul>	A pre-construction survey of work sites with potential to support yellow-legged frog habitat will be performed by a qualified biologist.	Pre-Construction	
<b>IS/MND Mitigation Measure BIO-5.</b> The following measures shall be implemented to protect California giant salamander during construction activities:			
<ul style="list-style-type: none"> <li>The biological training session to be provided to construction personnel (see Mitigation Measure BIO-3) shall also address the potential presence of California giant salamander. At a minimum, the training shall include a</li> </ul>	All construction personnel will attend a mandatory pre-construction biological	Pre-Construction	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
description of the California giant salamander and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if a California giant salamander is observed in the construction area and the biologist must be immediately notified.	resource training.		
<ul style="list-style-type: none"> <li>A qualified biologist shall survey the work sites within 50 feet of Bon Tempe Creek or any other work sites containing or adjacent to standing water and saturated soils within 48 hours of the onset of construction activities for California giant salamander. If the species is found, construction activities will be delayed until the salamander leaves the construction zone on its own or until a biologist in possession all required permits moves the salamander(s) to an area outside of the construction zone.</li> </ul>	A pre-construction survey of work sites with potential to support California Giant Salamander habitat will be performed by a qualified biologist.	Pre-Construction	
<b>IS/MND Mitigation Measure BIO-6.</b> The following measures will be implemented to protect western pond turtle during construction activities:			
<ul style="list-style-type: none"> <li>The biological training session to be provided to construction personnel (see <b>IS/MND Mitigation Measure BIO-3</b>) shall also address the potential presence of western pond turtle. At a minimum, the training shall include a description of western pond turtle and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be halted if a pond turtle is observed in the construction area and the biologist must be immediately notified.</li> </ul>	All construction personnel will attend a mandatory pre-construction biological resource training.	Pre-Construction	
<ul style="list-style-type: none"> <li>A qualified biologist shall survey work sites within construction areas where suitable western pond turtle nesting or aquatic habitat exists within 48 hours of the onset of construction activities. If western pond turtle are found, the turtle will be relocated to a suitable location outside of the construction zone by a qualified biologist.</li> </ul>	A pre-construction survey of work sites with potential to support western pond turtle nesting or aquatic habitat will be performed by a qualified biologist.	Pre-Construction	
<ul style="list-style-type: none"> <li>Prior to the start of construction, construction fencing shall be placed between the lake or Bon Tempe Creek and the construction area or access routes where suitable western pond turtle habitat exists, at the direction of the qualified biologist. The fencing shall be placed at the edge of the construction area or access routes to maximize areas for turtle movement or nesting. Large-mesh construction fencing shall be used to allow hatchlings, but not adults of the species, to pass through the fencing. Additionally, prior to the start of construction each day, a designated biological monitor (who has received training from a qualified biologist) shall inspect the fence and construction area. Any pond turtles found on the upland side of the construction fencing shall be relocated to the lake-side of the construction fencing by a qualified biologist or the trained, designated biological monitor.</li> </ul>	<p>The district or district's contractor will install exclusionary fencing where suitable western pond turtle habitat exists along Bon Tempe Creek and Alpine Lake prior to the start of construction.</p> <p>The district's qualified biologist will perform daily inspections of the fence to ensure its integrity, function, and to relocate any turtles found upslope of the exclusionary fencing.</p>	Pre-Construction and Construction	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p><b>IS/MND Mitigation Measure BIO-7.</b> If construction activities occur during the nesting season of native bird species, typically February through August in the project region, a pre-construction survey for nesting birds will be conducted by a qualified biologist. The survey will occur within one week of the commencement of construction activities.</p>			
<ul style="list-style-type: none"> <li>• If active nests are found in areas that could be directly affected, or that are within 300 feet of construction and would be subject to prolonged construction-related noise, then an appropriate no-disturbance buffer zone shall be created around active nests during the nesting season or until a qualified biologist determines that all young have fledged. The size of the buffer zone and types of construction activities restricted within the buffer zone will be determined through coordination with the California Department of Wildlife, the district, and a qualified biologist taking into account factors such as the following:               <ol style="list-style-type: none"> <li>a) Noise and human disturbance levels at the construction site at the time of the survey and the noise and disturbance expected during the construction activity;</li> <li>b) Distance and amount of vegetation or other screening between the construction site and the nest; and</li> <li>c) Sensitivity of individual nesting species and behaviors of the nesting birds.</li> <li>d) To minimize the potential for a construction-related delay due to the presence of an active bird nest, any required tree and vegetation removal may be conducted outside of the nesting season.</li> </ol> </li> </ul>	<p>The district will perform or commission nesting bird surveys and establish no work buffer areas.</p>	<p>Pre-Construction</p>	
<p><b>RTMP Mitigation Measure 3.3-C.1.</b> If shrubs or trees would need to be removed to construct a specific project, MMWD should remove those trees and shrubs prior to the onset of the nesting season (i.e., after late July and before mid-March of any year) so birds will not nest in trees or shrubs on the construction site. However, trees known to be used for northern spotted owl and golden eagle nesting shall not be removed.</p>	<p>Where appropriate and feasible, the district would schedule shrub and tree removal outside the nesting bird season.</p>	<p>Pre-Construction</p>	
<p><b>RTMP Mitigation Measure 3.3-C.2.</b> For projects that would remove trees or shrubs (that were not removed per <b>RTMP Mitigation Measure 3.3-C.1</b>) and projects that would use heavy equipment in forested areas or areas of chaparral during the primary bird breeding season (mid-March through the end of July), a qualified wildlife biologist shall examine the project site and surrounding area to determine the presence of nests of any Special Status Species of birds. If said nests are found in trees or shrubs planned for removal and/or if the wildlife biologist determines that the proximity of nearby nests to the site where heavy equipment would be operating would or could result in the adult birds abandoning the nest, work at the site will be scheduled to occur after the breeding season.</p>	<p>In the event tree and vegetation removal is required during the nesting bird season, <b>IS/MND Mitigation Measure BIO-7</b> requires a pre-construction nesting bird survey and establishment of no-work buffers if nesting birds are identified within or near (300 feet) the limits of construction. <b>IS/MND Mitigation Measure BIO-7</b> is more specific in that it identifies the factors used to establish no-work buffers. This process will result in rescheduling of work to avoid impacts to nesting birds identified <b>RTMP Mitigation Measure 3.3-C.2</b> if construction activities and equipment would or could results in adult</p>	<p>Pre-construction and Construction</p>	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
	birds abandoning the nest. Therefore, implementation of <b>IS/MND Mitigation Measure BIO-7</b> will fulfill the requirements of <b>RTMP Mitigation Measure 3.3-C.2</b> .		
<b>RTMP Mitigation Measure 3.3-C.3.</b> For projects within spotted owl nest areas, heavy equipment will not be operated between February 1 and August 31 within one quarter mile of any spotted owl nest site unless protocol surveys determine the nest is not being used.	The district or its contractors will not operate heavy equipment within a quarter mile of spotted owl nest areas.	Construction	
<b>IS/MND Mitigation Measure BIO-8.</b> If vegetation removal occurs during the bat maternity roosting (April 15 to August 31) or hibernation period (October 15 to February 28), a focused tree habitat assessment shall be conducted by a qualified bat biologist of all trees that will be removed or impacted by construction activities. Trees containing suitable potential bat roost habitat features would then be clearly marked.			
<ul style="list-style-type: none"> <li>• The habitat assessment should be conducted enough in advance to allow preparation of a report with specific recommendations and to ensure tree removal can be scheduled during seasonal periods of bat activity, if required. If the absence of roosting bats cannot be confirmed, then the removal of trees providing suitable maternity or hibernation roosting habitat should only be conducted during seasonal periods of bat activity, including:               <ol style="list-style-type: none"> <li>a) Between March 1 (or after evening temperatures rise above 45F and/or no more than 1/2" of rainfall within 24 hours occurs) and April 15; or</li> <li>b) Between September 1 and about October 15 (or before evening temperatures fall below 45F and/or more than 1/2" of rainfall within 24 hours occurs).</li> </ol> </li> </ul>	The district will retain a qualified bat biologist to perform a habitat assessment in the event vegetation removal occurs within the bat maternity or hibernation period.	Pre-construction	
<ul style="list-style-type: none"> <li>• If it is determined that day roosting bats are unlikely to occur, the tree may be removed as described below.               <ol style="list-style-type: none"> <li>a) Appropriate methods will be used to minimize the potential harm to bats during tree removal. Such methods may include using a two-step tree removal process. This method is conducted over two consecutive days, and works by creating noise and vibration by cutting non-habitat branches and limbs from habitat trees using chainsaws only (no excavators or other heavy machinery) on Day 1. The noise and vibration disturbance, together with the visible alteration of the tree, is effective in causing bats that emerge nightly to feed and to not return to the roost that night. The remainder of the tree is removed on Day 2. A bat biologist qualified in two-step tree removal is required on Day 1 to supervise and instruct the tree-cutters who will be on the site conducting the work, but only for a sufficient length of time to train all tree cutters who will conduct two-step removal of habitat trees. The bat biologist is generally not required on Day 2, unless a very large cavity is present and a large colony is suspected.</li> </ol> </li> </ul>	The district will retain a qualified bat biologist to direct the district's removal of potential bat habitat in accordance with agency approved methods (two-step removal).	Construction	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p><b>RTMP Mitigation Measure 3.3-D.2.</b> Tree removal larger than 24 inches (DBH) shall occur during one of two time windows: a) after the bat maternity season, when young bats are volant (i.e., flying) (September 1), and before the hibernation period (October 30), or b) after hibernation (March 1), and before birth of young (April 15). Trees smaller than 24-inches DBH not immediately adjacent (within 15 feet) to large trees (&gt;24-inches DBH) may be removed at any time.</p>	<p><b>IS/MND Mitigation Measure BIO-8</b> is more protective of potential bat habitat as it requires surveys of all potential bat habitat trees between October 15 and February 28 before trees can be removed (<b>RTMP Mitigation Measure 3.3-D.2</b> allows tree removal to commence between September 1 and October 30 without surveys and identifies that smaller trees adjacent to larger trees may be removed at any time). Therefore, implementation of <b>IS/MND Mitigation Measure BIO-8</b> will fulfill the requirements for the timing of tree removal identified in <b>RTMP Mitigation Measure 3.3-C.2</b>.</p>	<p>Pre-construction and Construction</p>	
<p><b>RTMP Mitigation Measure 3.3-D.3.</b> Smaller trees (&lt;24-inches DBH) that are adjacent to larger trees (&gt;24-inches DBH) shall be removed first, one day (24 hours) before removal of adjacent large trees. This will provide an indirect disturbance that should be sufficient to cause bats roosting in adjacent larger trees to vacate the roost, without providing enough time for re-colonization of the roost.</p>	<p>The district will coordinate and sequence removal of trees so that smaller trees are removed one day in advance of larger (24-inch DBH) trees. See <b>IS/MND Mitigation Measure BIO-8</b> for additional detail on the two-step removal process. Removal of smaller trees are still subject to the conditions of <b>IS/MND Mitigation Measure BIO-8</b></p>	<p>Pre-construction and Construction</p>	
<p><b>RTMP Mitigation Measure 3.3-D.4.</b> Snags shall not be removed without first being surveyed by a qualified bat biologist, 2-4 weeks prior to planned tree removal to determine whether bats are roosting inside the trees. If no roosting is observed, the snag shall be removed within one week following surveys. If bat roosting activity is observed, limbs not containing cavities, as identified by the bat biologist, shall be removed first, and the remainder of the tree removed the following day. The disturbance caused by limb removal, followed by a one night interval, will allow bats to abandon the roost.</p>	<p><b>IS/MND Mitigation Measure BIO-8</b> identifies the period for which bat habitat surveys are required to remove living vegetation (trees and shrubs). <b>RTMP Mitigation Measure 3.3-D.4</b> specifically addresses potential habitat in snags (non-living trees/shrubs) and also requires surveys prior to removal. The district will perform pre-construction surveys of all snags slated for removal and proceed with the removal methodology identified in <b>RTMP Mitigation Measure 3.3-D.4</b>.</p>	<p>Pre-construction and Construction</p>	
<p><b>IS/MND Mitigation Measure BIO-9.</b> The following measure will be implemented to protect American Badger during construction activities:</p>			
<ul style="list-style-type: none"> <li>The biological training session to be provided to construction personnel (see <b>IS/MND Mitigation Measure BIO-3</b>) shall also address the potential presence of American Badger. At a minimum, the training shall include a description of American Badger and its habitat, the measures that are being implemented to conserve the species as they relate to the Proposed Project, the boundaries within which the Proposed Project may be accomplished, and instructions that construction activities must be</li> </ul>	<p>Pre-Construction training will include American Badger.</p>	<p>Pre-Construction</p>	



Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
halted if American Badger dens are observed in the construction area and the biologist must be immediately notified.			
<ul style="list-style-type: none"> <li>Prior to construction, the work areas will be surveyed for the presence of badger dens. If such sites are identified, work shall not start at that site until a qualified wildlife biologist has determined that the den is not active or, if active, until the young have left the site and are capable of surviving away from the site.</li> </ul>	Pre-construction surveys for badger dens or burrows completed by qualified biologist.	Pre-Construction	
<p><b>RTMP Mitigation Measure 3.3-D.1.</b> Prior to construction of any project, the site will be surveyed for the presence of badger dens or burrows. If such sites are identified, work shall not start at that site until a qualified wildlife biologist has determined that the den is not active or, if active, until the young have left the site and are capable of surviving away from the site.</p>	Pre-construction surveys for badger dens or burrows will be completed by qualified biologist. Implementation of <b>IS/MND Mitigation Measure BIO-9</b> will fulfill the requirements of <b>RTMP Mitigation Measure 3.3-D.1.</b>	Pre-Construction	
<p><b>RTMP Mitigation Measure 3.3-F.1.</b> During all on-site activities, MMWD and its contractors shall take all precautions to avoid damaging or killing any form of wildlife, including snakes, lizards, small mammals, or birds, that becomes exposed during vegetation or soil removal. If such an animal is observed in the work area, the contractor shall move the animal out of harm's way, if possible, or request MMWD personnel to move the animal.</p>	All construction personnel will attend mandatory pre-construction biological resource training which will include a review of precautions and procedures for avoiding or killing wildlife.	Construction	
<p><b>IS/MND Mitigation Measure BIO-10.</b> Given the above, active and adaptive management measures are needed to ensure the routes perform as designed and that they would not have a substantial adverse impact on biological resources. The district has enjoyed several years of successful use of adaptive management concepts to control undesirable road and trail use through its "Project Restore" program. Started in 2009, Project Restore is an implementation program originally developed in Chapter 5 of the RTMP for the management of non-system routes. It uses a multi-disciplinary management approach, including public outreach, stewardship, and education to explain undesirable effects of illegal trail use or construction, complete physical removal of undesirable routes, including full landform restoration in some cases, official closure of the areas pursuant to district regulation Section 9.01.06, and focused patrol and monitoring of the closed and restored areas, including issuing of citations. Consistent with Chapter 5 of the RTMP, the following measures shall be implemented to address potential indirect impacts to biological resources from use of the Proposed Project routes:</p>			
<ul style="list-style-type: none"> <li>The BMPs and Environmental Protection Measures in the RTMP (Chapter 3) shall be implemented.</li> </ul>	The district will implement the environmental protection measures from chapter 3 of the RTMP.	Post-construction	
<ul style="list-style-type: none"> <li>After the project is complete, monitoring and enforcement shall be carried out as part of and pursuant to the annual Project Restore program and methodology (Chapter 5 of the RTMP). The methodology shall include multimedia public outreach including on-site signs to explain the undesirable effects of illegal trail use or construction, complete physical removal of a route, including landform restoration as needed, and official closures pursuant to district regulation 9.01.06, including issuing citations.</li> </ul>	The district will perform monitoring and enforcement including public outreach, signage, and adaptive management actions.	Post-construction	
<ul style="list-style-type: none"> <li>The district's rangers will regularly patrol the trail system to provide monitoring of trail conditions and enforcement of regulations. As appropriate, additional training may be provided to the rangers so that they can recognize and report areas that are experiencing unauthorized or excessive use.</li> </ul>	The district will integrate patrol and enforcement of Azalea Hill and Liberty Gulch into scheduled ranger enforcement activities.	Post-construction	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<ul style="list-style-type: none"> <li>At locations where the trail borders sensitive biological resources (e.g., rare plant populations, wetlands), design features (e.g., logs, rocks) will be used where appropriate to clearly demark the tread margins and discourage encroaching into adjacent vegetation.</li> </ul>	The district will incorporate design features in the final project plans to discourage off-trail use and associated impacts adjacent to sensitive biological resources.	Pre-construction	
<ul style="list-style-type: none"> <li>Adaptive management measures, including but not limited to implementation of BMPs, Design Standards, Environmental Protections per the RTMP, edge-of-trail barriers, tread surface hardening, seasonal trail closures, restoration of degraded habitats, weeding, and increased patrols shall be implemented as needed to ensure routes perform as designed. These adaptive management measures shall persist and remain in effect for as long as the routes are in use and shall be maintained at a level to protect biological resources, as necessary.</li> </ul>	The district will perform adaptive management for as long as the routes are in use to protect biological resources.	Post-construction	
<ul style="list-style-type: none"> <li>Interpretative signage shall be installed at key locations (e.g., at trailheads, near sensitive resources) that convey that trail users must stay on designated trails and roads. The signage shall explain open space conservation goals, the natural resources protected, and the regulations in the area. The signage shall also identify which trails are not open to mountain bikes.</li> </ul>	The district will incorporate interpretive signage in the final project plans to educate trail users, discourage off-trail use, and identify acceptable modes of use (hiking, biking, equestrian).	Pre-construction	
<ul style="list-style-type: none"> <li>A district botanist will conduct surveys, as needed, of the trail system to identify areas of overuse or illegal use and provide adaptive management recommendations (see above) to address areas that are experiencing habitat degradation or increases in weeds. Other district staff, or consultants retained by the district with an expertise in hydrology, geomorphology, trail maintenance/design, and landform restoration will assist the district botanist in identifying areas of over use and development of adaptive management actions.</li> </ul>	The district will monitor the Azalea Hill Trail, Liberty Gulch Road, and decommissioned trails and provide adaptive management recommendations to be incorporated into ongoing district maintenance activities.	Post-construction	
<p><b>IS/MND Mitigation Measure BIO-11.</b> Where trails will be rerouted or where activities will occur outside of existing trails, the protection of native vegetation will be prioritized by adjusting the final alignment, within the regions already surveyed for sensitive species. Any trees larger than 8-inch DBH that are removed as part of the Proposed Project shall be replaced. The minimum ratio for tree replacement shall be 3:1 (three trees replaced for each tree removed) but shall be adjusted by the district botanist in concert with the regulatory agencies to re-establish the structure and function of existing landscapes). Areas disturbed by construction will be monitored and adaptively managed to ensure revegetation for a period of five years.</p>	The district will adjust the final constructed routes, within the project limits already surveyed for special status plants, to avoid existing vegetation to the extent practicable. Existing trees that cannot be avoided will be replaced and monitored for five years.	Construction and Post-construction	
<p><b>RTMP Mitigation Measure 3.2-E.1.</b> All projects shall be designed and constructed to remove only that native vegetation needed to accomplish the erosion control objectives. MMWD shall monitor work to ensure only targeted plants are removed.</p>	For each project phase, the district will flag the limits of work. The final project contract documents will require that only vegetation within the limits of work and flagged for removal by the district can be removed. Daily inspections by the district will ensure conformance with the contract documents.	Construction	
<p><b>RTMP Mitigation Measure 3.2-E.2.</b> Standing trees, snags and stumps greater than one foot in diameter at breast height shall not be damaged or undercut unless authorized by the MMWD Resource Specialist.</p>			

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p><b>RTMP Mitigation Measure 3.2-F.2.</b> In locations where there are mature trees on fillslopes or cutslopes, MMWD should make every effort to preserve those trees unless the banks where these trees are growing pose a significant risk of failure.</p>	<p>In the event the district crews construct the project, the district supervisor and district botanist will coordinate and confirm the limits of construction and areas for vegetation removal.</p>		
<p><b>RTMP Mitigation Measure 3.2-G.1.</b> To the degree feasible, MMWD shall lay out the new trail locations to avoid mature trees, mature shrubs, or other sensitive or unique plant specimens. All wetlands shall be avoided other than where it is necessary to cross a stream.</p>			
<p><b>RTMP Mitigation Measure 3.1-F.1.</b> The minimum width needed for safe use of the trail will be disturbed for trail construction.</p>			
<p><b>IS/MND Mitigation Measure BIO-12.</b> All areas temporarily disturbed during project construction, including areas where tree replacement is conducted, will be restored and revegetated to their pre-disturbance condition. The pre-disturbance condition will be documented by a qualified botanist prior to project implementation to establish a baseline for recording any changes to vegetation including native and non-native plant cover, density, and distribution.</p>			
<ul style="list-style-type: none"> <li>For each construction phase, a restoration and monitoring plan, with performance standards, will be implemented to track and restore all temporarily disturbed areas and shall continue annually until revegetation meets the performance criteria.</li> </ul>	<p>The district will develop a five year restoration and monitoring plan to re-establish functional vegetation assemblages within areas impacted by the project.</p>	<p>Post-construction</p>	
<ul style="list-style-type: none"> <li>The plan shall set specific performance criteria that shall be attained before revegetation is considered complete. The success criteria, at a minimum, shall require that non-native species cover shall not exceed pre-disturbance non-native species cover and re-establishment of native cover to pre-disturbance levels.</li> </ul>			
<ul style="list-style-type: none"> <li>The plan shall also define corrective actions or adaptive management that would be taken if the revegetation actions are not substantially on course to meet the performance criteria and the triggers for taking corrective actions, including those necessary to address weed invasion, including annual grasses encroaching into native grasslands.</li> </ul>			

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p><b>IS/MND Mitigation Measure BIO-13.</b> In addition to the requirements of <b>RTMP Mitigation Measure 3.2-F.1</b>, all decommissioned trails will be monitored by a qualified botanist annually for a period of five years. Corrective actions will be implemented if it is determined by the botanist, other district staff, or consultants retained by the district with an expertise in botany, weed management, trail maintenance/design, and landform restoration, that the trails are not revegetating with appropriate vegetation characteristic of surrounding areas on similar soils or if non-native weeds require management. To ensure these areas are restored to a natural/native condition, notably in areas that could support special status plant species, the monitoring shall include weed removal along the decommissioned trails as determined by the botanist for the five-year period. If the Proposed Project is implemented in phases, this mitigation measure shall be carried out independent of other project elements for each phase of work. Also see Mitigation Measure BIO-2, which includes measures to prevent the spread of weeds during construction activities.</p>	<p>The district will develop a five-year restoration and monitoring plan to re-establish functional vegetation assemblages within areas impacted by the project including all decommissioned trails.</p>	<p>Post-construction</p>	
<p><b>RTMP Mitigation Measure 3.2-F.1.</b> Decommissioned roads and trails should be covered with native mulch available in the site area. MMWD may also collect seeds of plants or live plants common to the area and revegetate the disturbed slope. Decommissioned sections should be ripped or otherwise treated to encourage the establishment of seeds or seedlings. Planting techniques can include seed casting, hydroseeding, or live planting methods using the techniques in the latest version of the California Salmonid Stream Habitat Restoration Manual.</p>	<p>Specific decommissioning activities will be directly incorporated into the project design plans in accordance with <b>RTMP Mitigation Measure 3.2-F.1</b>.</p>	<p>Pre-construction</p>	
<p><b>RTMP Mitigation Measure 3.2-G.2.</b> Class VI trails will be constructed according to accepted equestrian trail standards.</p>	<p>Equestrian trail design standards will be directly incorporated into the project design plans.</p>	<p>Pre-construction</p>	
<p><b>RTMP Mitigation Measure 3.2-D.4.</b> The new trail from Laurel Dell Road to Barth's Retreat should be routed through the Douglas fir woodland to the west of the chaparral area that borders the existing access road.</p>			<p>This mitigation measure Does not apply to Azalea Hill Restoration Project.</p>
<p><b>RTMP Mitigation Measure 3.2-F.3.</b> Pulling fillslopes back onto the roadbed or trailbed is not recommended for the portions of Lagoon Road that pass through serpentine chaparral or for Upper Berry Trail.</p>			<p>This mitigation measure Does not apply to Azalea Hill Restoration Project.</p>
<p><b>RTMP Mitigation Measure 3.2-G.3.</b> MMWD should consider constructing the reroutes of the bottom of Boy Scout Road and the Bald Hill Trail on the existing roadbed.</p>			<p>This mitigation measure Does not apply to Azalea Hill Restoration Project.</p>
<p><b>RTMP Mitigation Measure 3.2-G.4.</b> The easternmost trail connection between Oat Hill Road and the head of Carson Falls shall be closed and decommissioned. A sign shall be installed explaining the closure and directing the user 0.1 mile to the middle trail access to Big Trees. A sign shall be installed at the Old Sled Trail junction with Oat Hill Road directing people 0.1 mile to the middle trail access to Big Trees. The district could use Carson Falls as the destination on these signs rather than Big Trees; however, it may result in less use of the sensitive Carson Falls area if it were not emphasized on signing.</p>			<p>This mitigation measure Does not apply to Azalea Hill Restoration Project..</p>

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<b>RTMP Mitigation Measure 3.2-G.5.</b> The Potrero Meadow Trail reroute shall be constructed along the interface of the meadow and the woodland to the north. In constructing the trail, healthy trees over 8 inches in diameter (DBH) shall be retained. The south-forking trail in the lower meadow shall be closed and decommissioned.			This mitigation measure Does not apply to Azalea Hill Restoration Project.
<b>RTMP Mitigation Measure 3.3-B.1.</b> All work at stream crossings of Little Carson Creek, Big Carson Creek, and their tributaries shall be conducted between September 1 and October 15. Prior to the start of work, a wildlife biologist who is qualified to identify and handle yellow-legged frogs shall survey the area to be affected by the stream crossing project. The biologist shall remove any frogs or tadpoles at risk and release them in a safe location on the creek. The biologist should be present prior to each day's work to relocate frogs and tadpoles.			This mitigation measure Does not apply to Azalea Hill Restoration Project.
<b>RTMP Mitigation Measure 3.3-B.2.</b> MMWD shall install signs that clearly explain that Little Carson Creek from the base of the falls to Kent Lake is one of two drainages in the Watershed currently supporting yellow-legged frogs and what the status of those frogs is. The sign shall explain that dogs or humans entering the stream can crush egg masses, tadpoles, and frogs and that it is imperative that people keep their dogs on leash and that neither they nor their dogs enter the stream channel from the base of the falls to Kent Lake. A second sign shall be placed on the non-system trail that leads from Little Carson Trail to the pool at the base of the falls that explains the trail is closed and the reasons for that closure. This branch trail should be blocked. MMWD shall determine the route of the trail from the head of the falls to the base consistent with its goals to protect yellow-legged frogs while reducing sedimentation.			This mitigation measure Does not apply to Azalea Hill Restoration Project.

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Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<b>5. Cultural Resources</b>			
<p><b>IS/MND Mitigation Measure ARC-1.</b> In the event of an unanticipated discovery of archaeological deposits during project implementation, the district shall ensure that construction crews shall stop all work within 100 feet of the discovery until a qualified archaeologist can assess the previously unrecorded discovery and provide recommendations. Resources could include subsurface historic features such as artifact-filled privies, wells, and refuse pits, and artifact deposits, along with concentrations of adobe, stone, or concrete walls or foundations, and concentrations of ceramic, glass, or metal materials. Native American archaeological materials could include obsidian and chert flaked stone tools (such as projectile and dart points), midden (culturally derived darkened soil containing heat-affected rock, artifacts, animal bones, and/or shellfish remains), and/or groundstone implements (such as mortars and pestles).</p>	<p>The district will stop work in the event of unanticipated discovery of archaeological deposits or human remains until a qualified archaeologist can assess the situation and provide recommendations.</p>	Construction	
<p><b>IS/MND Mitigation Measure ARC-2.</b> In the event of an unanticipated discovery of human remains during project implementation, the district shall ensure that construction crews stop all work within 100 feet of the discovery. The district shall treat any human remains and associated or unassociated funerary objects discovered during soil-disturbing activities according to applicable State laws. Such treatment includes work stoppage and immediate notification of the Marin County Coroner, requisition of a qualified archaeologist, and in the event that the Coroner's determination that the human remains are Native American, notification of the Native American Heritage Commission (NAHC), according to the requirements in PRC Section 5097.98. The NAHC would appoint a Most Likely Descendant (MLD). A qualified archaeologist, the district, and the MLD shall make all reasonable efforts to develop an agreement for the treatment, with appropriate dignity, of any human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5[d]). The agreement would take into consideration the appropriate excavation, removal, recordation, analysis, custodianship, and final disposition of the human remains and associated or unassociated funerary objects. The PRC allows 48 hours to reach agreement on these matters.</p>	<p>The district's construction contract documents will require construction personnel to report any archaeological deposits or human remains to the district immediately. Daily inspections by district staff will be performed to ensure compliance.</p>		
<p><b>RTMP Mitigation Measure 3.4-B.1.</b> The Mount Tamalpais Area Vegetation Management Plan Draft EIR (Leonard Charles and Associates, 1994) contains an Archaeological Sensitivity Map (Figure 21 of that Draft EIR) which identifies areas within the Watershed that may contain cultural resources. This map was prepared by a consulting archaeologist and is used by MMWD to check for archaeological resources prior to conducting Vegetation Management Plan projects. This same map will be used to guide future Draft Plan projects.</p>	<p>A supplemental cultural resources investigation was completed for the project IS/MND (Appendix C) and identified mitigation measures to reduce impacts to a less than significant level (<b>IS/MND Mitigation Measure ARC-1 and ARC-2</b>). No further action is required.</p>	Pre-Construction	Completed (Project-wide) – August, 2017

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p><b>RTMP Mitigation Measure 3.4-B.2.</b> Prior to constructing any project that would involve disturbance of earth outside road or trail beds or other areas previously disturbed when constructing the road and trail system. MMWD staff shall review Figure 21 of the Mount Tamalpais Area Vegetation Management Plan Draft EIR. If the project is located within an area that is mapped as "archaeologically sensitive," then the site shall be field surveyed by a qualified archaeological consultant who shall make recommendations and develop proposals for any procedures deemed appropriate to further investigate and/or mitigate adverse impacts to those resources.</p>	<p>A supplemental cultural resources investigation was completed for the project IS/MND (Appendix C) and identified mitigation measures to reduce impacts to a less than significant level (<b>IS/MND Mitigation Measure ARC-1 and ARC-2</b>). No further action is required.</p>	<p>Pre-Construction</p>	<p>Completed (Project-wide) – August, 2017, AF</p>
<p><b>RTMP Mitigation Measure 3.4-B.3.</b> If cultural resources are discovered on a site during field surveys or during subsequent construction activities, all earthmoving activity in the area of impact shall be halted until a qualified archaeological 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.</p>	<p>Implementation of <b>IS/MND Mitigation Measure ARC-1</b> will fulfill the requirements of this measure.</p>	<p>Construction</p>	
<p><b>RTMP Mitigation Measure 3.4-B.4.</b> In the event that human skeletal remains are discovered, work shall be discontinued in the area of the discovery and the County Coroner shall be contacted. If skeletal remains are found to be prehistoric Native American remains, the Coroner shall 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 would 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 Public Resources Code Section 5097.98.</p>	<p>Implementation of <b>IS/MND Mitigation Measure ARC-2</b> will fulfill the requirements of this measure.</p>	<p>Construction</p>	





Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<b>6. Geology/Soils</b>			
<p><b>RTMP Mitigation Measure 3.4-C.1.</b> MMWD will have a geotechnical engineer consult in the design of any road bridge project or retaining walls on the Watershed. Major trail and road reroutes will be reviewed by a geologist or geotechnical engineer. The recommendations of the geologist or geotechnical engineer regarding location, design, and/or construction of the trail or road will be included in the final trail or road reroute plan.</p>	<p>The district will retain the services of a geotechnical engineer and integrate his/her recommendations into the design of any road bridge or retaining wall.</p>	<p>Pre-construction</p>	

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**7. Greenhouse Gas Emissions** - The project would not result in significant adverse impacts related to Greenhouse Gas Emissions. No mitigation is required.

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Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<b>8. Hazards and Hazardous Materials</b>			
<b>IS/MND Mitigation Measure HAZ-1.</b> The accidental release of asbestos fibers shall be mitigated by implementing the following measures for construction activities in areas with serpentinite-derived soils:			
<ul style="list-style-type: none"> <li>• Construction vehicle speed at the work site shall be limited to fifteen (15) miles per hour or less.</li> <li>• The contractor shall only wet organic topsoil designated by the district botanist for salvage to the extent required to control dust emissions. Care should be taken to not over-water topsoil.</li> <li>• Prior to any ground disturbance, sufficient water must be applied to the area to be disturbed to prevent visible emissions.</li> <li>• Areas to be graded or excavated must be kept adequately wetted to prevent visible emissions.</li> <li>• Except for salvaged serpentinite topsoil, temporary storage piles containing serpentinite-derived soils must be kept adequately wetted or covered when material is not being added to or removed from the pile. Salvaged serpentinite topsoil shall be lightly wetted at the surface only to the extent required to control dust emissions. Care shall be taken to not over-water topsoil piles. Salvaged serpentinite topsoil shall not be covered.</li> <li>• Equipment must be washed down before moving from the work limits onto a paved public road or adjacent work areas.</li> <li>• Visible track-out on the paved public road must be cleaned using wet sweeping or a HEPA filter equipped vacuum device within twenty-four (24) hours.</li> </ul>	<p>The district's contract documents will require implementation of the best management practices identified in <b>IS/MND Mitigation Measure HAZ-1</b> by any contractors working on the project. Daily inspections by district staff will ensure compliance with the contract documents.</p> <p>If the project is implemented by the district, the district will implement the best management practices identified in <b>IS/MND Mitigation Measure HAZ-1</b>.</p>	<p>Construction Period</p>	
<b>IS/MND Mitigation Measure HAZ-2.</b> The district and/or its contractor(s) shall use BMPs that will minimize the potential adverse effect of the Proposed Project to groundwater and soils from chemicals used during construction activities. The BMPs will include the following measures:			
<ul style="list-style-type: none"> <li>• Establish refueling and vehicle maintenance areas away from all drainage courses and design these areas to include secondary containment and to control runoff;</li> <li>• Follow manufacturer's recommendations on use, storage, and disposal of chemical products used in construction;</li> <li>• Avoid overtopping construction equipment fuel gas tanks;</li> <li>• Provide secondary containment for any hazardous materials temporarily stored onsite;</li> <li>• During routine maintenance of construction equipment, properly contain and remove grease and oils;</li> <li>• Perform regular inspections of construction equipment and materials storage areas for leaks and maintain records documenting compliance with the storage, handling and disposal of hazardous materials;</li> <li>• Properly dispose of discarded containers of fuels and other chemicals; and</li> </ul>	<p>The district's contract documents will require any contractors prepare and submit a spill prevention and countermeasure plan for district review and approval. Which includes, at the very least, the BMPs listed under <b>IS/MND Mitigation Measure HAZ-2</b>.</p> <p>If the project is implemented by the district, the district will prepare a spill prevention and countermeasure plan.</p>	<p>Construction Period</p>	

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<ul style="list-style-type: none"><li>• A spill prevention and countermeasure plan shall be developed that will identify proper storage, collection, and disposal measures for potential pollutants (such as fuel, grease, oils , etc.) used onsite. The plan will also require the proper storage, handling, use, and disposal of petroleum products.</li></ul>			
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Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<b>9. Hydrology/Water Quality</b>			
<p><b>RTMP Mitigation Measure 3.1-B.1.</b> For each project or a related group of projects to be done sequentially by the same contractor, MMWD will identify which mitigation measures and/or Best Management Practices (BMPs) will be required for that project. The measures/BMPs will be described using a checklist identifying where and when the measures are to be done. MMWD staff will visit the site with the contractor to identify and, if necessary, flag where the measures/BMPs are to be done. The mitigation measures/BMPs shall be included in construction contracts with outside contractors and/or in construction plans for MMWD staff. MMWD staff shall be responsible for monitoring all work to ensure satisfactory compliance. Construction sites will be monitored during and after the completion of the activities to ensure there are no unintended or undesirable environmental effects resulting from the project. When there are special status species populations nearby, the area will be monitored more closely by the district during and after project completion. The level and duration of monitoring will be determined by the district on a case by case basis to ensure that there are no accidental environmental impacts and that all necessary mitigation measures are fully implemented.</p>	<p>The district will identify and implement BMPs as described in <b>RTMP Mitigation Measure 3.1-B.1</b> for each phase of construction.</p>	<p>Construction</p>	
<p><b>RTMP Mitigation Measure 3.1-B.2.</b> Where needed, temporary diversions around the work area will be accomplished using a small cofferdam and flexible pipe. For wet crossings, excavations must begin at the downstream end of the site and is recommended for dry sites worked on near the end of the dry season. When a dam is used, sufficient water will be allowed to pass downstream to maintain aquatic life below the dam. Any equipment work within the stream channel shall be performed in isolation from the flowing stream. If there is any flow when the work is done, the contractor shall construct coffer dams upstream and downstream of the excavation site and divert all flow from upstream of the upstream dam to below the downstream dam. The coffer dams may be constructed with clean river gravel or sand bags, and may be sealed with sheet plastic. Sand bags and any sheet plastic shall be removed from the stream upon project completion. Clean river gravel may be left in the stream, but the coffer dams must be breached to return the stream flow to its natural channel. Standing water, however, may remain in work areas due to the high water table at some sites. The creek flow must remain free of turbidity during grading and all other construction activities. The district and its contractor will be responsible for preventing loose soil from entering flowing water during grading. Methods for preventing turbidity may not prevent fish passage and may not block off a portion of the creek whereby fish could be trapped. The use of silt fencing or similar actions that require trenching into vegetated areas that would otherwise remain</p>	<p>The district will verify that all temporary water diversions will be implemented and monitored by district staff in accordance with <b>RTMP Mitigation Measure 3.1-B.2.</b></p>	<p>Construction</p>	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
undisturbed is generally not preferred. Aquatic organisms in the area filled by the dam will be relocated to a secure section of stream prior to work.			
<p><b>RTMP Mitigation Measure 3.1-B.3.</b> The contractor will establish an outflow point for the dewatering pipe at a downstream location in the creek, even if flows are very low. The outflow point will be approved by the district prior to installation. The contractor will be responsible for maintaining the dewatering system and must use a material for coffer dams, such as sandbags, that will not cause fish to become trapped or caught or pose any other potential hazard to the fish. The contractor will conduct any maintenance or reinforcement or take any additional measures necessary to ensure that the dewatering system functions to limit turbidity. The contractor will take additional measures to ensure that excessive turbidity is not caused when the coffer dams are removed.</p>	<p>The district will develop and monitor temporary water diversions, including the establishment of outflow points when constructing stream crossings to protect water quality in accordance with <b>RTMP Mitigation Measure 3.1-B.3.</b></p>	<p>Construction</p>	
<p><b>RTMP Mitigation Measure 3.1-B.4.</b> Sufficient erosion control will be in place during and after work to ensure that sediment does not enter the stream channel and that there is no increase in stream turbidity levels resulting from construction. Disturbance of streamside vegetation will be the minimum necessary to complete operations. Other restrictions may be applied for specific sites.</p>	<p>Erosion control methods and materials will be included in the final project design plans for each phase of construction to control sediment and avoid increases in turbidity in adjoining streams.</p>	<p>Pre-construction</p>	
<p><b>RTMP Mitigation Measure 3.1-B.5.</b> The number of access routes, number and size of staging areas, and the total area of the work site activity shall be limited to the minimum necessary to complete the restoration action.</p>	<p>The limits of construction shall be flagged by the district or contractor and enforced by the district to minimize the total area of work and area of disturbance. Implementation of <b>IS/MND Mitigation Measure BIO-2</b> will fulfill the requirement of <b>RTMP Mitigation Measure 3.1-B.5.</b></p>	<p>Construction</p>	
<p><b>RTMP Mitigation Measure 3.1-B.6.</b> Because construction work in streams will be conducted during a low flow period when turbidity can impact salmonids, the district and its contractor must exercise extreme care in all actions - even for such actions as walking in the stream – to prevent sediments from being stirred into the creekflow. Operators conducting in-stream work must take care to reduce any possible impacts to streamside vegetation, overhanging limbs, surface gravel, or erosion, or any other environmental effects that are not the direct result of project actions required to implement this job. In particular, all best management practices shall be followed to prevent turbidity or other water quality impacts to either localized work areas or downstream areas where work is not being conducted.</p>	<p>Although, none of the stream crossings identified in the Proposed Project support salmonids, the district will require the contractor, or district staff working on the project, to exercise extreme care when working in streams in accordance with <b>RTMP Mitigation Measure 3.1-B.6.</b></p>	<p>Construction</p>	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p><b>RTMP Mitigation Measure 3.1-B.7.</b> Any equipment entering the creek will keep movement in the creek and entrances and exits to and from the creek at an absolute minimum. The contractor will be responsible for pre-planning the movements of any equipment into the creek to reduce these movements.</p>	<p>The district will work with the contractor, or its own crews, to develop construction sequencing and access plans for all stream work to minimize the required number of entrances and exits of equipment in accordance with <b>RTMP Mitigation Measure 3.1-B.7.</b></p>	<p>Construction</p>	
<p><b>RTMP Mitigation Measure 3.1-B.8.</b> To prevent construction debris from entering the creek, appropriate best management practices set forth in the California Storm Water Best Management Practice Handbooks will be employed, including the following:</p>			
<ul style="list-style-type: none"> <li>• In upland work areas, barriers will be placed between the construction area and the creek to prevent construction debris or surface runoff from entering the creek.</li> </ul>	<p>The district shall verify that the BMPs identified in <b>RTMP Mitigation Measure 3.1-B.8</b> are implemented by the contractor or district construction crews to prevent construction debris from entering any streams or creeks.</p>	<p>Construction</p>	
<ul style="list-style-type: none"> <li>• The district will install temporary erosion control measures, such as silt fences, erosion control matting, wattles or hay bales, to prevent transport of sediment and other wastes off the project, storage or staging areas that could possibly enter a creek or reservoir.</li> </ul>			
<ul style="list-style-type: none"> <li>• Erosion control will be in place by October 30.</li> </ul>			
<ul style="list-style-type: none"> <li>• Furthermore, the district will control dust at the project, storage or staging areas to prevent the transport of such material into a creek or reservoir.</li> </ul>			
<ul style="list-style-type: none"> <li>• Imported wattle, hay bales, and matting used for erosion control should be certified "weed free." Mulches, jute netting, and/or native plant materials will be used wherever bare ground can erode into a creek or reservoir. This includes all excavated fillslopes above these waterbodies and all excavated stream crossings. Weed free straw (3,000 to 5,000 lbs/acre) is one of the most common products used for mulch, but there are other products available as well.</li> </ul>			
<ul style="list-style-type: none"> <li>• On steep slopes or in windy areas, mulch will be tacked, punched or secured to the ground. Imported mulch should be certified weed free.</li> </ul>			
<ul style="list-style-type: none"> <li>• Mulched sites will be mapped and monitored for nascent weed populations.</li> </ul>			
<ul style="list-style-type: none"> <li>• Rather than random scattering of debris, vegetative material will be collected and concentrated on slopes adjacent to live streams and other locations where fine sediment may be mobilized and enter the stream system. If there is not enough on-site vegetative debris to achieve the desired level of ground cover, excess vegetation from nearby restoration sites may be utilized or additional materials may be imported to the site. Materials will be selected to comply with MMWD requirements to minimize introduction of exotics and interference with re-establishment</li> </ul>			

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p>of native forest species. The Contractor will be required to assist in the transport of such materials from their point of delivery to the actual job site where they will be used. Site-specific conditions both on the finished slope and within the buffer will affect the amount of ground cover actually needed to achieve the goals of reducing downstream turbidity and suspended sediment. Where particularly vulnerable species or habitat are located immediately downstream, or where highly erodible soils are found, the guidelines shall be adjusted to favor more complete surface erosion control. Conversely, some areas may allow relaxing of guidelines, for example where buffer zones have atypically high sediment trapping efficiency due to topographic benches or particularly dense understory and litter accumulations or where excavated materials contain large coarse fragment content that would readily form an erosion pavement. These guidelines will be used and adapted as needed to actual field conditions to ensure that fine sediment is prevented from entering the stream systems as much as is reasonably possible. materials contain large coarse fragment content that would readily form an erosion pavement. These guidelines will be used and adapted as needed to actual field conditions to ensure that fine sediment is prevented from entering the stream systems as much as is reasonably possible.</p>			
<p><b>RTMP Mitigation Measure 3.1-B.9.</b> Potential pollutants (e.g., fuels, etc.) will be stored with proper containment and outside of areas where contact with stormwater runoff or creek waters could occur. Contractors will be held responsible for proper handling of fuels and other pollutants to ensure there is no spillage during refueling or other handling procedures.</p>	<p>The district shall require its contractor, or district construction crews to store and handle all potential pollutants, in properly contained areas away from streams and sensitive biological areas. <b>IS/MND Mitigation Measure HAZ-2</b> is more specific and protective than <b>RTMP Mitigation Measure 3.1-B.9</b> and details requirements and contents of a spill prevention and countermeasure plan that will be developed by the contractor or district. Therefore, implementation of <b>IS/MND Mitigation Measure HAZ-2</b> will fulfill the requirements of <b>RTMP Mitigation Measure 3.1-B.9</b>.</p>	<p>Construction</p>	
<p><b>RTMP Mitigation Measure 3.1-B.10.</b> All bridge abutments shall be designed by a civil engineer. Abutments will be armored and otherwise protected as recommended by the designing engineer.</p>	<p>The district's engineer or an engineer commissioned by the district will design all bridge abutments.</p>	<p>Pre-construction</p>	
<p><b>RTMP Mitigation Measure 3.1-B.11.</b> All work activities will be timed to avoid, or minimize, the environmental impacts of those work activities. Work in a stream crossing will be done during the dry season to help protect water quality and fisheries. Work around streams will be confined to the period of April 15 through October 15 or the first rainfall. In-water work will cease on or before October 15 of any year.</p>	<p>The district will control the sequence of work to avoid and minimize environmental impacts including stopping work, based on information/conditions in the field and limiting work windows for instream activities</p>	<p>Construction</p>	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
	to the dates identified in <b>RTMP Mitigation Measure 3.1-B.11.</b>		
<b>RTMP Mitigation Measure 3.1-B.12.</b> Any disturbed banks shall be fully restored upon completion of construction. Revegetation shall be done using native species. Planting techniques can include seed casting, hydroseeding, or live planting methods using the techniques in the latest version of the California Salmonid Stream Habitat Restoration Manual.	The district shall ensure that all disturbed banks are revegetated with native species in accordance with <b>RTMP Mitigation Measure 3.1-B.12.</b>	Construction	
<b>RTMP Mitigation Measure 3.1-B.13.</b> Planting of seedlings shall begin after December 1, or when sufficient rainfall has occurred to ensure the best chance of survival of the seedlings, but in no case after April 1.	The district shall ensure that all planting operations are sequenced to maximize the survival of plants in accordance with <b>RTMP Mitigation Measure 3.1-B.13.</b>	Construction	
<b>RTMP Mitigation Measure 3.1-B.14.</b> Prior to any work, the construction crew(s) will be informed of: (1) all necessary environmental protection measures; (2) the location of known special status species populations; (3) the location of any environmentally sensitive habitats; (4) the location of invasive exotic weed species that could infest the project site, and (5) all protective measures included in the project to minimize accidental environmental impacts.	Per <b>IS/MND Mitigation Measures BIO-2, BIO-3, BIO-4, BIO-5, BIO-6, BIO-7, and BIO-9</b> , the district will verify that all construction crew members attend a mandatory pre-construction biological training identifying the required environmental protection measures and special status species near the project site. The mandatory training will review special status species locations, protection measures, and review all environmental protection measures required including any conditions within resource agency permits.	Pre-construction	
<b>RTMP Mitigation Measure 3.1-B.15.</b> All construction sites will be signed and noticed that a construction project will occur or is in progress. The notice will describe, as appropriate or necessary, the type of work, whether or not the work will result in a road, trail or area closure, the duration of the work activities, when the road, trail or area would be reopened (if applicable), and include contact information for the public so they can get more information on the project.	The district will install signage with project information (closure areas, work schedule, etc.) and a district contact.	Pre-construction	
<b>RTMP Mitigation Measure 3.1-B.16.</b> All construction staging and storage areas shall be identified prior to beginning construction. Whenever possible, the staging and storage areas should be located in areas that have minimal natural resource value like parking areas, roadbeds, and trail beds. In all cases, the staging and storage areas should be returned to, at a minimum, their pre-construction condition. If these areas are associated with a decommissioning or restoration project, they could be included in the restoration also.	The district will select construction staging and storage areas to minimize potential environmental impacts and identify the locations on the final project plans.  Also see <b>IS/MND Mitigation Measure BIO-2</b> , which requires flagging and demarcation of all access, staging, and storage areas by the contractor and approval by the district prior to construction.  The district will verify that all staging and storage areas are restored to their original	Pre-construction	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p><b>RTMP Mitigation Measure 3.1-B.17.</b> Whenever possible, the district will confine its work activities within the alignment of an existing road or trail and avoid impacts to previously untrammed areas. In most cases, the older, high maintenance insloped routes can be converted to low maintenance outsloped routes without disturbing adjacent areas. When appropriate, such as when special status species populations are in the vicinity of the project, staging or storage areas, the construction crews will be notified of the special status species and the requirement to protect them. If necessary, the sensitive areas will be clearly marked or fenced during the duration of the project to minimize accidental impacts.</p>	<p>condition.</p> <p>The district will integrate conditions of <b>RTMP Mitigation Measure 3.1-B.17</b> into the final design plans to limit impacts to previously untrammed areas and will identify the project work limits. Furthermore, the district will require mandatory biological training for special status species and required protection measures. Also see <b>IS/MND Mitigation Measure BIO-1 and BIO-2</b>, which require flagging and demarcation of special status plants and approved work limits to reduce impacts to adjacent habitat. Daily inspections by district staff will be performed.</p>	<p>Construction</p>	
<p><b>RTMP Mitigation Measure 3.1-B.18.</b> Only the areas that truly need to be disturbed will be disturbed. Ditches and cutbanks should be left undisturbed unless they are identified as specific areas needing work. Construction crews will be briefed on what is not to be disturbed on site prior to the commencement of work. When environmentally sensitive habitats or special status species populations are involved, a protective barrier or signage will be installed that indicates the limits of construction and prohibits any work in areas not to be disturbed. In all cases, no sidecasting during maintenance, reconstruction or decommissioning work shall occur, especially near streams.</p>	<p>Similar to <b>IS/MND Mitigation Measure BIO-1 and BIO-2</b>, the district will ensure only areas that need to be disturbed to complete the project are disturbed. This will be accomplished by demarcating and adhering to the district-approved limits of work as shown on the final project plans. Daily inspections by district staff will be performed.</p>	<p>Construction</p>	
<p><b>RTMP Mitigation Measure 3.1-B.19.</b> Placement of excess materials resulting from project activities will be identified in advance. Spoils will be placed in stable areas preferably in areas planned for long-term rehabilitation (former quarry sites, rock terraces near dam sites etc.). Fill material removed from stream crossings and other sites shall be placed onto a road, landing, or skid road, inboard of the toe of the cut and against the existing cutbanks, but shall not exceed existing cutbank height. Fill shall be placed against cutbanks in such a manner that will prevent concentration, containment, or diversion of surface runoff. Fill material shall be placed such that surface runoff cannot enter the stream between the cutbank and the emplaced fill. The finished grade shall be a free draining surface. All berms, tracks, and other surface irregularities shall be smoothed. Fillsites shall not trap or pond surface water, and must create free draining surface flow. Brush, trees and other organic debris (including but not limited to logs and rootwads) encountered or removed during excavation and clearing of fillsite areas are to be distributed over the finished surface in accordance with the post-excavation erosion control guidelines. The fill site shall be revegetated as warranted.</p>	<p>In regards to placement of excess materials and drainage processes the district will integrate conditions of <b>RTMP Mitigation Measure 3.1-B.19</b> directly into the final project designs to ensure fill placement and adequate stabilization limit erosion, diversion of run-off, and other unanticipated drainage problems.</p>	<p>Pre-construction</p>	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p><b>RTMP Mitigation Measure 3.1-B.20.</b> The district will seek to allow natural reestablishment of native vegetation at construction sites, taking into account the following when determining site-specific revegetation strategies:</p> <ul style="list-style-type: none"> <li>• Potential for natural recovery of the vegetation;</li> <li>• Potential for expansion and establishment of invasive, exotic weed species;</li> <li>• Availability of local seed and plant stock; and</li> <li>• Available information on special status species and environmentally sensitive habitats in the area.</li> </ul>	<p>The district will consider natural reestablishment as a potential revegetation technique where natural reestablishment and recruitment can meet the goals of revegetation based on the factors listed in <b>RTMP Mitigation Measure 3.1-B.20</b>. This approach will be particularly important along decommissioned trail segments that do not require intensive revegetation efforts.</p>	<p>Post-construction</p>	
<p><b>RTMP Mitigation Measure 3.1-B.21.</b> Whenever possible, the district will reseed disturbed sites by redistributing topsoil and surrounding vegetative litter in the final site dressing. Seeding with imported germ material may be appropriate where extensive areas are disturbed or the native seed bank is degraded. Seed material collected from the Watershed will be used to the fullest extent possible. Seed mixes should be site specific, with species composition drawn from the surrounding plant community. Where rapid establishment of vegetative cover is deemed necessary, seed mixes should be restricted to sterile, annual grass species. Fertilizers and nitrogen-fixing cover crops should not be used, as such “soil enhancers” because they can facilitate invasive, exotic weed establishment.</p>	<p>The district will integrate the conditions of <b>RTMP Mitigation Measure 3.1-B.21</b> in the revegetation plan required for all disturbed areas by <b>IS/MND Mitigation Measure BIO-12</b> and <b>RTMP Mitigation Measure 3.1-B.12</b>. The plan will include seeding and local topsoil harvesting and replacement as top dressing to retain the existing seed bed and repurpose available organic content to the extent practicable based on site specific conditions. Only locally harvested seed and species representative of each specific project site will be seeded. No fertilizers or cover crops will be utilized.</p>	<p>Post-construction</p>	
<p><b>RTMP Mitigation Measure 3.1-B.22.</b> Newly seeded areas should be marked on the ground or mapped and protected from disturbance during the germinations season. These areas should also be closed to foot, horse and bicycle traffic. Vehicles should not be parked or driven over seeding weed populations. If necessary, a temporary or permanent access barrier or fence may be installed to prevent damage.</p>	<p>The district will protect newly seeded areas from disturbance during the germination period by limiting vehicle access, temporarily closing areas with flagging/fencing, and/or installing temporary barriers.</p>	<p>Post-construction</p>	
<p><b>RTMP Mitigation Measure 3.1-B.23.</b> Following seeding planting perennial species, shrubs and trees, may be appropriate at specific project sites. While these plants ultimately provide better erosion control, they take longer to establish. Species selection should reflect the surrounding plant communities, and plant material should be gathered from the Watershed. To the fullest extent possible, root masses, bulbs, and corms excavated during construction should be preserved and replanted on the project site as part of the final dressing. In some cases, extra care may be needed for the newly planted perennial species to protect them from deer, summer drought and other plant species which may out compete them for sun, water and nutrients.</p>	<p>The district’s revegetation plan (required by <b>IS/MND Mitigation Measure BIO-12</b> and <b>RTMP Mitigation Measure 3.1-B.12</b>) will select perennial species based on site-specific conditions and will harvest and replant, to the extent practicable, root masses, bulbs, and corms generated during initial site clearing activities as described in <b>RTMP Mitigation Measure 3.1-B.23</b>.</p>	<p>Post-construction</p>	
<p><b>RTMP Mitigation Measure 3.1-B.24.</b> Topsoil removed from the project area will be stored for its return to the disturbed site upon project completion. Special care will be applied to any soil supporting special status plant species to minimize excessive disturbance of the soil during its removal, storage and</p>	<p>The district’s final plans and contract documents will require special handling and care for topsoil generated through initial clearing and grubbing activities including</p>	<p>Construction</p>	



Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
return to the project area.	segregation and temporary storage of site-specific topsoil in accordance with <b>RTMP Mitigation Measure 3.1-B.24.</b>		
<b>RTMP Mitigation Measure 3.1-B.25.</b> Soil will only be compacted to the extent necessary to reduce any surface erosion that may occur in the first heavy rainfall.	The district's final plans and contract documents will set maximum compaction limits for non-trail/tread surfaces.	Construction	
<b>RTMP Mitigation Measure 3.1-B.26.</b> Seasonal Closures. Minimize traffic loads on sensitive roads during the rainy season by seasonally or temporarily closing the roads or trails to certain uses.	The district will continue to inspect roads and stream crossings, perform routine maintenance of drainage facilities, and close roads and trails as described in <b>RTMP Mitigation Measures 3.1-B.26, 3.1-B.27, 3.1-B.28, 3.1-B.29, 3.1-B.30, 3.1-B.31, 3.1-B.32, 3.1-B.33, and 3.1-B.34.</b>		
<b>RTMP Mitigation Measure 3.1-B.27.</b> Inspections. The district will regularly inspect, before the rainy season, all stream crossings (including culvert trash racks and erosion control features), inboard ditches, ditch relief culverts, rolling dips and waterbars to be sure they will function properly.			
<b>RTMP Mitigation Measure 3.1-B.28.</b> Road Grading. The district will grade roads only when needed to maintain an acceptable driving surface and retain proper drainage. The district will grade only when road surfaces are slightly damp so the graded materials get properly mixed, compacted and bound with the underlying materials.			
<b>RTMP Mitigation Measure 3.1-B.29.</b> Ditch Grading. Ditches will be graded only when and where necessary. Small plants and annual grasses will be left in ditches if they do not block water movement. This vegetation slows runoff velocities, helps prevent scour and filters out sediments. Often, nothing more than shovel work is necessary to maintain drainage ditches.			
<b>RTMP Mitigation Measure 3.1-B.30.</b> Culverts. The district will continue to mark all its culverts with coded signs that indicate where the culvert is located, and in certain cases, their diameter and relative inspection needs (based on its likelihood of plugging or history of problems). The district will continue to maintain a master file of all the culverts and their attributes for quick reference. This file will be regularly updated and maintained to maximize its usefulness. The district will also inspect culverts during periods of high runoff to clear them of debris that may cause plugging. The district will also fix culvert problems as soon as practicable as a delay may cause a failure that could lead to costly road damage.		Pre-construction & Post-construction	
<b>RTMP Mitigation Measure 3.1-B.31.</b> Bridges. Bridge riprap and other abutment protection structures will be repaired by the district as soon as possible to prevent the loss of the bridge. Large, woody, floating debris will be cut free and removed or floated downstream. Unwanted debris that accumulates on the deck surfaces will be picked up or pushed to the adjacent bank for proper disposal. The district will not dump, push or scrape this material into the creek or reservoir.			
<b>RTMP Mitigation Measure 3.1-B.32.</b> Fords. As required, the district may also perform some rock armor maintenance on permanent fords. If the district needs to do maintenance work on a ford it will wait until low flow conditions to minimize impacts to the creek and water quality.			

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p><b>RTMP Mitigation Measure 3.1-B.33.</b> Cutbanks. Cutbanks will be frequently inspected by the district to help identify potential failures before they happen. The district will remove these materials (especially from inboard ditches) before they have an opportunity to enter a creek or reservoir, restore the road or trail surface drainage, and dispose of the material where it will not erode into a creek or reservoir or create other problems.</p>			
<p><b>RTMP Mitigation Measure 3.1-B.34.</b> Fillslopes. If fillslope material could fall into a creek or reservoir, it should be excavated before it fails. The district will continue to work diligently to maintain proper drainage that helps minimize the development of the cracks and scarps. If movement is persistent, the district will seek an alternative so the fill area is no longer needed or subjected to loading. If more width is needed to maintain safe passage, the district will explore the possibility of cutting further into the hillside, a retaining wall or other structure.</p>			
<p><b>RTMP Mitigation Measure 3.1-B.</b> Trail Decommissioning. All the mitigation measures pertinent to decommissioning listed under Impact 3.1-B will apply. In addition, the following measure is included in the Draft Plan.</p> <ul style="list-style-type: none"> <li>Waterbars and cross-road drains will be installed at 50, 75, 100 or 200-foot intervals, or as necessary at springs and seeps, to disperse road surface runoff, especially on roads that are to be decommissioned. Cross-road drains are large ditches or trenches excavated across a road surface to provide drainage and to prevent the collection of concentrated runoff on the former road bed. They are typically deeper than waterbars and do not allow for vehicle access.</li> </ul>	<p>Waterbars, critical dips, and cross-road drains will be integrated into the final project design plans to disperse surface run-off and prevent the collection of concentrated flow.</p>	<p>Pre-construction</p>	
<p><b>RTMP Mitigation Measure 3.1-F.2.</b> Trail improvements should be constructed according to recommendations outlined in either the Trail Manual for the Maintenance and Operation of Trails in the East Bay Regional Park District (McDonald 1995), A Handbook on Trail Building and Maintenance (Griswold 1996), NPS Trails Management Handbook (National Park Service, 1983), or the Trails Handbook (California Department of Parks and Recreation 1998). Class VI trails should be built and repaired to allow safe horse passage per guidelines set forth in Trails Manual (Vogel, 1982). Regarding both new and restored trails and roads, the following measures are recommended for trail stability and erosion control:</p>			
<p>a) The trails should travel up and down grade ("undulating grades") to allow rolling dips to dewater the trail.</p>	<p>The conditions and characteristics of trail design listed in <b>RTMP Mitigation Measure 2.1-F.2</b> will be included in the project design plans and details for the project.</p>	<p>Pre-construction and Construction</p>	
<p>b) Trails shall generally follow a curvilinear alignment. Maximum grades should generally not exceed 10%, though steeper grades can be permitted for short sections; the average slope should be maintained at 7.5% or less.</p>			
<p>c) Class VI trails shall be wide enough to allow safe use by equestrians and hikers. Trails that are expected to have light use generally have trail treads 2-4 feet wide, while heavy use trails are generally designed to be 5-6 feet wide. A maximum of four feet is recommended for the proposed trails.</p>			
<p>d) Trails shall be constructed with a 3-4% outslope wherever feasible. Two approaches can be applied to gain the desired outslope; a) blade off the outer trail edge with a trail machine or hand implements, or b) import material to raise the inslope portion of the</p>			

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<p>trail. The first approach should be avoided where the trail is close to a drainageway, since the blading operation will deposit some sidecast material on the downslope side of the roadway and the material could be conveyed downslope to the active channel.</p> <p>e) On both insloped and outsloped trail segments, install rolling dips where needed. If rolling dips are not feasible, install water bars at spacings as needed. On especially steep grades, closer spacing may be necessary. The optimal outlet locations for runoff collected and diverted by dips and bars would be on locally convex slopes. Where necessary, rock the outlet.</p> <p>f) Construct stabilized at-grade crossings of streams using the design and construction procedures included in the Handbook for Forest and Ranch Roads - A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads (Pacific Watershed Associates 1994), A Handbook on Trail Building and Maintenance (Griswold 1996), or the Trails Handbook (California Department of Parks and Recreation 1998).</p> <p>g) Proper culvert design and construction procedures are outlined in the Handbook for Forest and Ranch Roads - A Guide for Planning, Designing, Constructing, Reconstructing, Maintaining and Closing Wildland Roads (Pacific Watershed Associates 1994). Wherever culverts are installed, construct a rocked apron at the outlet; the stabilized apron should be at a flat or mild grade (e.g. 1-2%); extend a minimum of five feet downslope from the outlet and one foot (vertical) up onto the adjoining banks (higher where outlet channel banks are steeper than 2:1); and comprise strongly embedded (e.g. 60%) larger rock and cobble infill to minimize the risk of erosion within the structural elements.</p>			
<p><b>RTMP Mitigation Measure 3.1-F.3.</b> When laying out the trail location, MMWD should attempt to locate the trail in locations where any erosion that does occur will be drained to areas that do not connect to the stream system.</p>	<p>The trail alignment will be adjusted to minimize transport and deposition of sediment into adjacent streams and maximize deposition in features that can temporarily store sediment for future removal (maintenance).</p>	<p>Pre-construction</p>	
<p><b>RTMP Mitigation Measure 3.1-F.4.</b> Areas that are disturbed when constructing the trail that are outside the trail tread shall be reseeded with native plant seed, and/or punched straw or other locally available mulch will be placed to protect against raindrop impact and to minimize soil detachment and downslope movement.</p>	<p>The district will stabilize all disturbed areas with native seed or mulch. Also see <b>IS/MND Mitigation Measure BIO-12.</b></p>	<p>Pre-construction</p>	
<p><b>RTMP Mitigation Measure 3.1-F.5.</b> New trail grading or culvert crossing installation should be implemented during the dry season, which from a regulatory standpoint typically extends from April 15 to October 15.</p>	<p>The district will only grade or install new crossings during the dry season and abide by any additional work period limits imposed by</p>	<p>Construction</p>	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
Appropriate erosion control measures (i.e. BMPs), including seeding, should also be installed prior to the first rain of the winter season, or by October 15.	the regulatory agencies and mitigation measures defined elsewhere in this document (nesting birds, bat habitat, etc.).		
<b>RTMP Mitigation Measure 3.2-H.1.</b> Prior to designing or finalizing construction documents/plans for each project, a field survey of the project site shall be conducted by a qualified wetland expert. This expert shall identify all Army Corps jurisdictional wetlands and wetlands subject to RWQCB oversight. These wetland delineations and identifications shall be submitted to the Army Corps, California Department of Fish and Game, and the RWQCB when submitting the annual list of projects to be carried out the following year.	A qualified wetland expert surveyed the project area to quantify and map potentially jurisdictional wetlands. The map of potentially jurisdictional wetlands and project-related impacts will be submitted to the agencies to obtain the required environmental permits for the project.	Pre- construction	Jurisdictional Wetland Survey: Complete – August, 2017 Submittal of Wetland Survey:
<b>RTMP Mitigation Measure 3.2-H.2.</b> All wetlands created by springs shall be maintained to the maximum degree feasible. If the drainage of the spring must be altered to allow proper road or trail drainage, the district shall strive to create a drainage pattern that provides an equal or greater amount of wetland habitat in the area of the spring.	The district will integrate <b>RTMP Mitigation Measures 3.2-H.2, 3.2-H.3, 3.2-H.4, 3.2-H.5, and 3.2-H.6, and 3.2-H.7</b> into the final design plans for the project. This will include developing designs that maintain or improve drainage patterns to support wetland habitat, avoid and retain all wetlands (including roadside ditches), limit the area of impact required, and retain existing culvert design elevations unless preservation of wetland features may cause	Pre- construction & Construction	
<b>RTMP Mitigation Measure 3.2-H.3.</b> Any roadside ditch wetlands will be assessed by the district to determine whether they can be retained. Unless displacement of these wetlands is critical to reducing a substantial erosion problem, these wetlands will be retained.			
<b>RTMP Mitigation Measure 3.2-H.4.</b> When removing culverts for replacement, the minimum amount of vegetation shall be removed. No equipment should be allowed within any wetland.			
<b>RTMP Mitigation Measure 3.2-H.5.</b> Culverts draining upslope wetlands shall be placed so that the inlet is set at the same elevation as the existing culvert to maintain the upslope hydrologic regime.			
<b>RTMP Mitigation Measure 3.2-H.6.</b> When decommissioning roads and trails, all wetlands should be retained unless their retention would cause substantial future erosion.			
<b>RTMP Mitigation Measure 3.2-H.7.</b> All ditches supporting wetlands shall be clearly identified so that ongoing road and trail maintenance avoids grading or cleaning these ditches except where needed to restore ditch function.	The district will install signage indicating the extent of wetland habitat to facilitate avoidance during ongoing road and trail maintenance except where explicitly required to maintain ditch function in accordance with <b>RTMP Mitigation Measure 3.2-H.7.</b>	Post- construction	
<b>RTMP Mitigation Measure 3.2-H.8.</b> Where wetland plants must be removed or wetland habitat is created, the district shall collect seed from wetland plants in the area and reseed the area once construction is complete. Suitable live plants can also be planted. Planting techniques can include seed casting, hydroseeding, or live planting methods using the techniques in the latest version of the California Salmonid Stream Habitat Restoration Manual.	The district will develop a revegetation plan for all wetlands temporarily impacted by the project that includes harvesting of existing wetland plants and seeds, where feasible. Also see <b>IS/MND Mitigation Measure BIO-12.</b>	Pre- construction	
<b>RTMP Mitigation Measure 3.2-H.9.</b> The district shall abide by any additional permit conditions required by the Army Corps, California Department of Fish	The district will abide by any and all additional permit conditions stipulated by the Army	Construction & Post-	

Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
and Game, and the RWQCB.	Corps, California Department of Fish and Game, and the RWQCB.	construction	
<p><b>RTMP Mitigation Measure 3.2-H.10.</b> To ensure there is no net loss of wetlands due to the project, the district is committed to creating approximately 290 feet of new creek as the result of the road and trail decommissioning called for in the Draft Plan. The unavoidable impact of loss of isolated wetlands in in-board ditches due to road re-contouring (subject to <b>RTMP Mitigation Measures 3.2-H.1 and 3.2-H.3</b>) shall be assessed, quantified, and calculated for size, condition, function, and value of the ditch wetlands. The loss of isolated, in-board ditch wetlands shall not exceed the 290 feet of new creek that will be created. Once the threshold is reached, no additional wetlands shall be displaced or impacted without further environmental analysis and mitigation.</p>	<p>The district will assess and quantify all wetlands impacted by the project to ensure there is no net loss of wetlands.</p>	<p>Pre- construction &amp; Construction</p>	

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**10. Land Use/Planning** - The project would not result in significant adverse impacts related to Land Use/Planning. No mitigation is required.

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**11. Mineral Resources** - The project would not result in significant adverse impacts related to Mineral Resources. No mitigation is required.



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Environmental Factor Potentially Affected/ Mitigation Measure	Compliance Verification (Project Phase, Date, & Initials)
<b>12. Noise</b>	
<p><b>RTMP Mitigation Measure 3.4-D.1.</b> Project construction in areas within one-quarter mile of a private residence shall be limited to the hours of 7:30 a.m. to 5:00 p.m. on weekdays. No work shall be allowed on Saturdays, Sundays, or holidays.</p>	<p>This mitigation measure does not apply to the Azalea Hill Restoration Project. No private residences are located within a quarter mile radius of the project site.</p>

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**13. Population/Housing-** The project would not result in significant adverse impacts related to Population/Housing. No mitigation is required.

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**14. Public Services** - The project would not result in significant adverse impacts related to Public Services. No mitigation is required.

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Environmental Factor Potentially Affected/ Mitigation Measure	Specific Action	Timing	Compliance Verification (Project Phase, Date, & Initials)
<b>15. Recreation</b>			
<p><b>IS/MND Mitigation Measure REC-1.</b> The main trailhead at the upper Azalea Hill parking lot shall include interpretive signage (kiosk, etc.) that explains and illustrates the sensitive plants and communities on Azalea Hill, encourages their avoidance and protection, and identifies the importance of staying on system trails. Interpretive signage shall also be placed at the lower trailhead on Bullfrog Road for both the Azalea Hill Trail and the Liberty Gulch route. In both cases, signs should clearly indicate allowed use and direct bikes away from the Azalea Hill Trail.</p>	<p>The district will design and develop informational kiosks at the Azalea Hill parking lot trailhead and Bull Frog road as part of project design.</p>	<p>Pre-construction</p>	
<p><b>IS/MND Mitigation Measure REC-2.</b> The survey required by <b>IS/MND Mitigation Measure BIO-10</b>, shall also include an identification adaptive management actions to treat any deterioration in trail and road segments and parking lots serving the project area. The adaptive management actions shall be included in annual trail maintenance and operation activities to be performed by the district.</p>	<p>The district botanist will identify required adaptive management actions to be implemented as part of annual road and trail maintenance activities performed by the district.</p>	<p>Post-construction</p>	
<p><b>IS/MND Mitigation Measure REC-3.</b> On Liberty Gulch Road, speed calming features (e.g. signs, changes in elevation such as earthen speed bumps, lane narrowing, diagonal diverters using local logs or rocks, etc.) to reduce the downhill speed of bicyclists shall be constructed that integrate standard trail design guidelines (hiking, equestrian, biking) and a focus on safety. To discourage cycling on the Azalea Hill Trail bicycle deterrence elements (e.g. signs, abrupt changes in elevation that are difficult to roll over, horse friendly diverters or step-overs using local logs or rocks, etc.) shall be constructed. The effectiveness of these features shall be monitored to ensure they perform as designed in accordance with <b>IS/MND Mitigation Measures BIO-10 and REC-2</b>.</p>	<p>Project designs will include speed calming measures and signage along Liberty Gulch Road to reduce bicycle speeds. Project designs will include bicycle deterring elements along the Azalea Hill Trail and signage to discourage bicycle use.</p>	<p>Pre-construction</p>	
<p><b>IS/MND Mitigation Measure REC-4.</b> The district shall conduct focused patrols at Azalea Hill, similar to those it conducts for Project Restore, and document its patrol and enforcement activity in the Azalea Hill area and prepare a report on its findings after five years. The number of focused patrols shall be determined based on the illegal activity discovered or reported (the schedule of such patrols need to remain confidential). Findings of illegal activity, including failure to abide by permitted use on a route, failure to comply with speed limits, including when passing, and failure to keep out of closed areas, shall trigger corrective actions as described in <b>IS/MND Mitigation Measure BIO-10</b>. These efforts shall continue until the desired outcome, compliance with district regulations preventing illegal activities, is achieved.</p>	<p>District rangers will conduct regular patrols along Azalea Hill project trails and coordinate with facilities and watershed staff to identify adaptive management actions and corrective measures to achieve use patterns.</p> <p>The district will produce a report 5 years after completion of the project which documents the results of patrols and enforcement actions.</p>	<p>Post-construction</p>	



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**16. Transportation/Traffic** - The project would not result in significant adverse impacts related to Transportation/Traffic. No mitigation is required.

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**17. Tribal Cultural Resources** - The project would not result in significant adverse impacts related to Tribal/Cultural Resources. No mitigation is required.

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**18. Utilities/Service Systems** - The project would not result in significant adverse impacts related to Utilities/Service Systems. No mitigation is required.