

PROJECT DESCRIPTION FOR THE PONTI FIRE ROAD PROJECT

Prepared by
Marin County Open Space District
November 2018



Project Title

Ponti Fire Road to Trail Conversion Project

Lead Agency Name and Address

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

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Project Location

Pacheco Valle Open Space Preserve, Marin County, California

Project Sponsor's Name and Address

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

General Plan Designation

Open Space (OS)

Zoning

APN 160-010-85: Open Area (OA)
APN 160-010-78: Open Area (OA)
APN 160-010-77: Open Area (OA)
APN 160-010-76: Open Area (OA)
APN 160-010-68: Open Area (OA)
APN 160-010-55: Open Area (OA)

Ponti Fire Road to Trail Conversion Project

I. BACKGROUND

On December 16, 2014, the Marin County Board Supervisors approved the Road and Trail Management Plan (RTMP)¹ and certified its program Environmental Impact Report (EIR) (State Clearinghouse Number 2011012080) (MCOSD, 2014a and 2014b). The RTMP is a science-based comprehensive management plan to guide the MCOSD in the: 1) establishment and maintenance of a sustainable system of roads and trails; 2) reduce environmental impact of roads and trails on natural resources; and 3) improve visitor experience and safety.

The RTMP covers six regions (Figure 1) within Marin County, and 34 open space preserves. Region 3, which includes the project site, covers the following open space preserves:

- Lucas Valley
- Loma Verde
- Pacheco Valle
- Ignacio Valley
- Indian Valley

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

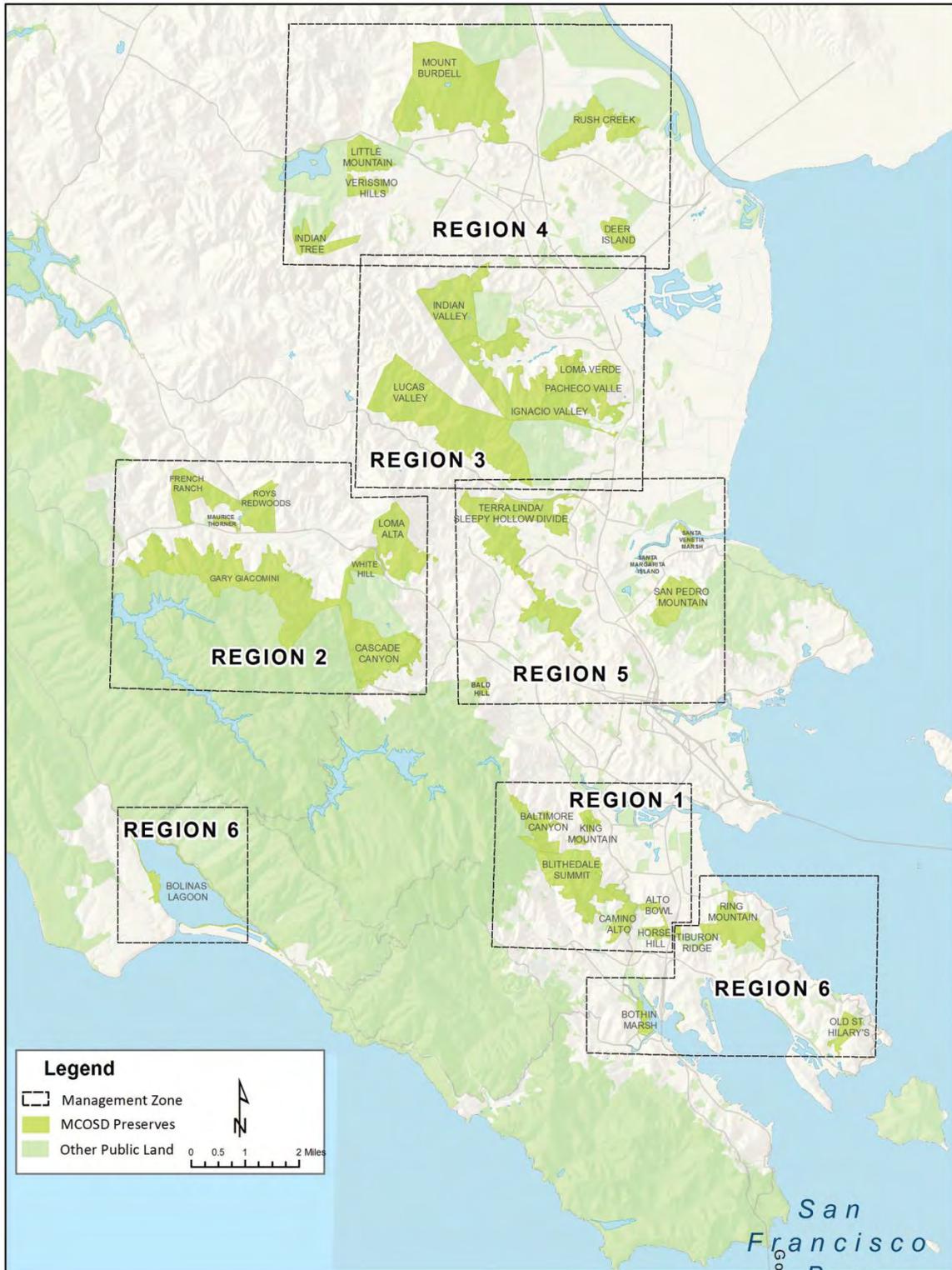
The road and trail designation for Region 3 occurred in 2016. Region 3 is located in the middle of Marin County, west of the Ignacio and Marinwood communities. This region consists of five preserves totaling approximately 3,553 acres. It includes the Lucas Valley, Ignacio Valley, Indian Valley, Pacheco Valle, and Loma Verde Preserves. Lucas Valley is the largest preserve in this region (1,271 acres), followed by Ignacio Valley (901 acres) and Indian Valley (558 acres). Region 3 contains approximately 38 miles of roads and trails. The Region 3 Designation Workshop was held on August 21, 2016. Following the workshop, the public had an opportunity to view and comment on the proposed road and trail system for Region 3 (Figure 2 and 3).

The RTMP incorporates existing policies from the Countywide Plan and the MCOSD's Policy Review Initiative. Additionally, it identifies 34 new policies that govern the MCOSD's road and trail system. The intent of these policies is to reduce the environmental impact from the roads and trail system and to improve the recreational experience. In addition to these policies, the RTMP defined several best management practices (BMPs) that will reduce resource effects from any road and trail projects.

¹ For a copy of the RTMP, go to http://www.marincountyparks.org/~media/files/departments/pk/projects/open-space/rtmp-eir/rtmp_lowres_3615_bookmarks.pdf?la=en. Printed copies are available from Marin County Parks for a small fee.

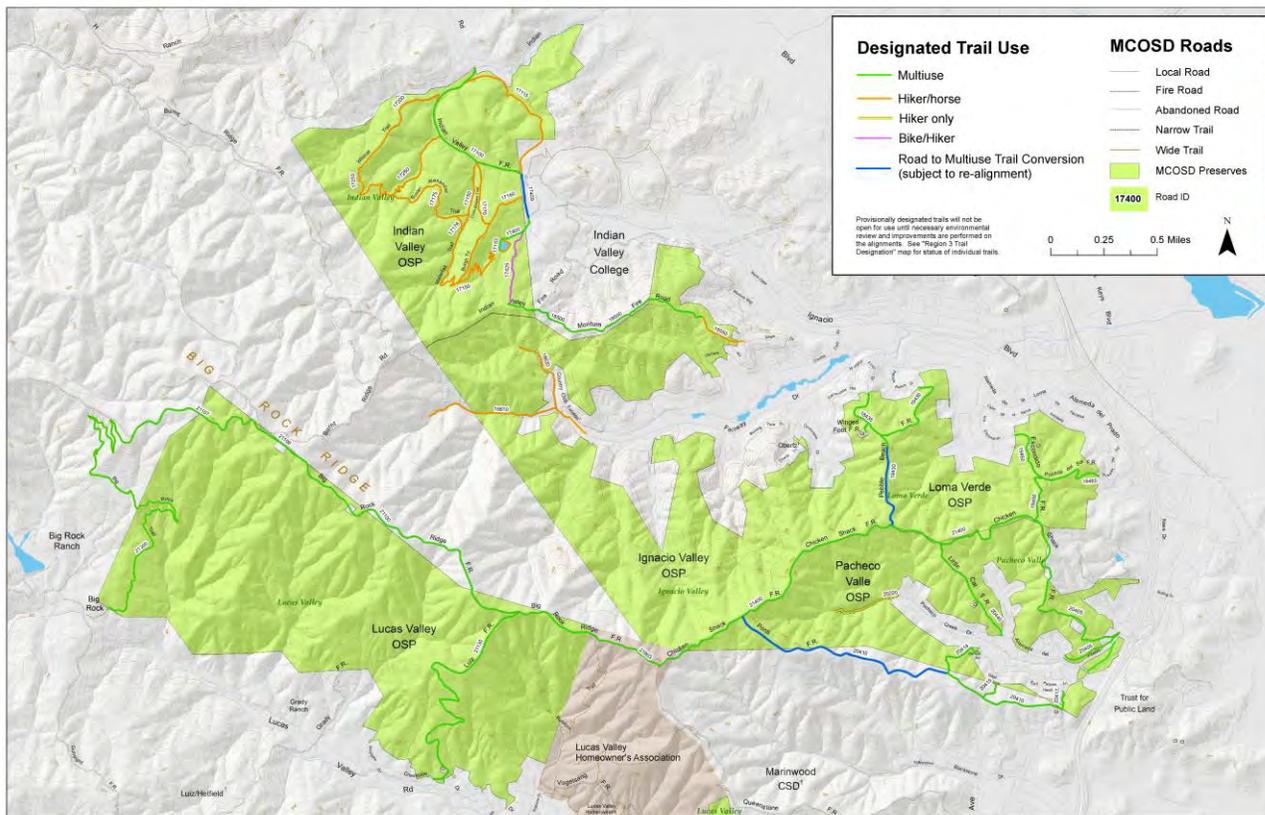
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Figure 1: MCOSD Preserves by Region



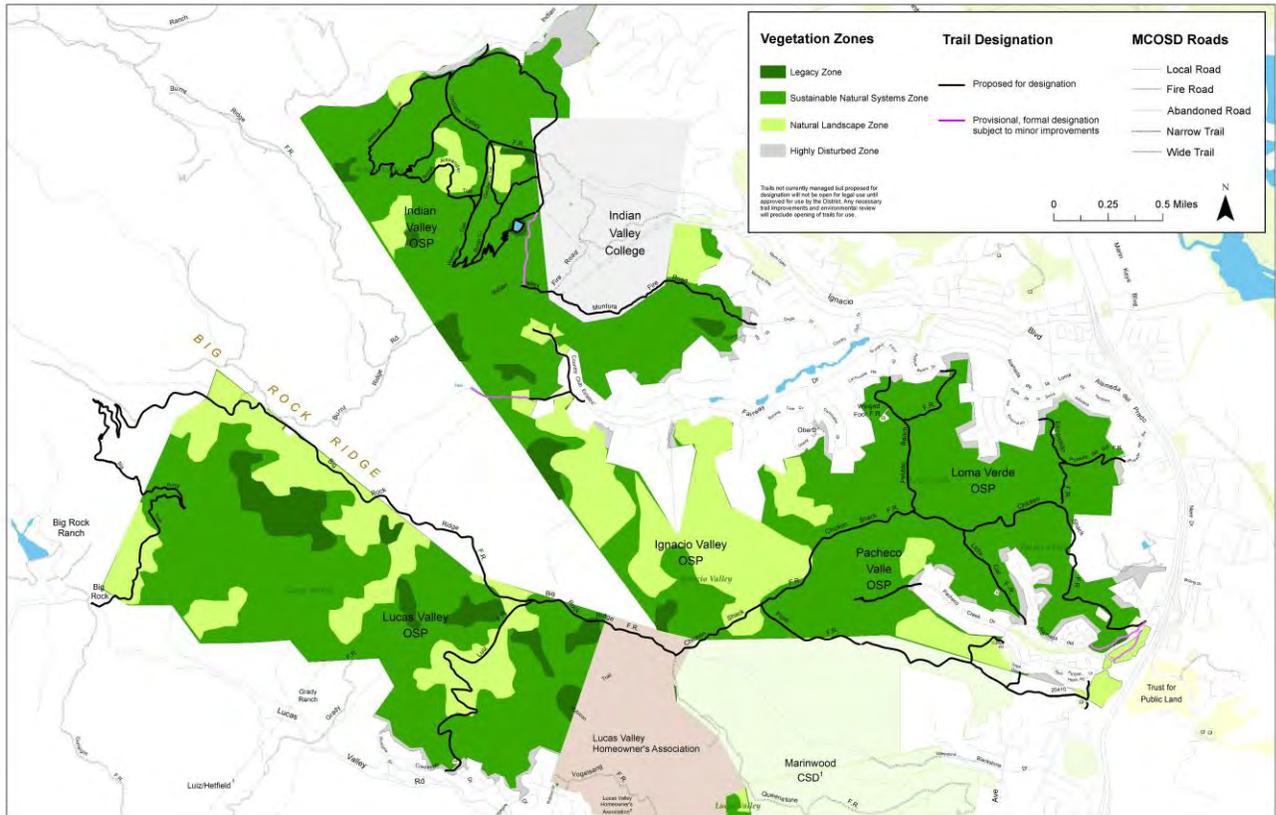
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Figure 2: Region 3 Trail Designations



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Figure 3: Region 3 Vegetation Communities



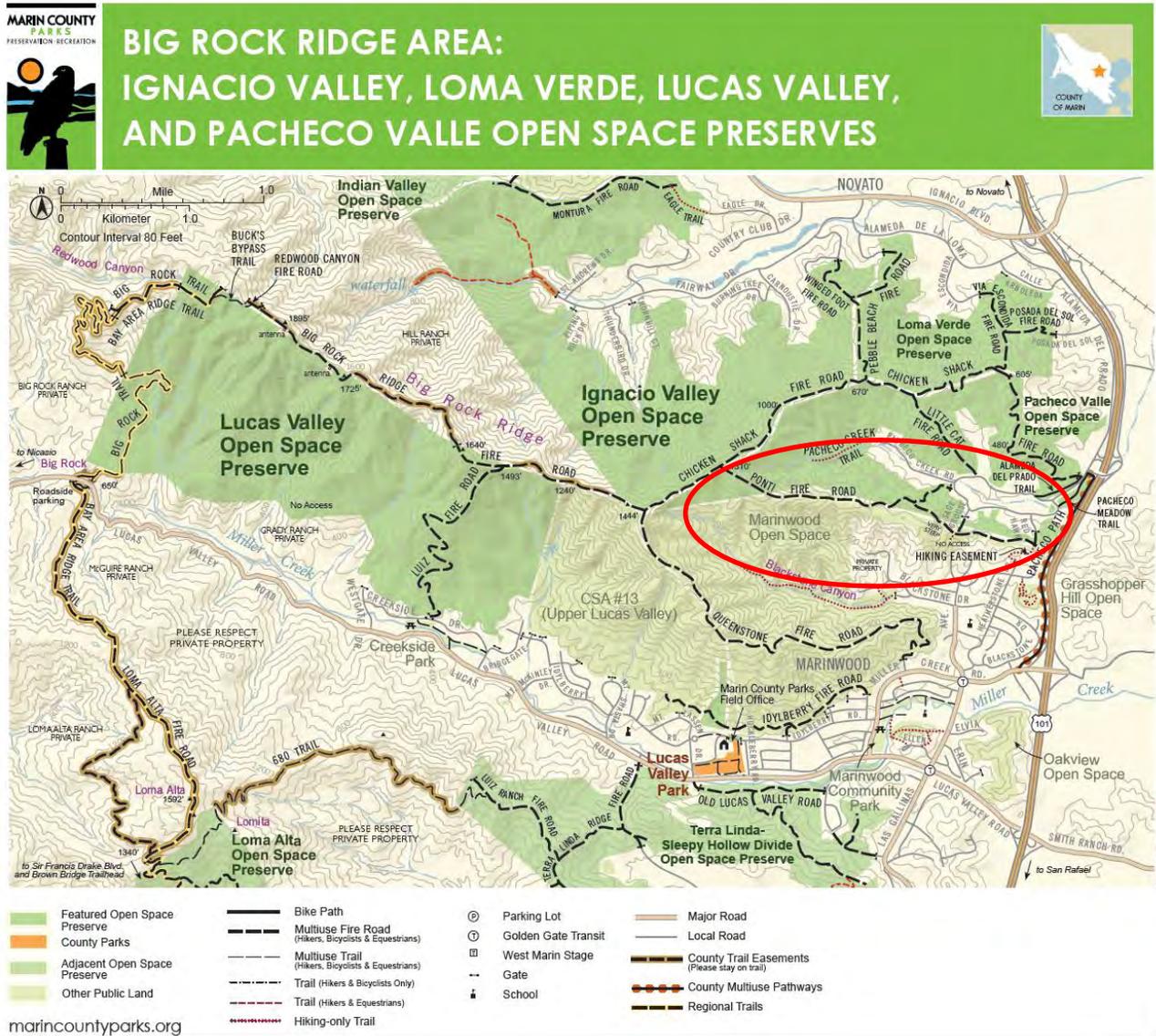
II. PROJECT SETTING

The project site is located within the Pacheco Valle Open Space Preserve, which totals 503 acres. Together, the Loma Verde, Ignacio Valley, Pacheco Valle, and Indian Valley Open Space Preserves form a contiguous band of undisturbed open space encompassing virtually the entire northern slope of eastern Big Rock Ridge (Figure 4 and 5). The preserve is surrounded by single-family residential development in the unincorporated neighborhoods of Marinwood and Lucas Valley to the south, Novato to the east, Loma Verde Open Space Preserve to the north, and the Ignacio Valley Open Space Preserve to the west. Access to the project site is from Heatherstone Drive in Marinwood and Sage Grouse Fire Road, Red Hawk Fire Road, and Curlew Fire Road off Alameda del Prado in Novato. There is limited parking at the preserve along the roadsides. The preserve is mainly used by local residents who walk or bike to the site.

The Ponti Fire Road is a 1.7-mile long, steep, unsurfaced 14-foot-wide fire road that extends from the end of Heatherstone Drive in Marinwood, up the Big Rock Ridge to Chicken Ranch Fire Road on the ridge between the Pacheco Valle and Ignacio Valley Open Space Preserves. The fire road is used for year-round recreational trail use and maintenance vehicles. The fire road is in a state of disrepair and is no longer needed or acceptable to support fire and emergency access. The lower 0.5 mile of Ponti Fire Road is located largely on moderate gradient slopes along the ridge crest and is in generally good condition. The upper portion of the road, however, is very steep (20 to 35 percent gradient) and poorly suited for trail or vehicle access. MCOSD in consultation with Marinwood Community Services District (CSD), and the Marin County Fire Department, have concluded that the steep upper portion of this road is not desirable for fire access and therefore it is proposed to be converted to a multi-use trail.

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Figure 4 – Pacheco Valle Open Space Preserve



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Figure 5 – Project Site



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Vegetation

Vegetation zones in the project area include Sustainable Natural Systems, Natural Landscape, and Highly Disturbed zones. These designations are derived from the MCOSD's Vegetation and Biodiversity Management Plan, which are described below (Figure 6):

Sustainable Natural Systems

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

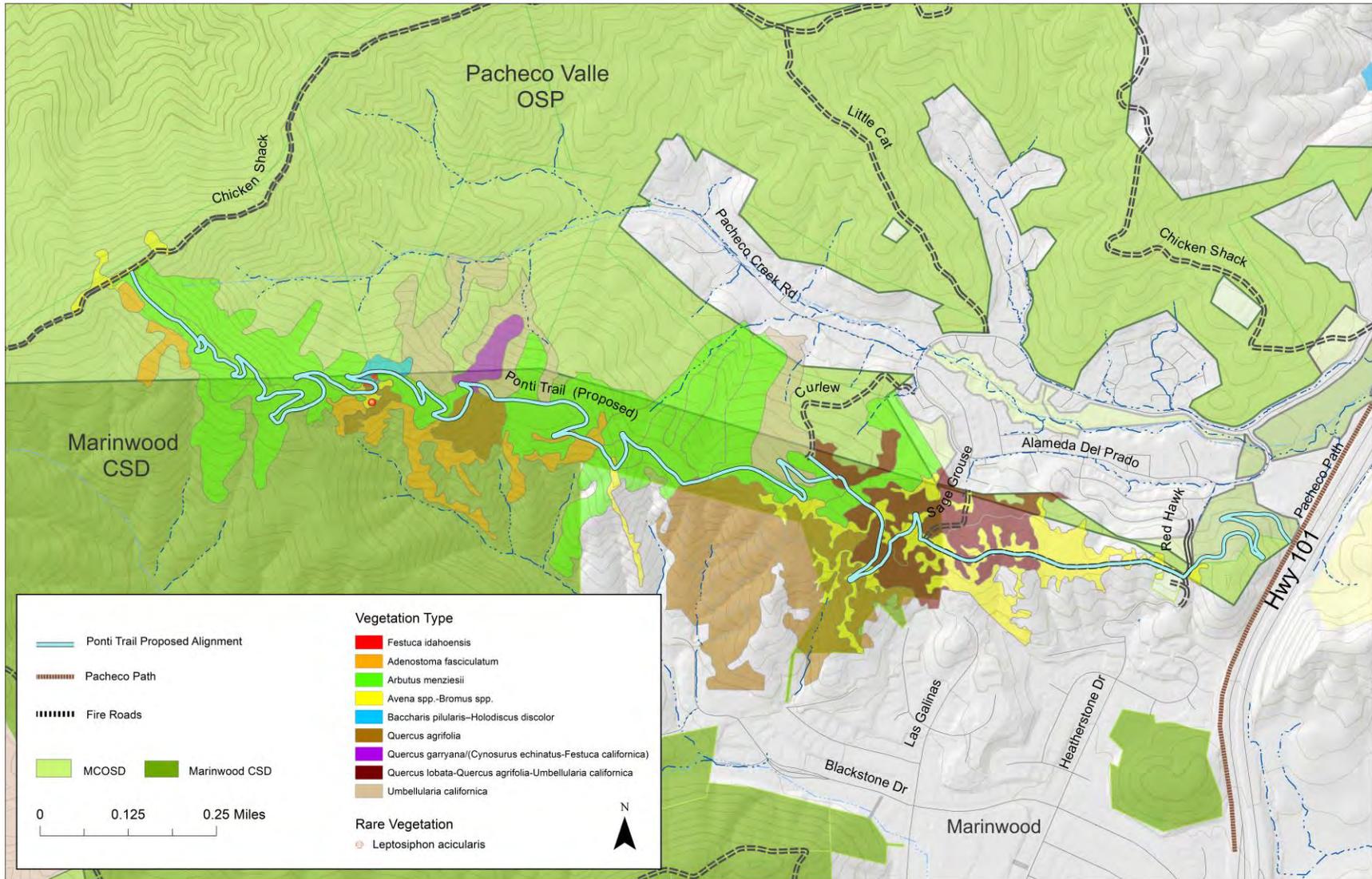
Natural Landscape Zone

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

Highly Disturbed Zone

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

Figure 6 – Vegetation Types at the Project Site



Hydrology

Pacheco Valle is mostly located in the Novato Creek watershed. Novato Creek is the largest watershed in eastern Marin County and flows eastward through oak and bay forests, grasslands, the City of Novato, and into San Pablo Bay near the mouth of the Petaluma River and encompasses 45 square miles (Marin County, 2017; Figure 3). The Ponti Fire Road is located on the Big Rock ridge, which is the boundary between the Novato Creek Watershed and the Miller Creek Watershed. The Miller Creek watershed covers 12 square miles with 30 miles of channels. Miller Creek flows eastward from open space and private ranches on Big Rock Ridge through multiple unincorporated housing developments, including Miller Creek Estates and Marinwood, until it passes under Highway 101 and enters the baylands at the Northwest Pacific Railroad (NWPRR) Bridge (Figure 8).

Hydrologic features in project area include Pacheco Creek (part of Novato Creek watershed via Ignacio Creek). Gullying occurs along the ridgeline fire roads, including Chicken Shack, Little Cat, and Ponti (MCOSD, 2014b).

Figure 3: Novato Creek Watershed

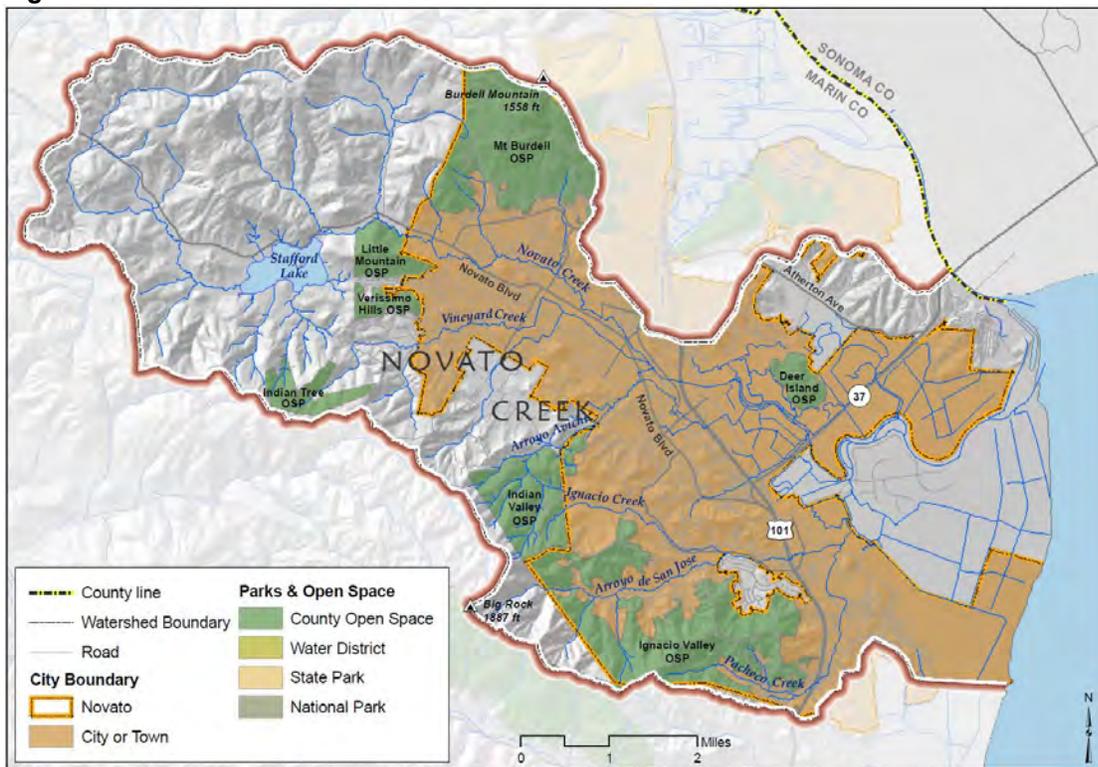
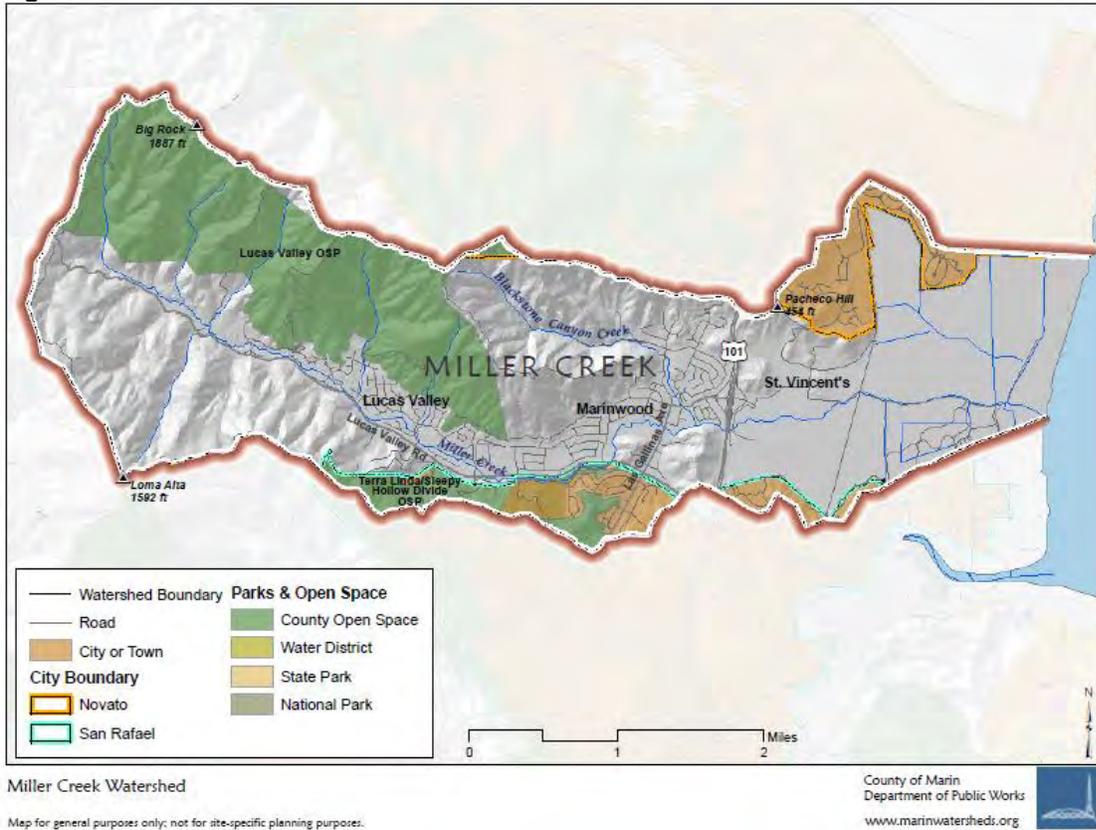


Figure 4: Miller Creek Watershed



III. PROJECT PURPOSE AND NEED

As discussed above, the Ponti Fire Road is a dilapidated fire road that no longer supports emergency vehicles. The road is in a state of disrepair and is very steep, with grades exceeding 10 percent. In addition, the fire road is wider than needed to support recreation. The primary purpose of the proposed project is to convert the fire road to a trail in order to reduce the overall footprint and reduce the trail grade. The lower grade would better support recreation and reduce sedimentation and erosion. Specific objectives include:

- Reduce trail grade;
- Reduce trail foot print;
- Improve trail safety;
- Reduce trail erosion; and
- Improve recreational opportunities.

IV. TRAIL ASSESSMENT

The proposed project was originally identified during the Region 3 Designation process. In order to adopt the road to trail project, modifications to the road are needed for safety. The design process for the project began field reconnaissance by MCOSD staff, literature review of available data, and site-specific reports and data. Sources consulted include:

- MCOSD, 2014a. Road and Trail Management Plan Recirculated Final Tiered Program Environmental Impact Report, November;
- MCOSD, 2014b. Road and Trail Management Plan, December;
- MCOSD, 2016a. Inclusive Access Plan, July;
- MCOSD, 2016b. Vegetation and Biodiversity Management Plan, October;
- Timothy C. Best, CEG, 2018. Engineering Geologic and Feasibility Assessment - Ponti Fire Road to Trail Conversion Project. September.
- Benson, S, 2017. Botanical Assessment of Ponti Ridge, Pacheco Valle Preserve, Marin County Parks. Marin County Parks, August 25, 2017, unpublished report.
- Benson, 2018. Addendum to the Botanical Assessment of Ponti Ridge, Pacheco Valle Preserve-Marine County Open Space District. Marin County Parks, October 5, 2018, unpublished report.
- Prunuske Chatham, Inc., 2017. Biological Resources Assessment Ponti Ridge – Pacheco Valle Preserve, Marin County. November.

In addition, Marin County Parks commissioned a preliminary trail report by Timothy C. Best, CEG Engineering Geology and Hydrology. The report evaluated the engineering, geologic, and geotechnical feasibility of the proposed conversion of the Ponti Fire Road into a trail. The scope of the study included:

- Review of the proposed trail alignment as identified by MCOSD staff;
- Evaluation of geologic and geotechnical constraints associated with realigned trail construction and road to trail conversion;
- Qualitative assessment of the implications of the trail on erosion and slope stability; and
- Development of conceptual recommendations for trail construction.

Site reconnaissance took place from October 2017 – July 2018 by Jon Campo (Senior Natural Resources Planner), Carl Szawarzenski (Equipment Operator Supervisor) and David Frazier (Maintenance Equipment Operator), and included site investigation of topography of project site, soil conditions, trail gradients, and drainage issues. Additionally, MCOSD engaged the community through a series of stakeholder meetings to further facilitate the opportunity for feedback about the proposed project.

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V. PROPOSED PROJECT

The proposed project would improve and realign the existing 1.2-mile-long, 14-foot wide upper Ponti Fire Road into a 2.8-mile long, 5-foot wide multi use earthen trail. The realigned trail would connect to the 0.5 mile-long, 14-foot wide lower Ponti Fire Road, which would connect to the 0.4 mile-long, 5-foot wide new connector trail to the Pacheco Pathway. The combined segments would have a total length of 3.7 miles and a sustained grade of 10 percent and extend from Pacheco Path (the paved Caltrans path along Highway 101), westward to Chicken Shack Fire Road on Big Rock Ridge. The proposed trail would provide shared-use access for hikers, bicyclists, and equestrian users. The realigned trail would be constructed with a 5-foot trail width to meet the Novato Fire Department's request to have the trail ATV accessible. The realigned trail would be drained with frequent drain dips to prevent the concentration of runoff and would include 18 switchbacks or climbing turns to reduce the trail grade to 10 percent (currently 20 to 35 percent gradient). The final trail layout would be determined in the field by MCOSD staff. To meet the RTMP Policy SW.4: Overall Reduction of Road, Trail and Visitor Impacts, the project includes the decommissioning unused portions of the Ponti Fire Road, and unsanctioned Trail 18645, a 5,706-linear foot unnamed fall line social trail connecting Chicken Shack Fire Road to Thornhill Court, and several unnamed social trails parallel to Ponti Fire Road. The proposed decommissioning would reduce erosion and habitat fragmentation.

The proposed project was analyzed for compliance with the MCOSD's Inclusive Access Plan. The project cannot meet all accessibility trail design guidelines because the trail would not originate from an accessible trailhead and the steep topography and steepness of existing trail segments where only maintenance is proposed would prohibit full compliance with the Inclusive Access Plan. Although full compliance with these design standards could not be met, they would be implemented where possible. The proposed new trail segments would strive to meet an average gradient of 10 percent or less, which would make the trail less steep than the current fire road and therefore be more accessible to a greater number of users. A 5-foot wide trail width would be maintained for the entire alignment, making sure the width supports safe use by multiple user groups. Also, the project would incorporate level landings to act as resting areas, where feasible.

Based on the trail report, biological reports, and supporting data, MCOSD is proposing the following project components (Figure 9 and 10):

- Maintain and improve 0.5 mile of Lower Ponti Fire Road;
- Realign 1.2 miles of existing Upper Ponti Fire Road into 2.8 miles of 5-foot wide trail;
- Construct a new 0.4-mile long, 5-foot wide connector trail from Ponti Fire Road to Pacheco Path along Highway 101;
- Designate realigned trail as multiuse;
- Decommission Trail 18645;
- Decommission portions of Ponti Fire Road;
- Decommission unnamed social trails parallel to Ponti Fire Road; and
- Install new signage.

These measures would substantially reduce the grade of the existing trail, reduce road and trail redundancy and reduce erosion and sedimentation into nearby drainages and the San Francisco Bay.

Figure 9 - Proposed Project

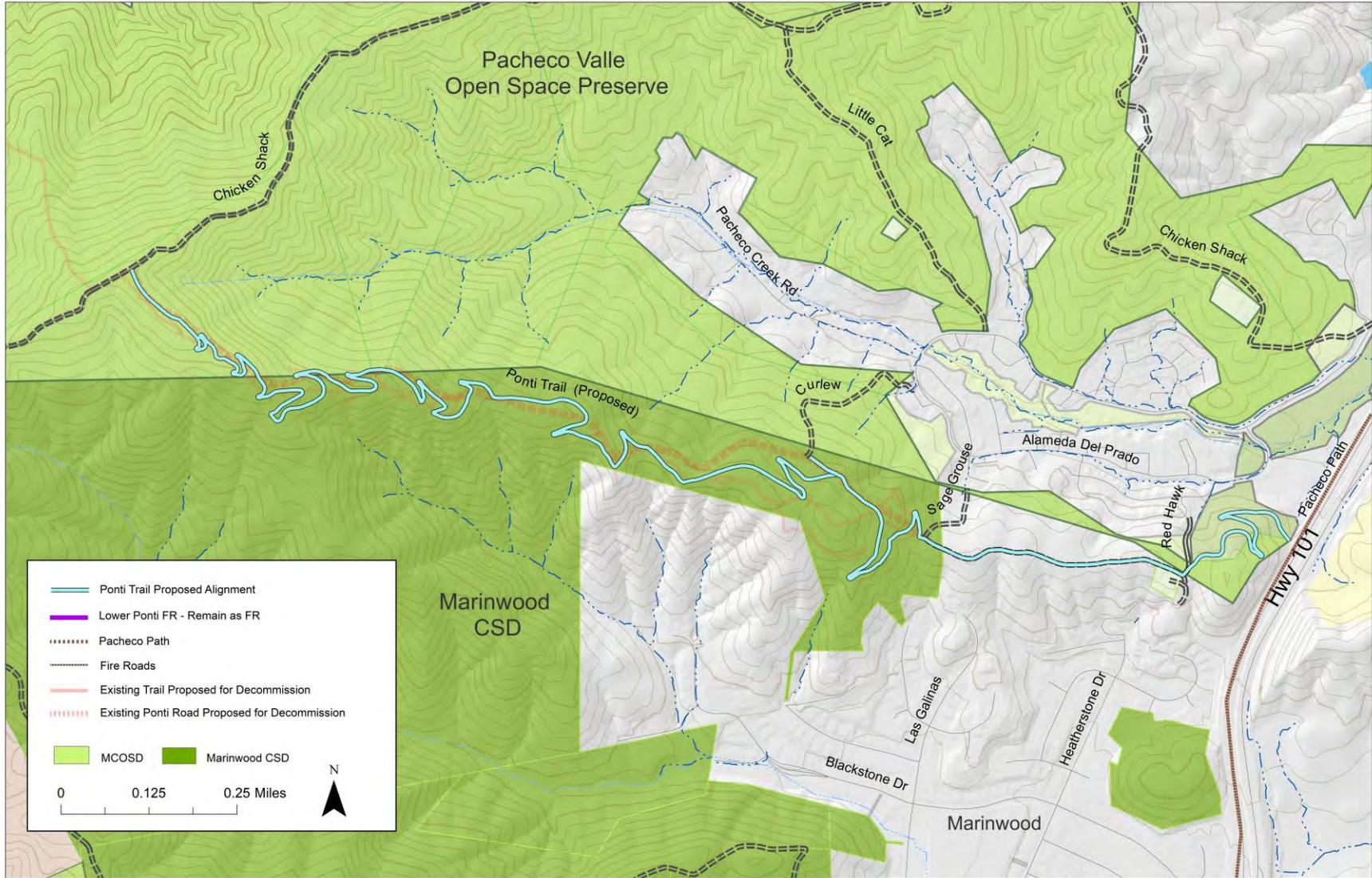
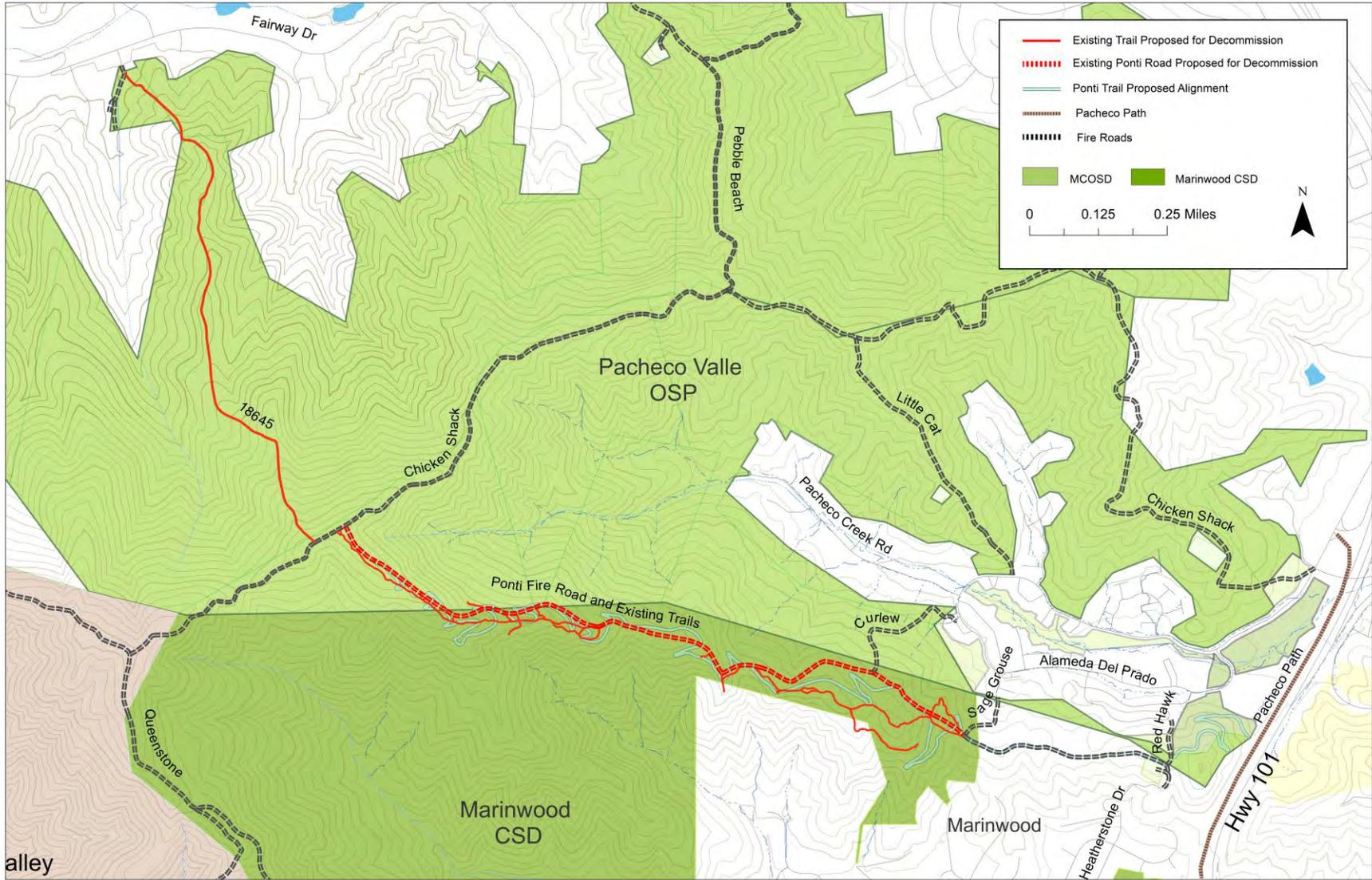


Figure 10 - Proposed Decommissioning



Maintain and Improve Lower Ponti Fire Road

The existing Ponti Fire Road is accessed from the end of Heatherstone Drive in Marinwood. The lower 0.5 mile of this fire road is located mainly on moderate gradient slopes along the ridge crest and is in generally good condition. The project would not modify the alignment or width of this section of fire road. Some routine improvements may be made to improve stability, drainage, and the overall sustainability of the road.

Photo 1: Lower Ponti Fire Road (Looking East) Photo 2: Steep Intersection (Looking East)



Realign Upper Ponti Fire Road

The upper portion of the 14-foot-wide Ponti Fire Road is very steep, erosive, subject to landslides, and poorly suited for trail or vehicle access. This segment of fire road climbs steeply up the ridge and adjacent steep sideslopes, with natural slope between 20 to 65 percent. Portions of this road are in poor condition and have previously failed or are at risk for failure. A large road failure occurred in 2005 where 40 feet of the road fill failed as a debris flow and impacted a downslope residence. This failure was subsequently repaired with a large soldier pin retaining wall. In addition, most of the Ponti Fire Road is poorly drained, resulting in concentrated road runoff and increased risk of instability where water is ultimately discharged off the road.

The project would re-align 1.2 miles of Upper Ponti Fire Road into 2.8 miles of rerouted multi-use trail at a sustained 10 percent grade and reduce the width from 14 feet to 5 feet. The trail would include 18 switchbacks or climbing turns to attain a 10 percent grade. Most of the climbing turns will require a retaining wall or rock buttress, with the largest being 4.5 feet high.

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Photo 3: Ponti Fire Road



Photo 4: Rutting in Ponti Fire Road



Additional retaining walls and buttresses would also be required along the new alignment. It is anticipated that three sections of realigned trail would require the following structures:

- 50-foot long, 1 to 2-foot high rock or timber buttress
- 150-foot long, 1 to 2-foot high rock buttress
- 30-foot long, 3 to 5-foot high retaining wall or rock buttress

Photo 5: Ponti Fire Road (Landslide site)



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New Connector Trail

Access to the eastern end of the Ponti Trail is proposed to be provided through the construction of a new connector trail that would allow users access from Pacheco Path, the existing paved path along Highway 101. This new access would be provided via a new 5-foot wide trail connecting to the Pacheco Path through an existing gate and dirt road extending off the paved Caltrans pathway along Highway 101 (Photo 6 and 7 below). At this location, the paved bike path is 10 feet wide with average grade of about 8 percent. An existing 16-foot wide gate is located about 27 feet back from the outer edge of the paved pathway with a stable gravel and grass shoulder. The dirt road extending past the gate slopes away from the paved pathway and descends down the valley bottom accessing a grassy field. This road is no longer used and is largely grassed over. The gate provides a stable access point for the proposed trail with good sightlines up and down the paved pathway.

The project proposes to remove the existing gate and replace it with a 5-foot wide block stile barrier or similar. No grading will be required to develop the access point. Just past the gate and on MCOSD lands, the project proposes the new approximately 2,000-foot long (0.4 mile), 5-foot wide multi-use trail that would connect to the existing Ponti Fire Road. The trail would climb up the hillside at a less than 10 percent grade. Standard MCOSD signage will be installed at the access point.

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Photo 6 – Proposed Connection to Pacheco Path



Photo 7 – Proposed Signage and Connection to Pacheco Path



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Designate Realigned Trail as Multiuse

After construction of the trail modifications, the Ponti Trail would be designated on the MCOSD Region maps as multiuse trail. This designation accommodates hiking, equestrian, and bicycle use. The change from a road to trail will maintain consistency with the existing dog policy and require dogs to be leashed on trails. The portion of Ponti Fire Road to remain would continue to be a fire road and accessible for all user groups.

Road Decommissioning

To meet a critical goal of the RTMP, the proposed project includes the reduction of environmental impacts through the closure and decommissioning of unsanctioned trails to reduce habitat fragmentation. A 6,900-foot long, 14-foot wide portion of Ponti Fire Road is proposed for abandonment, along with the trail decommissioning of Trail 18645, a 5,706 foot, long 2-foot wide unsanctioned trail.

As part of the trail conversion, portions of the fire road that would not be used for the new alignment would be abandoned and hydrologically restored to natural conditions. Approximately 6,900 feet of Ponti Fire Road would be restored by pulling back the perched and unstable fill and compacting the material along the adjacent inside edge of the road and installing frequent drain dips at 50-foot spacings with fill material removed from the dip outlet. Additionally, an active revegetation effort will restore the fragmented ridgeline habitat with an appropriate local native plant palette.

Unsanctioned Trail 18645 was identified for decommissioning because it is excessively steep and erosive with grades exceeding 50 percent in some places. This trail extends approximately 5,706 linear feet from the Chicken Shack ridgeline to Thornhill Court. The trail descends the north slope and is approximately two to three feet wide and well worn. The project would also decommission 9,475 linear feet of 2 to 3-foot wide unnamed social trails parallel to Ponti Fire Road. The MCOSD would decommission these sections with the following techniques:

- Scarification;
- Installing dewatering features;
- Brushing with dead and local vegetation
- Straw application;
- Split rail fencing if needed; and
- Trail closure signage at top and bottom of both segments.

Install new signage

New signage would be installed along the trail alignment to provide trail users with locational information, rules and regulations and more. Proposed signage would include three types of signs: primary, notice, and wayfinding. The primary sign is a redwood structure, set in concrete, which welcomes the visitor to the preserve. The primary sign would provide preserve rules, regulations, as well as a detailed preserve map with trail mileage and other wayfinding information. The notice sign, of similar construction to the primary, contains spaces in which to display notices to inform the public of upcoming events, hazards, trail closures, or other important information. There would also be a magnetic message board for the public to share information regarding lost or found items. The final signage element is the trail wayfinding post (6-inch by 6-inch redwood post) which identifies the trail name along with the allowed uses related to hiking, biking, equestrians, and dogs.

VI. CONSTRUCTION

Construction of the project would adhere to the Road and Trail Standards and BMPs outlined in Chapter 6 of the RTMP. Construction would be multi-phased as a result of timing requirements due to sensitive species and for wet weather considerations. Construction would begin in spring 2019 and would extend into 2020 and possibly 2021. Construction would take place four days a week, Monday through Friday, from 7:00 a.m. to 4:00 p.m. Construction of the project would require up to 2 to 5 permanent MCOSD staff members, 4 to 6 seasonal employees, and a number of volunteers. Equipment for project would include:

- Medium and small Excavators
- Sweco(s) dozer
- 3 dump trucks
- 2 water tenders
- Carriers
- Compactors
- Cement mixers
- Generators
- ATVs
- Jackhammer
- Skillsaw, sawzall, and hand tools (hedge trimmers, chainsaws, etc.)

Construction of the new trail would take place by removing vegetation, roots, brush, organic soils and other unsuitable material within a 5 to 10-foot-wide corridor using the Sweco dozer and excavators as needed. Once the trail corridor is cleared, the trail tread would then be compacted using a compactor. Construction will not involve importing soils from off site, but rather use existing excavated soils from on site. If additional materials are needed to complete the project MCOSD will only use approved non-organic materials such as rock or crushed baserock. The proposed alignment was thoroughly evaluated and selected to avoid removing any large trees. However, it is possible that some minor tree removal and/or trimming may be required to accommodate the trail when the final alignment is determined in the field.

Approximately 175 to 200 drainage features would be constructed to improve trail sustainability and minimize erosion. These features include cross drains, rolling dips, reverse grades and nicks installed at 75 to 150-foot spacings in woodland/forested areas and 50 to 75-foot spacings in open grassland areas, unless otherwise specified. Trail decommissioning will be implemented by ripping the tread and brushing with dead vegetation. Decommissioning Trail 18645 would include scarification, installing dewatering features, straw application, split rail fencing if needed, and installing trail closure signage. Overall, trail construction will result in approximately 3 acres of ground disturbance and generate over 1,500 cubic yards of fill.

Construction staging areas would be restricted to existing MCOSD roads and trails or other areas that would avoid any significant impacts on sensitive natural resources as required by BMPs described in the MCOSD's Road and Trail Management Plan. Access to the project site for construction vehicles and equipment would be from Chicken Shack Fire Road, Little Cat Fire Road, Queenstone Fire Road, Curlew Fire Road, Sage Grouse Fire Road, Red Hawk Fire Road, and Heatherstone Drive. During construction, the MCOSD would limit and close trail access for safety purposes and would install signs at preserve entrances to warn trail users.

VII. OPERATION AND MAINTENANCE

After construction of the project, MCOSD would incorporate the trail into the Region 3 trail system and the types of allowed trail uses would be unchanged. The new trail would be open to hikers, bikers, equestrians, and dog walkers (same as existing allowed uses on the fire road). However, since the project would replace a steep, dilapidated fire road with an improved, sustainable multiuse trail that connects to a paved multiuse path, overall use of the trail may increase because of the reduced grade, new connectivity to the multiuse path, and overall improved user experience. However, visitor use studies conducted by Marin County Parks between 2015 and 2017 indicate that 77 percent of users were local Marin residents and the majority lived in close proximity to the preserves visited (Parks, 2017). Additionally, recent data obtained from trail eco-counters provides early indications that act of improving existing trails and incorporating them into the MCOSD's trail system has not resulted in substantial increases in use (Parks, 2018). Finally, the project does not include any parking or other amenities to improve access to the trail system, which would functionally limit increases in trail use. Therefore, while increases in use are anticipated, it is not expected to be substantial and would largely be residents in the neighboring communities of Marinwood and Novato.

Once the trails are incorporated into the MCOSD trail system, the trails would be maintained by MCOSD staff. As the trails are designed to improve existing trail sustainability, this level of maintenance is expected to be low. Regular maintenance includes, brushing of the trail corridor, maintaining drainage structures, and clearing fallen trees and trail obstructions and would occur as needed. As part of the project, the decommissioned trail segment would be monitored to ensure revegetation is successful and to prevent continued use of the decommissioned trails. Minor work may occur as needed to prevent access to the decommissioned trails.

VIII. PROJECT DESIGN FEATURES

The project would be designed and constructed in compliance with the RTMP. See Appendix A for a list of all applicable BMPs that are incorporated into the project. The figures below show typical drawings for some of the proposed project features.

Figure 11: Rock Spillway for Drainage Dip or Cross Drain

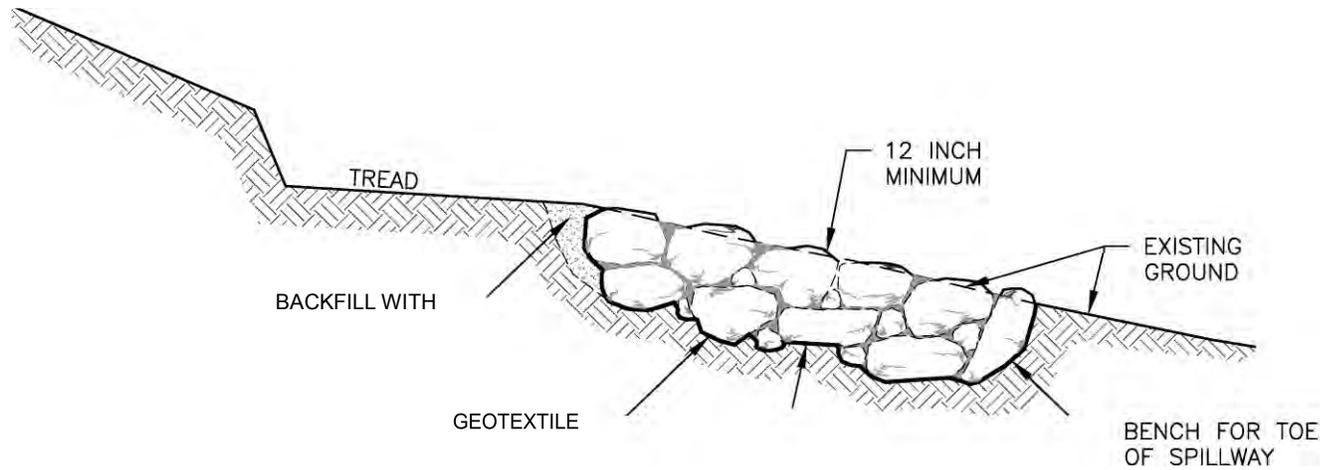


Figure 12: Rock Retention Wall

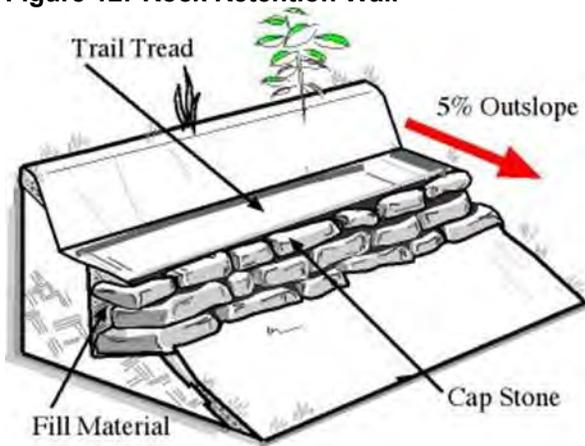
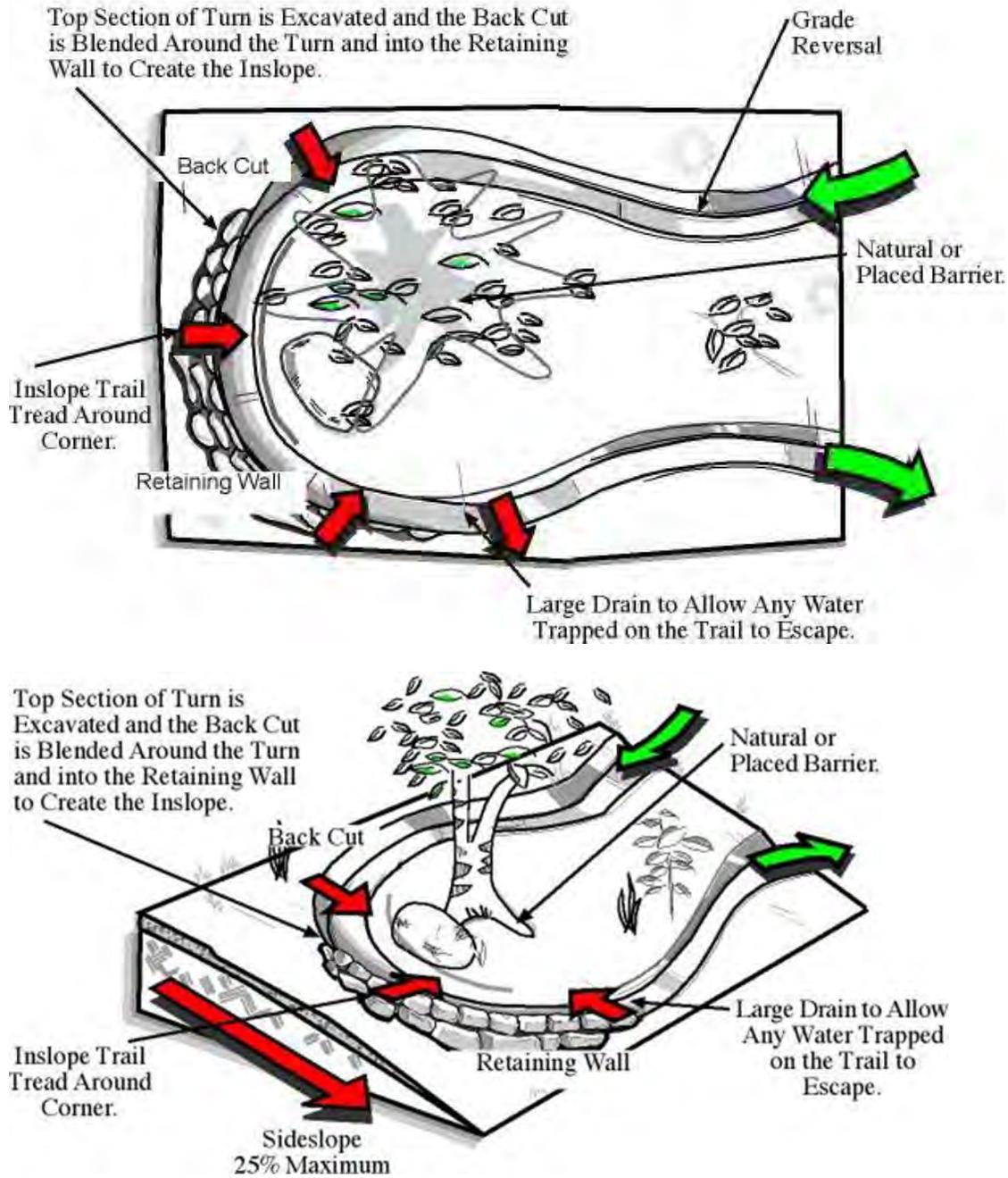


Figure 13: Insloped Turn

Insloped Turn



IX. REQUIRED APPROVALS

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

- Caltrans
- Marinwood Community Services District
- Regency Estates Homeowners Association

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X. REFERENCES

- Benson, 2017. Botanical Assessment of Ponti Ridge, Pacheco Valle Preserve, Marin County Parks. Marin County Parks, August 25, 2017, unpublished report.
- Benson, 2018. Addendum to the Botanical Assessment of Ponti Ridge, Pacheco Valle Preserve- Marin County Open Space District. Marin County Parks, October 5, 2018, unpublished report.
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- Prunuske Chatham, Inc., 2017. Biological Resources Assessment Ponti Ridge – Pacheco Valle Preserve, Marin County. November.