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# Trails Management Plan | 2015



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## Acronyms and Terms

DBH	Diameter at Breast Height
DOE	U.S. Department of Energy
ENV-ES	(LANL) Environmental Stewardship Services
Field Office	DOE/NNSA Los Alamos Field Office
FONSI	Finding of No Significant Impact
LANL	Los Alamos National Laboratory
LANS	Los Alamos National Security, LLC
NM	New Mexico
NNSA	National Nuclear Security Administration
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
SHPO	State Historic Preservation Office
TA	Technical Area
Trails EA	<i>Final Environmental Assessment for the Proposed Los Alamos National Laboratory Trails Management Program</i>
TWG	Trails Working Group

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## 1.0 Introduction

The Trails Management Plan for Los Alamos National Laboratory (LANL or the Laboratory) was prepared as part of the Laboratory's Trails Management Program that began with an environmental assessment in 2003. This Plan is one of the mitigation measures that resulted. The Trails Management Plan includes policy guidance for all trails at LANL, sets requirements for trails management, and includes trail-specific management plans with recommendations for more than 30 trails.

## 2.0 Purpose of Trails Management Plan

There are 32 named trails at LANL with a combined length of about 50 miles. Twenty-five of these trails (approximately 36 miles) are commonly open for public use. The purpose of this plan is to provide a solid policy foundation and formal decision-making framework on which to build the LANL Trails Management Program so that trail use does not impact the Laboratory's mission and operations, and environmental resources are protected.

## 3.0 Why Trails Management at LANL?

You are bound to get questions when you use the phrases “nuclear weapons” and “public trails use” in the same sentence, unless you are talking about the Trails Management Program at LANL. The primary LANL mission is nuclear weapon stockpile stewardship and research under the U.S. Department of Energy (DOE), National Nuclear Security Administration (NNSA).

Recreational trails use at LANL has always been highly valued as one of the benefits of working and living in Los Alamos County. However, before 2003, there was no explicit policy about trails use at LANL. The DOE/NNSA Los Alamos Field Office (Field Office) and Los Alamos National Security, LLC (LANS) recognize the importance trails at LANL play in the use and enjoyment of the area by LANL workers, local residents, and visitors to the area. In 2003, DOE directed LANL to establish a Trails Management Program when it issued the *Final Environmental Assessment for the Proposed Los Alamos National Laboratory Trails Management Program* (the Trails EA) and a *Finding of No Significant Impact* (FONSI) (DOE 2003a) and a Mitigation Action Plan in September 2003 (DOE 2003b). The most pertinent trails issues identified during the scoping of the environmental assessment were:

- DOE/NNSA does not have a public recreational mission established by Congress.
- Workers and the public get conflicting messages regarding trails on LANL property because signs, access controls, and enforcement at LANL vary.
- Trespassing occasionally occurs from LANL onto adjacent lands where trail use is not permitted.
- Trail use poses threats to some cultural and natural resources.
- People using trails inappropriately at LANL may be exposed to health or safety risks, including risks from LANL operations and from natural hazards.
- The use of certain trails may pose operational security concerns for LANL.

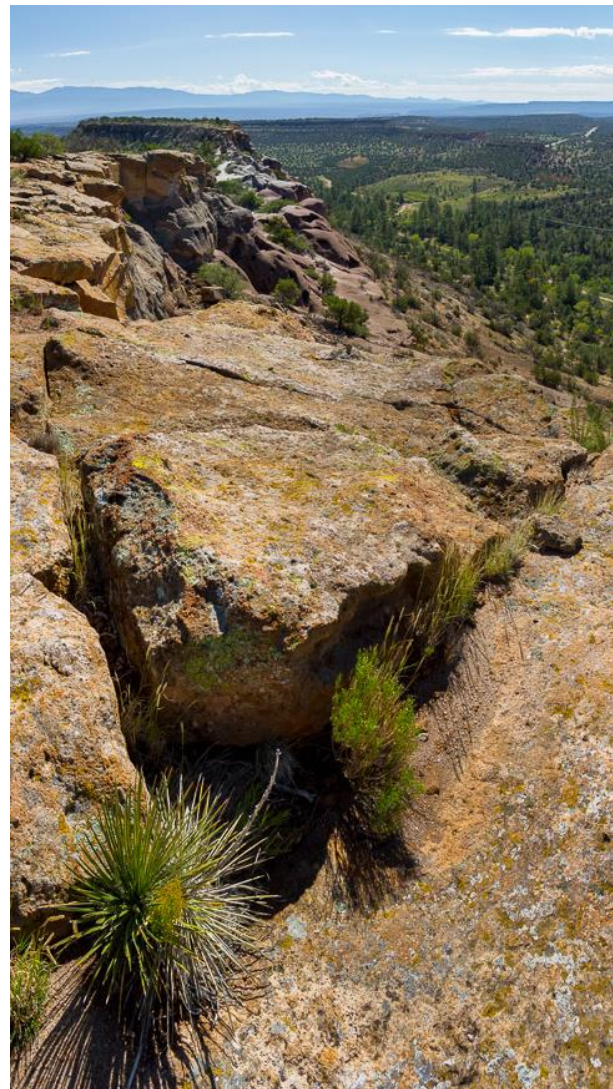
Prior to the 2003 Los Alamos National Laboratory Trails Management Program Environmental Assessment, DOE and NNSA had no formal policy on recreational uses, including trails on DOE-administered land at LANL. Allowing workers and officially invited guests access to trails within facility boundaries for recreational use had been developed at some of the other DOE Complex facilities (such as the Oak Ridge Reservation in Tennessee). At LANL, in 1993, DOE officially designated the Anniversary Trail for unlimited public hiking access, to commemorate the 50th anniversary of the Manhattan Project. Most recently, in 2014, with Congress approving the Manhattan Project National Historic Park, there will be a recreational aspect that will need to be coordinated and integrated into the Laboratory's mission and operations.

The Trails Management Mitigation Action Plan resulting from the Trails EA included the following activities:

- Prepare a management plan for trails at LANL.
- Plan, maintain, repair, and construct trails.
- Complete eligibility evaluations for historic trails under the National Historic Preservation Act.
- Identify environmental issues associated with recreational trails use.
- Evaluate and manage trails to determine appropriate closures and/or restrictions.
- Support the use of volunteers for selected trails maintenance projects at LANL.

## 4.0 LANL Trails Management Program

The Trails Management Program addresses both public use of trails within LANL and also trails use by workers at LANL (Figure 1). The Trails Management Program at LANL supports LANL's mission by ensuring that trail use by employees, residents, and visitors remains compatible with LANL's stewardship of the important and protected cultural and biological resources on DOE lands on the Pajarito Plateau, and is protective of health, safety, and security with respect to LANL operations. A standing Trails



**Figure 1** Many LANL trails provide access to the dramatic scenery of the Pajarito Plateau.

## FY 2015 Trails Management Plan for LANL

Working Group (TWG), made up of representatives from LANL, other agencies, and stakeholders was formed as part of this program in 2003. LANS established and leads the TWG, which includes LANS staff representing cultural and biological resources, health and safety, security, site planning, and facilities specialists and representatives from the Field Office, Los Alamos County, Bandelier National Monument, the Santa Fe National Forest, the four Accord Pueblos, and local residents and trail users. The TWG generally convenes monthly to provide an ongoing forum for discussing and resolving trails issues. The TWG advises LANS management on trails issues within LANL boundaries and, as appropriate, advises and represents LANS on trails issues involving adjacent properties. In order to facilitate trails management, the TWG has identified and designated official trails on LANL property (Table 1). The use of other trails is prohibited. As part of its efforts, the TWG conducts education and outreach to inform the public of the LANL trails system, changes to trailheads and trails, and the rules of use for the trails.

**Table 1. Current status of official LANL trails**

Trail Name	Access Location	Length (miles)	Elevation Change (feet)	Access	Status	Seasonal Restrictions
Ancho Canyon Trail	NM <sup>1</sup> 4 - Gate 1	1.3	330	None	Closed	no
Ancho Springs Trail	NM 4 - Gate 4	1.8	1000	Public	Open	no
Anniversary Trail	NM 502	1.4	25	Public	Open	no
Boundary Trail	NM 4 - Gates 7, 8A, and 10	1.2	35	Public	Open	no
Breakneck Trail	NM 502	0.5	345	None	Closed	no
Broken Mesa Trail	NM 4 - Gates 4 and 4A	1.4	245	Public	Open	no
Deadman's Crossing/ Duran Road	NM 502 and Omega Rd.	0.4	280	None	Closed	no
Devaney–Longmire Trail	From Research Park Trail	1.0	185	Public	Open	no
Fence Canyon Loop	Gates 10 and 11 or Monte Rey Dr. Kiosk	0.9	50	Public	Open	no
Gabriella Trail	Camp May Rd. and West Rd.	0.9	275	Public	Open	no
Hidden Canyon Trail	35th St. (off Trinity Dr.)	0.4	195	Public	Closed	no
Knife Edge Trail	NM 4 - Gate 3	1.2	190	Public	Open	no
LANL Fitness Trail	NM 501	2.3	320	Badged workers	Open	no
Lion Cave Trail	NM 4 - Gate 4A	1.2	250	Public	Open	no
Los Alamos Canyon Trail	West Rd. (Omega Rd.) and NM 4	6.0	780	Badged workers	Closed	no
Lower Water Canyon Spur	NM 4 - Gate 7	0.5	165	Public	Open	no
Lower Water Canyon Trail	NM 4 - Gate 5	2.1	210	Public	Open	no
Mattie Brook Trail	DP Rd.	1.7	785	None	Closed	no
Mortandad Bench Trail	Pecos Rd. (off Pajarito Rd.)	1.9	310	Badged workers	Open	yes
Mortandad Canyon Trail	Puye Rd. to Mortandad Canyon Rd. (off of Pajarito Rd.)	3.5	380	None	Closed	NA
Mortandad Loop Trail	Pajarito Rd.	2.5	225	Badged workers	Open	yes

# FY 2015 Trails Management Plan for LANL

Trail Name	Access Location	Length (miles)	Elevation Change (feet)	Access	Status	Seasonal Restrictions
Old Road Trail	NM 4 - Gate 2	1.5	185	Public	Open	no
Potrillo Canyon Loop	NM 4 - Gate 11	3.4	180	Public	Open	no
Potrillo Crossing	Kiosk 1 (Monte Rey)	0.5	90	Public	Open	no
Potrillo Mesa Trail	NM 4 - Gate 8A	2.6	233	Public	Open	no
Powerline Point Trail	NM 4 - Gate 4	1.9	180	Public	Open	no
Pretty Canyon Trail	From Potrillo Mesa Loop and Ruin Mesa Trails	0.6	135	Public	Open	no
Research Park Trail	NM 501	0.6	140	Public	Open	no
Ridgeline Trail	From Water Canyon Overlook and Potrillo Mesa Trails	0.5	80	Public	Open	no
Ruin Mesa Trail	From Water Canyon Overlook and Lower Water Canyon Trails	1.1	85	Public	Open	no
Twomile Mesa Trail	NM 501	1.9	170	Badged workers	Open	no
Unofficial Social Trails	Various	NA <sup>2</sup>	NA	Badged workers	NA	NA
Water Canyon Overlook Trail	NM 4 - Gate 10	0.8	85	Public	Open	no

<sup>1</sup> NM = New Mexico State Road

<sup>2</sup> Not applicable

There are six goals adopted by the Program; these provide a framework for this trails management plan:

1. Establish a safe, viable network of linked trails across the Pajarito Plateau that traverse land holdings of various private and government entities without posing a threat to DOE/NNSA and Environmental Management mission support work at LANL or disrupting LANL operations.
2. Minimize the risk of damage and injury to property, human life and health, and sensitive natural and cultural resources from trails use at LANL.
3. Maintain the security of LANL operations.
4. Respect the wishes of local Pueblos to maintain access to cultural resources by Pueblo members while also preventing unauthorized public access to adjacent Pueblo lands and other lands identified as both religious and culturally sensitive areas to Native American communities.
5. Adapt trails use at LANL to changing conditions and situations in a responsive manner.
6. Maintain the recreational functionality of DOE lands so that DOE-owned land remains open to all members of the public for non-motorized recreation, in compliance with federal laws and LANL operational constraints.

The Trails Management Program faces numerous challenges in balancing recreational use of LANL trails against goals for resource protection, safety, and security. These challenges include:

- **Cultural Resource Protection:** LANL has more than 2,000 known cultural sites, including archaeological sites and historic buildings that must be protected and managed under the National Historic Preservation Act compliance requirements (LANL 2012).
- **Biological Resource Protection:** Trails may have seasonal restrictions and closures in order to protect Threatened and Endangered Species such as the Mexican Spotted Owl and the Jemez Mountains Salamander (LANL 2014).
- **User Safety and Trail Maintenance:** LANL trails range from the Rio Grande on the east to New Mexico (NM) State Road 501 on the west, and traverse various terrains from canyon bottoms to mesa tops. Required trail maintenance activities include inventorying trails and their condition, repair of flood damage and erosion, removal of hazard trees and snags, and trail closures and reroutes. The Trails Management Program also coordinates with wildland fire crews and closes trails in times of high fire danger. A proliferation of signs posted in the past and never removed contributes to conflicting messages regarding trails and their status.
- **Security:** Certain trails may need to be periodically closed for security reasons and to prevent trespassing in areas not open for recreational use. In addition, some trails are open to the public while other trails are only open to DOE badge holders; thus, trail use and access must be managed in accordance with an area's security classification.
- **Tours:** Outside groups occasionally request guided tours on LANL lands. These tours need to be coordinated by the Field Office.
- **Through an agreement between the Field Office and the Department of the Interior,** Bandelier National Monument rangers patrol Technical Areas (TAs) 70 and 71 as well as other areas at LANL. These rangers have patrol and police enforcement authority under 36 Code of Federal Regulations. Other LANL trails may be monitored by the LANL Protective Force. Several LANL trails are currently closed pending security reassessments, or because of ongoing environmental remediation nearby. The TWG coordinates with other LANS programs on the reopening of various trails for recreational use.

### 5.0 Trails Working Group

LANS established and leads the TWG, which includes LANS staff representing cultural and biological resources, health and safety, security, site planning, and facilities specialists and representatives from the Field Office, Los Alamos County, Bandelier National Monument, the Santa Fe National Forest, the four Accord Pueblos, and local residents and trail users. The TWG generally convenes monthly to provide an ongoing forum for discussing and resolving trails mitigation issues. The TWG advises LANS management on trails issues within LANL boundaries and, as appropriate, advises and represents LANS on trails issues involving adjacent properties.

To address these challenges, the TWG has taken a more active "on-the-ground" approach to trails management to better manage trails, improve trail users' experience and understanding of the rules of use, and ensure regulatory compliance, safety, and security.

## FY 2015 Trails Management Plan for LANL

In order to facilitate trails management, the TWG has identified and designated official trails on LANL property (see Table 1). These trails are shown on trails program maps. In 2013, 11 new kiosks were installed at trailheads at TAs 70 and 71, and old trail signs were removed in an effort to standardize information for all LANL trails. The kiosks contain maps, hazard information, and rules of use. In addition to the kiosks, new emergency access gates and equestrian gates were also installed. Other areas traditionally used as trailheads were closed to protect sensitive areas and direct users to the official trailheads. Trail repair and resource protection efforts have recently focused primarily on the 4,000-acres of General Access Area in TAs 70 and 71 located between White Rock and Bandelier National Monument. The Trails Management Program continues to work with LANS cultural resources staff to monitor TAs 70 and 71 adjacent to Pajarito Acres, and accessible by the public from many trailheads along NM State Road 4. In the future, the TWG hopes to install additional trailhead signs along NM State Road 4 and improve parking areas for these trailheads.

A new LANL Trails website was created in 2014 ([www.lanl.gov/trails](http://www.lanl.gov/trails)) to provide additional information about trails on LANL property. The website contains trail maps that can be downloaded to computers, tablets, and smart phones and used in Google Maps or Google Earth. Additional website information includes rules of use, a list of official LANL trails and access points, status, mileage, and elevation change information, and links to other sites that maintain regional trails information (Los Alamos County, U.S. Forest Service, Bandelier National Monument, Valles Caldera, etc.). There are also web pages for the TWG and a Trails blog. Hikers can download maps onto their smart phones at the trailheads by scanning the QR codes on the trail kiosks.

In June 2013, a well-attended public meeting was held in White Rock regarding issues with trails use, cultural resources, and stewardship efforts at TAs 70 and 71. In addition, TWG members occasionally give presentations on the LANL trail system at various community organization meetings (Pajarito Environmental Education Center, equestrian groups, etc.) and LANS staff periodically conducts guided tours for the public. In April 2015, to commemorate Earth Day at LANL, the Trails Management Program held a public guided interpretive tour of the Lion Cave and Lower Water Canyon Trails for about 40 participants who walked a 3.5-mile route.

In 2015, the Trails Working Group began discussions about the role that LANL trails might play as part of the new Manhattan Project National Historical Park. A meeting of LANS subject matter experts was convened in November 2014 to discuss the reopening the Los Alamos Canyon Trail between NM State Road 4 and West Road. A subsequent meeting with DOE/NNSA staff was held in July 2015. Some parts of Los Alamos Canyon are potential habitat for the Jemez Mountains Salamander, added to the federal list of threatened and endangered species in 2013. In FY 2015, a biological assessment for recreational trails use and road repair in Los Alamos Canyon was approved by the U.S. Fish and Wildlife Service.

Also in 2015, Trails Management Program staff continued to engage with Bandelier National Monument on patrols and law enforcement in TAs 70 and 71. The Trails Management Program also coordinated with the Los Alamos County Trails and Open Space Program on a variety of issues affecting both Los Alamos County and LANL/DOE, including trails maintenance, closures, and way-finding.



## 6.0 Location and Current Status of LANL Trails

### General Location of Trails

LANL trails are located in two general areas: Los Alamos and in the vicinity of White Rock. Trails in the Los Alamos area have various use restrictions and trail users are responsible for knowing the status and rules of use of these trails. Some trails in the Los Alamos area are open only to badge holders. Trails in the White Rock area are located in TAs 70 and 71. These TAs have been designated as “General Access Areas” and thus have fewer restrictions.

The status of all LANL trails is available through the website “Taking Care of Our Trails” ([www.lanl.gov/trails](http://www.lanl.gov/trails); Figure 2). The current (as of October 2015) status of official LANL trails is listed in Table 1. Descriptions of individual trails are found in section 9.0 of this document.

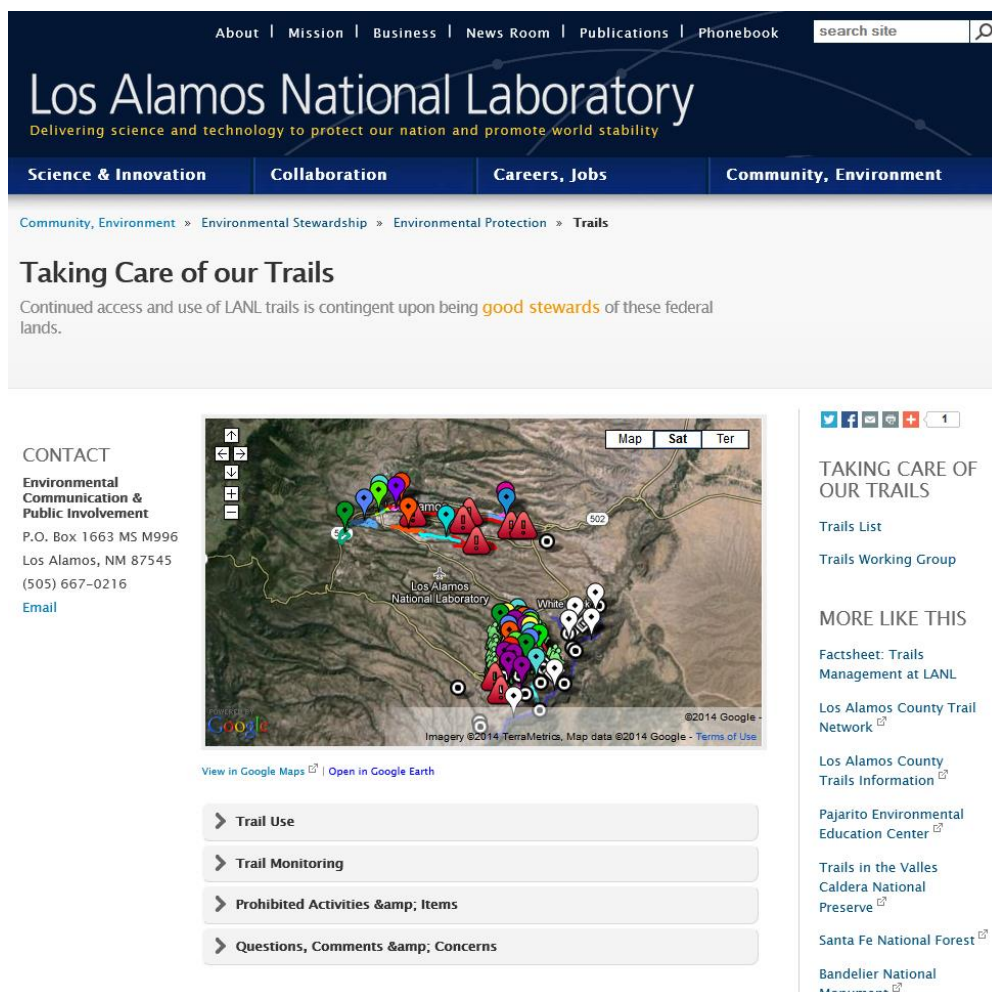
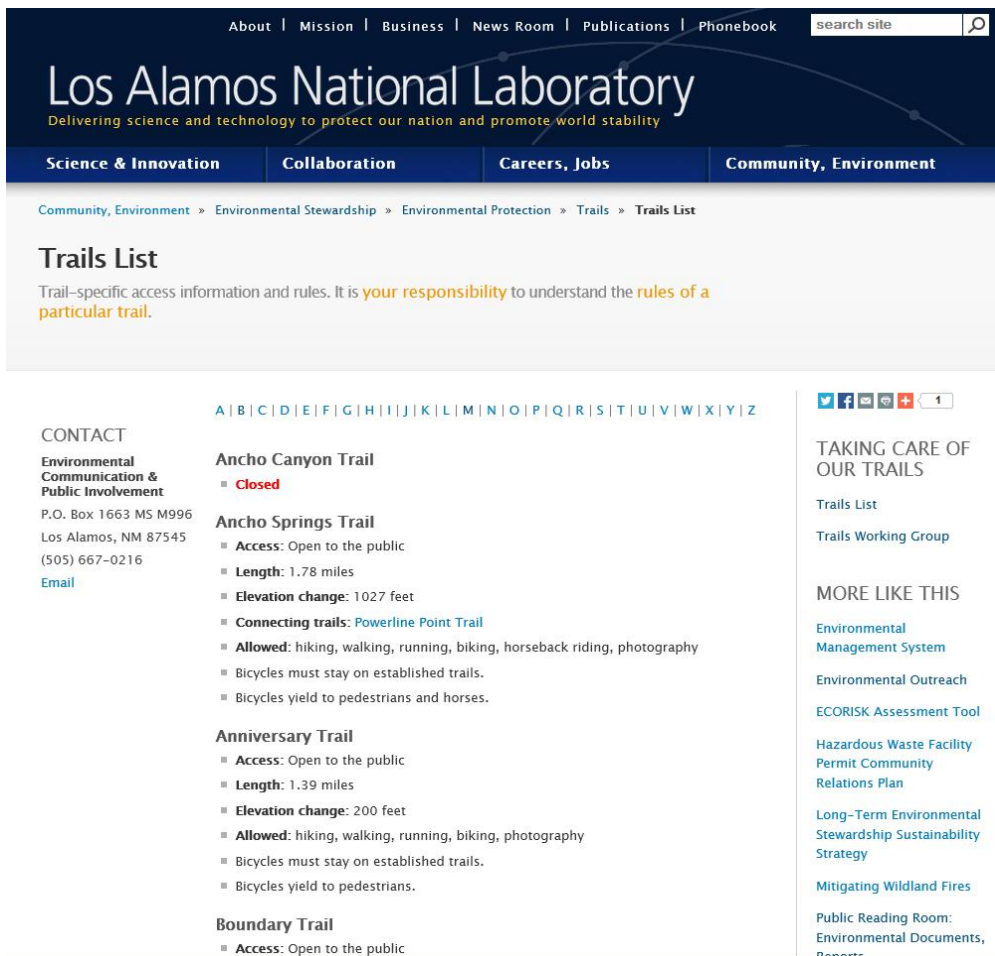


Figure 2. Screen shot of the LANL Trails website [www.lanl.gov/trails](http://www.lanl.gov/trails).

## 7.0 Rules of Use for LANL Trails

Trail users use LANL trails at their own risk. All LANL trails are open from dawn to dusk. Some trails allow photography, dogs, horses, and bicycles; these are prohibited on other trails. It is the trail user's responsibility to understand the rules, restrictions, and hazards associated with a particular trail. Rules of use for individual trails can be found at [www.lanl.gov/trails](http://www.lanl.gov/trails) (Figure 3).



**Figure 3. Screen shot of the LANL Trails list showing rules of use and trail status.**

Activities that may be allowed on certain LANL trails (check trails status website for details):

- day hiking
- mountain biking
- horseback riding
- photography
- dog walking
- snowshoeing

## Prohibited items and activities:

- alcohol consumption
- camping
- collecting natural or cultural materials
- creation of new trails and/or shortcuts
- digging or ground disturbance
- disorderly behavior
- disturbing archaeological resources
- drones (unmanned aerial vehicles) unless official use
- dumping or disposal of trash
- firearms and weapons
- fires
- fireworks
- geocaches and geocaching
- hunting or trapping
- memorials unless authorized
- motorized vehicles (unless performing official LANL business)
  - motorcycles
  - ATVs
  - 4WD vehicles
  - Scooters
- Paintball or similar activities
- smoking
- tree/vegetation cutting and/or wood gathering
- trail maintenance by the public
- vandalism

## 8.0 Policies

### 8.1 Cultural and Natural Resources Protection

#### 8.1.1 LANL Resource Management Plans

LANL trails management is done in accordance with LANL resource management plans, including as appropriate, the Wildfire Hazard Reduction Program, the LANL Threatened and Endangered Species Habitat Management Plan (LANL 2014), The Biological Resources Management Plan (LANL 2007), and the Cultural Resources Management Plan (LANL 2012).

### 8.1.2 Cultural Site Protection

Many of the trails at LANL have nearby cultural sites and/or are historic trails in their own right (Figure 4). These sites are important for their cultural significance and are protected by Federal laws.



**Figure 4. Cavate with petroglyphs. There are many cultural sites near trails on LANL property.**

Trail construction, maintenance, and repair are coordinated with LANS archaeologists. Protection of cultural resources is managed under the LANL Cultural Resources Management Plan (LANL 2012). LANS staff works with the Field Office, who may consult with the State Historic Preservation Office (SHPO) and/or four Accord Pueblos regarding the resources found in these areas.

At-risk cultural sites may be fenced and LANS archeologists will conduct field checks to identify cultural features and have fencing installed or repaired. If there are any issues with cultural resources associated with trails use, trails (or segments of trails) may be rerouted around or away from cultural resources or permanently closed.

When a trail is to be rerouted, LANS archaeologists will field check the location for the trail reroute with the construction crew before field activities commence. Construction crews are generally limited to performing work by hand. Tree cutting, piling, or dragging of materials across the surface of a cultural site is not permitted. SHPO consultation may also be necessary.

### 8.1.4 Natural Resources Protection

Trails may be periodically closed to protect sensitive species and associated habitat (Figure 5). Impacts to natural resources will be evaluated by LANS biologists following guidance in the Habitat Management Plan and the Biological Resources Management Plan. Trail closures will be coordinated with the chair of the TWG.



**Figure 5.** Some LANL trails traverse or are located near habitat for threatened or endangered species such as the Mexican spotted owl.

### **8.2 Trail Maintenance/Repair/Construction**

Most LANL trails have not had regular maintenance or repair. In general, some of the work that has been done on trails has included improvement and/or closure of access roads; improvements to parking areas; stabilization of a trail or a trail segment including best management practices such as the use of silt fences, straw bales, organic mulch material, concrete, stones, or gravel to check erosion and improve trail safety. Drainage elements, such as berms, check dams, drains, water bars, riprap, gabions or culverts, could be repaired, redirected, relocated, or installed. Short runs of stairs may be carved into trails traversing steep outcrops or installed using landscaping timbers or logs. Garbage may be removed from trails as needed, including litter. Additional work of this nature would continue in a more organized way under this plan.

Removal of individual trees and bushes along trails may occur during trail maintenance activities, such as the removal of damaged, dead, or so-called “hazard” trees. Additionally, some vegetation may be removed from small areas when these are cleared to enlarge existing or to construct new trailhead vehicle parking accommodations. Vegetation may also be selectively removed along new trail sections as the construction of new trails occurs.

#### **8.2.1 Use of the LANL Integrated Review Tool**

All proposed new trails, trail reroutes, and trail maintenance projects will be evaluated using the LANL Integrated Review Tool, which includes excavation permits and/or the permits and requirements identification tool. The links to these tools are found on the webpage at <http://int.lanl.gov/environment/compliance/index.shtml>.

## 8.2.2 Worker Safety

Repair and construction work will be planned, managed, and performed to assure that standard worker safety goals are met and that work will be performed in accordance with LANL management practices. Trails workers will wear personal protective equipment suitable for the conditions of any given trail project. Access to trails being repaired or under construction shall be restricted to involved personnel.

## 8.2.3 Stormwater Management

Care will be taken to assure that stormwater diverted off of trails does not cause soil erosion and is planned to avoid protected areas such as cultural sites. Trench and arroyo formation may be arrested by filling the trench with locally available rocks, branches, and soil, or diverting water off of the trail. A site-specific National Pollutant Discharge Elimination System (NPDES) Storm Water Pollution Prevention Plan may be prepared, and a Notice of Intent filed under the NPDES General Permit for construction activities, if necessary.

## 8.2.4 Equipment Used

Hand-held equipment is generally used for trail maintenance. Vehicular equipment is not used in areas with slopes greater than 30 percent, or on single-tread trails. Heavy machinery and vehicles are not used during saturated soil conditions. Any new trail access roads or parking areas should be constructed on slopes of less than 10 percent.

## 8.2.5 Vegetation Management

Disturbed areas will be revegetated after trail repairs or construction. The removal of trees will be evaluated with concern for threatened or endangered species seasonal restrictions, tree Diameter at Breast Height (DBH) restrictions, and migratory bird protection restrictions before the work is done (LANL 2014). Vegetation removal within cultural sites hazard removal, and the like, shall be done with hand tools whenever possible. Trees that have to be removed with a chain saw shall be felled away from any archeological features. Cultural resources monitoring will be done after such vegetation management.

## 8.2.7 Unsanctioned Trails and Vandalism Repair

Unsanctioned trails should be reported to the Trails Management Program at [trails@lanl.gov](mailto:trails@lanl.gov). Unsanctioned trails will be closed and remediated and these areas will be monitored to assure that these trails remain closed (Figure 6).



**Figure 6.** Closure of unsanctioned trail at the southeastern end of Ruin Mesa Trail.

## 8.3 Trailheads and Signage

### 8.3.1 Design of Trailhead Parking Areas

To keep traffic impacts at a minimum, proper sizing and design of trails parking and gathering areas and ingress and egress from adjacent roads will be considered. Specific needs and designs will be assessed in the planning phase prior to construction to ensure minimal disturbance of traffic in critical areas. This work will be coordinated with the LANS traffic engineer.

### 8.3.2 Kiosks, Trail Markers, and Signage

Informational kiosks will be installed at many trailheads. Kiosks will generally be made from recycled materials unless performance and cost vary greatly from industry standards (Figure 7). Rules of use, maps, trail descriptions, trail hazard information, emergency phone numbers, and contact information for the TWG will be posted at each kiosk. Information contained within the kiosks will be updated as necessary.



Figure 7. Informational kiosks made from recycled materials are placed at many trailheads.

### 8.3.3 Signs at Closed Trailheads and Trail Segments

Signs prohibiting use will be placed at closed trailheads when necessary. Appropriate signs will be used to preclude unauthorized public access during temporary trail closures. Signs will have a consistent appearance and posted where they will be easy to see. Signs at trailheads will list emergency phone numbers and the web address for the LANL Trails website. Trail markers will be placed along trails and at trail intersections to be visible but not obtrusive.

## 8.3.4 Directional Highway Signs

Signs may be placed in the highway or roadway right-of-way indicating a LANL trailhead. Signs will be installed in coordination with the LANS traffic engineer and other transportation agencies having jurisdiction.

## 8.4 Use of Volunteers

The Trails Management Program has used volunteers to help with maintenance and repairs. Volunteers were supervised by experienced trail personnel and LANS staff (Figure 8). In 2007, LANS entered an agreement with the Volunteer Task Force, a local nonprofit entity that performs trail maintenance, to authorize volunteers to work on trails projects at LANL. The Institutional Agreement expired in 2012.

### 8.4.1 Volunteers

LANS and the Field Office will explore options to allow volunteers to repair and maintain certain LANL trails.



Figure 8. Volunteers working on a LANL trail in 2010.

## 8.5 Trail Closures

### 8.5.1 Closing Trails

LANL trails may be closed at any time and for any reason by LANS or by DOE/NNSA or DOE/Emergency Management. Trail closures will be posted on the LANL Trails website. Whenever possible, notifications will also be made on the LANL homepage and the “LANL Today” daily email. Signs indicating the closure will be placed at the trail heads and other appropriate places along the



trails by LANS Environmental Stewardship Services (ENV-ES) staff. Some trails have seasonal restrictions to facilitate compliance with the Threatened and Endangered Species Act or other biological resources issues (LANL 2014). Trails may be closed or rerouted to ensure protection of cultural resources. Trails may also be closed for safety, security, or other reasons. Closure and reopening of trails will be coordinated with the TWG chairperson.

### 8.6 Trail Monitoring and Law Enforcement

LANL trails in the White Rock area (TAs 70 and 71) are actively patrolled by Bandelier National Monument rangers through an agreement between the National Park Service and the DOE. National Park Service rangers have full legal enforcement authority in TAs 70 and 71 and will ticket or arrest people who are in violation of the law. Trail users are required to acknowledge and comply with law enforcement requests and directions.



### 8.7 Public Resources and Involvement

Extensive information on all LANL trails is available at the “Taking Care of Our Trails” website: [www.lanl.gov/trails](http://www.lanl.gov/trails). This website is available to the public and contains trail maps, rules of use, a listing of all LANL trails and their status, fact sheets, and information about the TWG. The most recent Trails Mitigation Action Plan Annual Reports are posted at <http://www.lanl.gov/community-environment/environmental-stewardship/protection/trails/trails-working-group.php>.

#### 8.7.1 Reports

The Trails EA requires an annual report that updates the status of mitigation action commitments delineated in Trails Mitigation Action Plan. A Trails Mitigation Action Plan Annual Report is published as part of the LANL Site-Wide Environmental Impact Statement Mitigation Action Plan Annual Report (DOE 2014).

#### 8.7.2 Public Meetings

On occasion, LANS ENV-ES staff will conduct public meetings in Los Alamos or White Rock to brief the public on trails issues, closures, reroutes, and other information or to solicit community input on trails use or problems (Figure 9).



**Figure 9. Trails advocate Craig Martin addresses a public meeting on LANL trails management held in White Rock on June 13, 2013.**

## 9.0 Trail Assessments and Recommended Actions

As required by the Trails EA Mitigation Action Plan, LANS ENV-ES has evaluated the major trails at LANL. Initial trail assessments have been performed to verify and provide current information about the trails listed in this plan. Assessments included field visits and corresponding background research to allow for a determination of what actions may be required to maintain or close a given trail. Table 2 lists major LANL trails and provides a summary ranking of work priorities for future work plans. Priority is based upon a ranking of factors including maintenance, use, erosion, safety, security, affected resources and others issues in need of attention. The following trails received the highest work priorities: Los Alamos Canyon, the Fitness Trail, the Anniversary Trail, and Potrillo Canyon Loop Trail. These priorities may change subject to factors including security and changed conditions.

# FY 2015 Trails Management Plan for LANL

**Table 2. Trails Ranked by Maintenance Needs, Visitation, and Other Issues in Need of Attention to Identify Work Plan Priorities\***

Location and Access	Trail Name	Er	Vis	Bio	Cul	Ops	Par	Rem	Saf	Sec	UT	Sign	Overall Work Priority (sum of all issue rankings)
Currently Closed Trails	Los Alamos Canyon Trail	8	4		6		6	6			1	2	33
	Breakneck Trail	8							8		1	4	21
	Mortandad Canyon Trail	2	4	10				1			1	2	20
	Hidden Canyon Trail	4	4					6	2		1	2	19
	Deadman's Crossing/Duran Road	4						4	2		1	2	13
	Mattie Brook Trail	2	4								1		7
	Ancho Canyon Trail										1		1
Los Alamos townsite trails open to LANL badge holders only	LANL Fitness Trail	10	10			6					4	10	34
	Twomile Mesa Trail	4	8								1	2	15
	Mortandad Bench Trail	4	4						2		2	2	14
	Mortandad Loop Trail	4	4								1		9
Los Alamos townsite trails open to the public	Anniversary Trail	4	10		4		6						24
	Devaney - Longmire Trail	2	4	6	2						4	2	20
	Gabriella Trail	4	8								1	6	19
	Research Park Trail	4	8								2	2	16
White Rock area trails open to the public	Potrillo Canyon Loop	6	8				6				6	6	32
	Lower Water Canyon Trail	6	10				6		6		1	2	31
	Unofficial Social Trails	6	8		8						6	2	28
	Lower Water Canyon Spur	4	6				8		4		1		23

## FY 2015 Trails Management Plan for LANL

Location and Access	Trail Name	Er	Vis	Bio	Cul	Ops	Par	Rem	Saf	Sec	UT	Sign	Overall Work Priority (sum of all issue rankings)
White Rock area trails open to the public (continued)	<b>Broken Mesa Trail</b>	8	6									8	22
	<b>Lion Cave Trail</b>	4	4				4		4		1	4	21
	<b>Ancho Springs Trail</b>	4	4				4				6	2	20
	<b>Boundary Trail</b>	4	10									6	20
	<b>Ridgeline Trail</b>	4	4		4						2	4	18
	<b>Water Canyon Overlook Trail</b>	2	4				6				2	2	16
	<b>Ruin Mesa Trail</b>	2	4		6						1	2	15
	<b>Fence Canyon Loop</b>	6	4								1	2	13
	<b>Potrillo Mesa Trail</b>	4	4								1	4	13
	<b>Powerline Point Trail</b>	2	6				2				1	2	13
	<b>Knife Edge Trail</b>	4									6	2	12
	<b>Pretty Canyon Trail</b>	2	4								6		12
	<b>Old Road Trail – Middle Fork</b>	2	4				2				1	2	11
<b>Potrillo Crossing</b>	2	4								1	4	11	

\* Er = erosion, Vis = visitation priority, Bio = biological resources Issues, Cul = cultural resources, Ops = operational, Par = parking, Rem = remediation, Saf = safety, Sec = security, UT = unofficial trail, and Sign = kiosk and other signage.

1 = Issues of least concern, 10 = issues of most urgent concern.

Visitation: 1 = least visited trails, 10 = highly visited trail.

Unofficial Trails (UT): 1 = trail connects to very few UT, 10 = trail connects to UT in need of closing.

## Anniversary Trail

### Description:

The trailhead is located in TA-72 on the south side of NM State Road 502 just at the top of the main hill road. The trail goes east following an old road for much of its length through sparse piñon-juniper forest and is an easy walk on a mostly level surface. The trail ends at the mesa edge with phenomenal views of the “Guardian Mesas,” the Rio Grande Valley, and the Sangre de Cristo Mountains (Figure 10). At the mesa edge, the trail loops to the south and then west reconnecting with the original trail (Figure 11). The trail is 0.6 mile one way with an elevation change of 25 feet.

### Special Characteristics:

DOE officially designated the Anniversary Trail for unlimited public hiking access when this trail was dedicated in 1993 to commemorate the 50<sup>th</sup> anniversary of the Manhattan Project. A commemorative plaque and a bench sit at the mesa’s edge at the end of the trail. The Anniversary Trail was determined to be eligible for protection under the NRHP in 2014.

### Special Restrictions/Hazards:

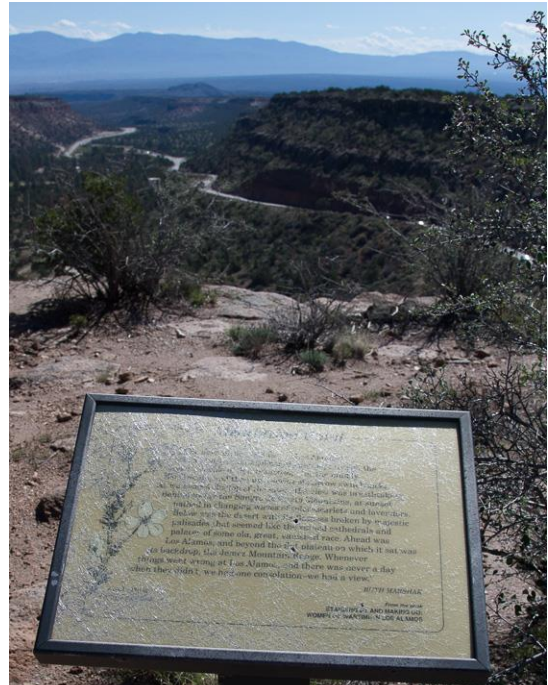
Because of fast moving traffic on NM State Road 502, limited sight distance, and a small area, the parking area for the trail is hazardous. Horseback riding is prohibited.

Los Alamos County may build a water line booster station from Pueblo Canyon to daylight on Anniversary Mesa. **October 2015 Trail Condition:**

The trail follows an old road for most of its length and is in good condition with no erosion or other hazards. There is a fair amount of litter at the end of the trail near the commemorative plaque and bench. The plaque is weathered and hard to read and the bench is in poor condition. There is no informational kiosk at the trailhead and no trail markers.

### Recommended Actions:

- Perform a trail assessment.
- Work with Los Alamos County to extend the Anniversary Trail west to the county’s Canyon Rim Trail and expand the Canyon Rim Trail parking area to accommodate both trails. This would allow for closure of the parking area at the top of the main hill road and provide for a continuous trail from the Smith’s Marketplace in Los Alamos to the mesa edge.
- Replace the commemorative plaque and bench at the east end of the trail at the mesa edge. Clean up rubble along the trail.
- Install an informational kiosk at Anniversary Trailhead.
- If water booster station construction occurs, evaluate restrictions needed, if any, for safe use of the trail.



**Figure 10. View from the east end of the Anniversary Trail with commemorative sign.**

# Breakneck Trail



Figure 11. Map of the Anniversary Trail shown in light blue. Red lines indicate closed trails.

## Breakneck Trail

### ***Description:***

The Breakneck Trail was built by students at the Los Alamos Boys School. It has been closed to public access since 2011, after the Las Conchas Fire. The trailhead for this trail is located directly across the main hill road, NM State Road 502 (southwest side of road) from the Anderson Overlook parking area. Hikers parked in the overlook parking area and had to cross this busy and narrow two-lane highway to access the trail. The trail heads southeast over the edge of Anniversary Mesa and down the canyon wall to the bottom of Los Alamos Canyon and connects with the Los Alamos Canyon Trail (also currently closed to the public). This trail is 0.56 mile one way with an elevation change of 345 feet (Figure 12).

### ***Special Characteristics:***

This is a very steep and difficult trail. The trail has little forest cover until reaching the bottom of Los Alamos Canyon.

### ***Special Restrictions/Hazards:***

This trail is currently closed to all entry and will likely remain so because of safety concerns related to parking and trail conditions. Trail steepness and loose gravel are the main trail hazards. The trail runs through lands that will be retained as DOE property and will not be considered for conveyance or transfer to other jurisdictions.

### ***Current Trail Conditions:***

Trail conditions are unknown. There is no informational kiosk at either end of this trail and no trail markers.

### ***Recommended Actions:***

- Keep the Breakneck Trail closed; consider using Mattie Brooke Trail for public access if the Los Alamos Canyon Trail is reopened to the public.
- Perform a trail NHPA eligibility assessment, if required, by the SHPO for documentation, for this trail.
- If the decision is made to permanently close the Breakneck Trail, work with the SHPO to determine what documentation and/or preservation of the trail is needed.

# Breakneck Trail

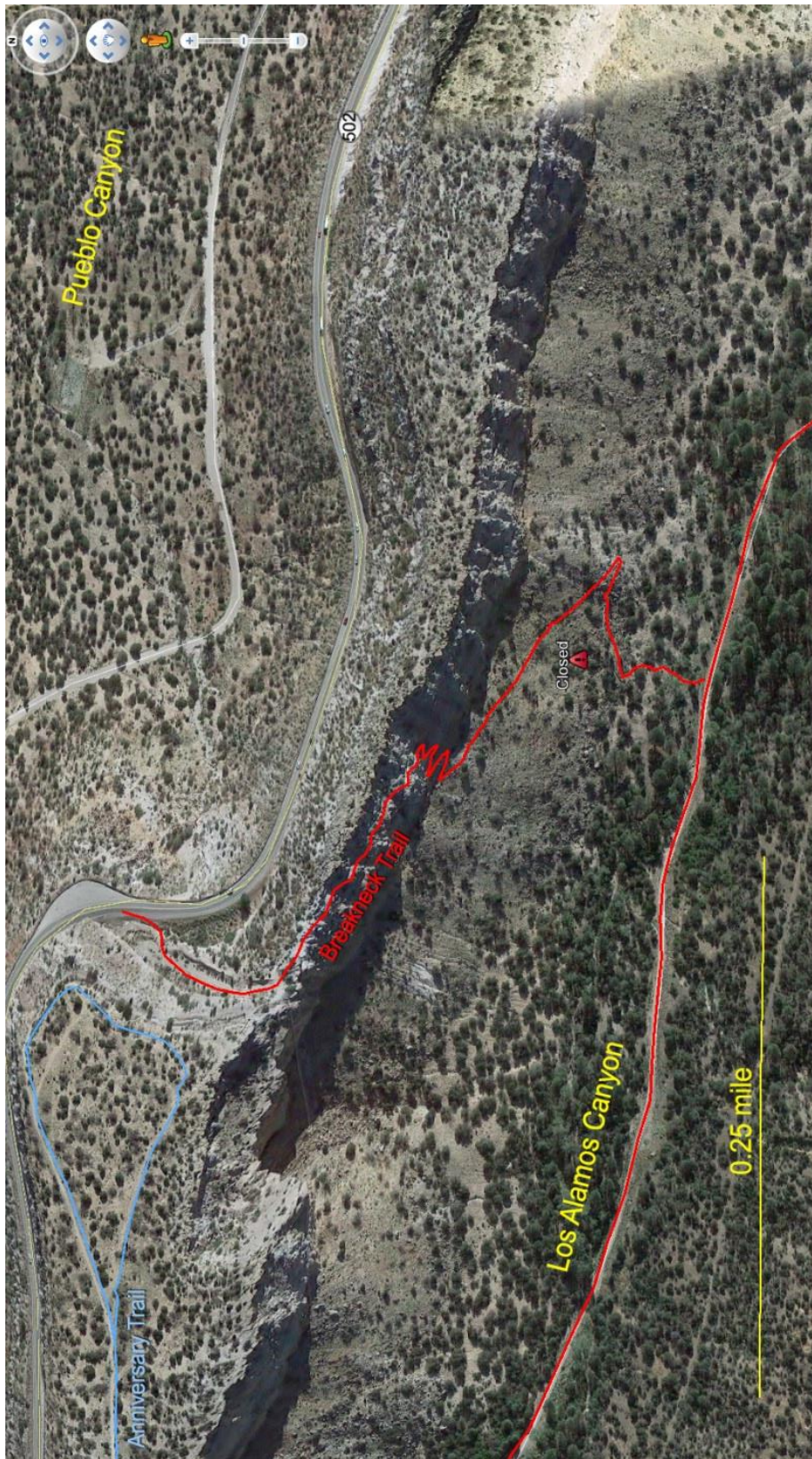


Figure 12. Breakneck Trail shown in red.



### Deadman's Crossing/Duran Road

#### ***Description:***

This trail is now closed to the public pending completion of environmental remediation work and a security assessment. The trailhead is marked by a small metal sign posted in TA-61 on the north side of the road at the intersection of East Jemez Road and NM State Road 501 (West Jemez Road) near the Vehicle Access Portals into TA-03. The trail leads north-northeast down the canyon wall through pine-spruce forest into Los Alamos Canyon. At the bottom of Los Alamos Canyon, the Deadman's Crossing/Duran Road intersects the Los Alamos Canyon Trail and the Hidden Canyon Trail (Figure 13). The trail is 0.43 mile one way with an elevation change of 280 feet.

#### ***Special Characteristics:***

This trail traverses habitat for the threatened and endangered Jemez Mountains Salamander and the Mexican Spotted Owl and can be closed for biological resources protection issues if deemed necessary by LANS biologists (LANL 2014). It can also be subject to periodic closure due either to ongoing environmental cleanup work on the slopes of Los Alamos Canyon or to flooding during the monsoon season. Because this trail accesses the bottom of Los Alamos Canyon in areas that are closed to the public, use of the trail may depend on the status of Los Alamos Canyon. This trail could link TA-03 and Los Alamos to a reopened Los Alamos Canyon Trail. This fact is important to planning for the Manhattan Project National Park that includes nearby sites to the east in the canyon.

#### ***Special Restrictions/Hazards:***

Horseback riding and photography are prohibited.

#### ***Current Trail Conditions:***

Volunteer work parties were organized by the Trails Management Program and performed repairs to the Deadman's Crossing/Duran Road Trail in 2009 and 2010. There is no parking area for this trail. There is no informational kiosk at either end of this trail and no trail markers.

#### ***Recommended Actions:***

- Perform a trail assessment to determine current conditions.
- Continue coordinating with security regarding closure status of this trail.
- Install informational kiosk to replace older trailhead sign and install trail wayfinding markers if the trail is to be opened.

# Deadman's Crossing/Duran Road

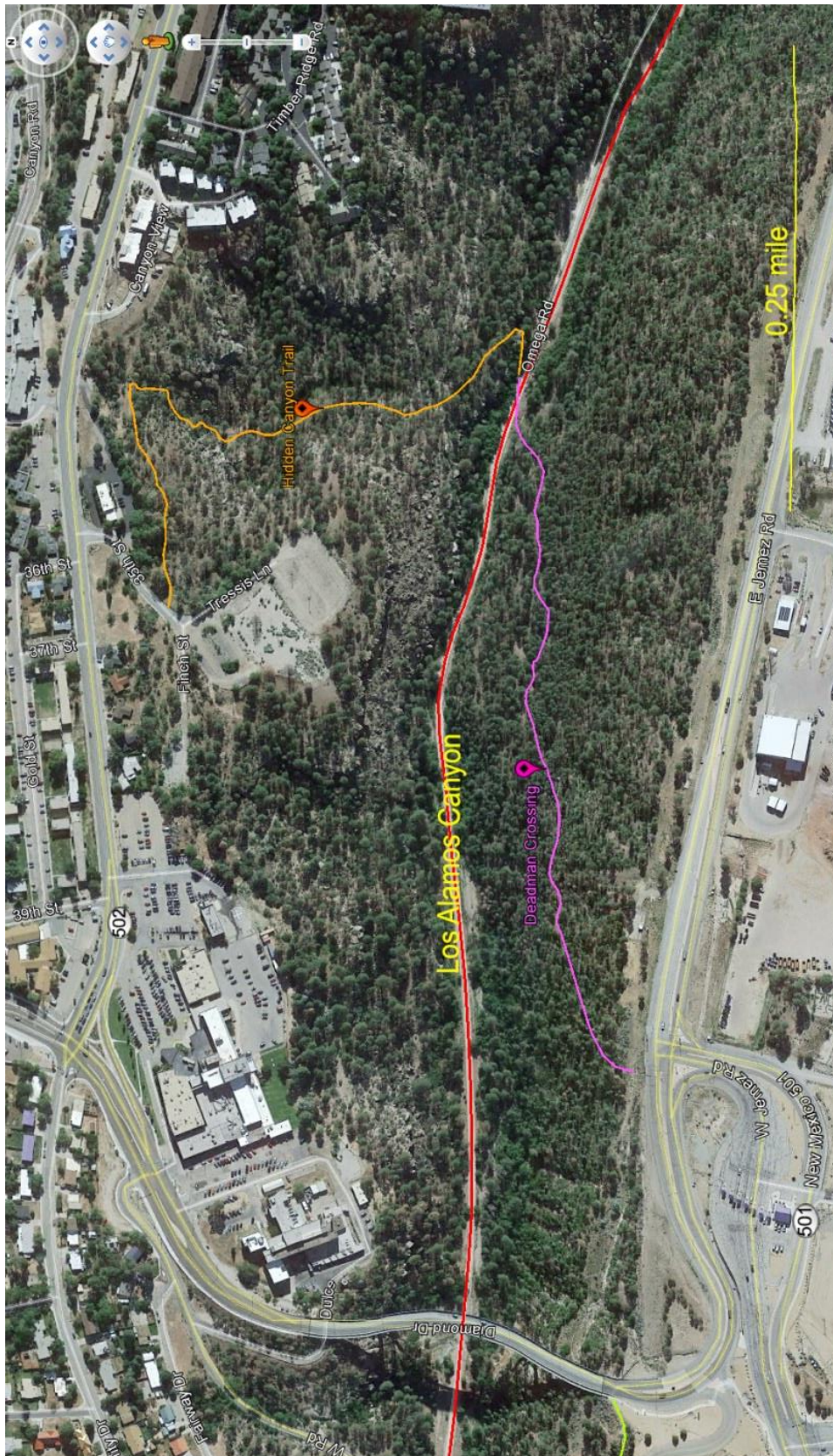


Figure 13. Deadman's Crossing/Duran Road shown in purple.

### Devaney–Longmire Trail

***Description:***

This trail is open to the public. The Devaney Trail is reached from the Research Park Trail behind, and northwest of, building 4200 in TA-03 (the “Motorola Building”) in the Los Alamos Research Park. It also rejoins the Research Park Trail just west of the Motorola Building. The trail heads north down the slope into Los Alamos Canyon and then northwest crossing into TA-62 to the west of the Los Alamos County Ice Rink. From there the trail becomes the Los Alamos County “Longmire Trail” and climbs up out of Los Alamos Canyon and ends at the intersection of Sandia Drive and 48<sup>th</sup> Street (Figure 14). The Los Alamos County “Quemazon Trail” intersects the Longmire Trail just before reaching Sandia Drive. The trail runs through mixed conifer forest and is 0.97 mile long with an elevation change of 185 feet. There are small metal trailhead signs posted at each end of the trail.

***Special Characteristics:***

This trail traverses habitat for the threatened and endangered Jemez Mountains Salamander and can be closed for biological resources protection issues if deemed necessary by LANS biologists (LANL 2014).

***Special Restrictions/Hazards:***

Horseback riding is prohibited.

***Current Trail Conditions:***

Trail conditions are unknown. There is no parking area for this trail; however, there is parking at the nearby Research Park. There is no informational kiosk at either end of this trail and no trail markers.

***Recommended Actions:***

- Perform a trail assessment.
- Install informational kiosk to replace older trailhead sign and install trail wayfinding markers.

# Devaney-Longmire Trail

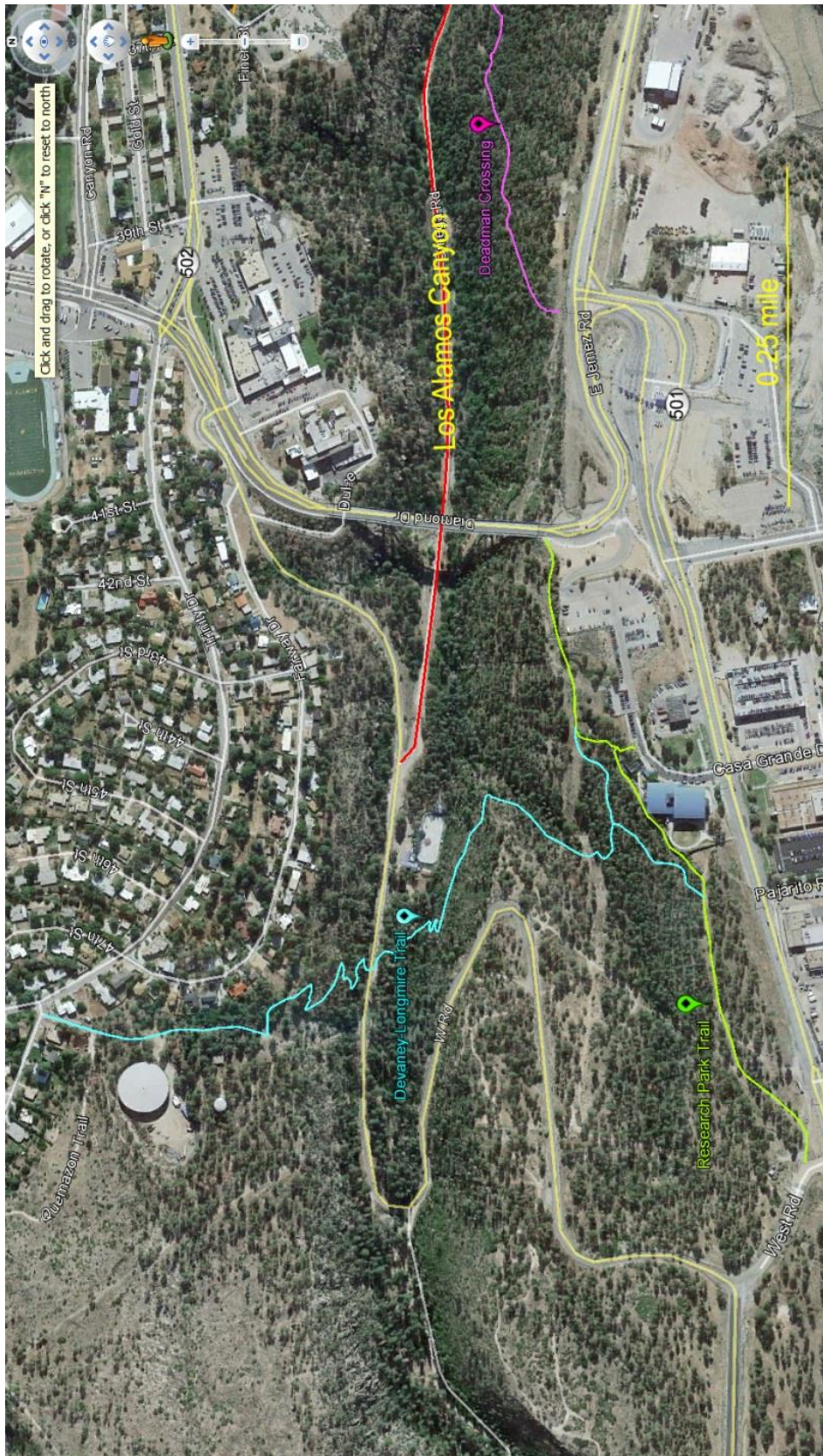


Figure 14. Devaney-Longmire Trail shown in light blue.

# Gabriella Trail

## Gabriella Trail

### **Description:**

This trail is open to LANL badge holders only and runs through the wooded area between NM State Road 501 and West Road. It is accessed from the end of the Research Park Trail at the old West Road cut-off (closed to vehicle traffic) and the intersection of West Road and Camp May Road (Figure 15). The trail traverses piñon-juniper-ponderosa-fir forest for 0.85 mile with an elevation change of 275 feet. The Gabriella Trail provides an alternative to the Fitness Trail for mountain bikers and a connection to Santa Fe National Forest Trails.

### **Special Characteristics:**

None

### **Special Restrictions/Hazards:**

None

### **Current Trail Conditions:**

Current trail conditions are unknown. There are no informational kiosks or trail markers. There is no designated parking area although there is a gravel pullout area near the base of Camp May Road.

### **Recommended Actions:**

- Perform a trail assessment.
- Install trail markers. Clearly mark this area as accessible to badge holders only.



Figure 15. Map showing the Gabriella Trail.

## Hidden Canyon Trail

### ***Description:***

This trail is now closed to the public pending completion of environmental remediation work, and a security assessment. It runs between the bottom of Los Alamos Canyon north of the intersection of the Deadman's Crossing/Duran Road and the Los Alamos Canyon Trail. From there it heads north through mixed conifer forest up Hidden Canyon to nearly the canyon rim before heading west and ending at the intersection of Finch Street and 35<sup>th</sup> Street (Figure 16). The trail is 0.42 mile long with an elevation change of 195 feet. A spur of the trail links to the Timber Ridge subdivision. There are small metal trailhead signs posted at each end of the trail.

### ***Special Characteristics:***

This trail traverses habitat for the threatened and endangered Jemez Mountains Salamander and the Mexican Spotted Owl (in Los Alamos Canyon) and can be closed for biological resources protection issues if deemed necessary by LANS biologists (LANL 2014). It can also be subject to periodic closure due either to ongoing environmental cleanup work on the slopes of Los Alamos Canyon or to flooding during the monsoon season. Because this trail accesses the bottom of Los Alamos Canyon in areas that are closed to the public, use of the trail may depend on the status of Los Alamos Canyon. This trail could link TA-03 and Los Alamos to a reopened Los Alamos Canyon Trail. This fact is important to planning for the Manhattan Project National Park that includes nearby sites to the east in the canyon.

### ***Special Restrictions/Hazards:***

There is no designated parking area for this trail and no informational kiosk at either end of the trail. Horseback riding and photography on this trail are prohibited.

### ***Current Trail Conditions:***

The Hidden Canyon Trail is in good condition because there were volunteer work parties in the recent past. Ongoing maintenance and wayfinding signs are needed along the trail and its spurs.

### ***Recommended Actions:***

- Install informational kiosk(s) and trail wayfinding markers.
- Continue coordinating with security regarding closure status of this trail.
- Explore collaborating with Los Alamos County (which now owns the land nearby that once housed the DOE offices on tracts A-12 and A-13) to construct a trail head with parking at the intersection of Finch and 35<sup>th</sup> Streets. This activity could support foot access to future Manhattan Project National Historic Park sites.

# Hidden Canyon Trail

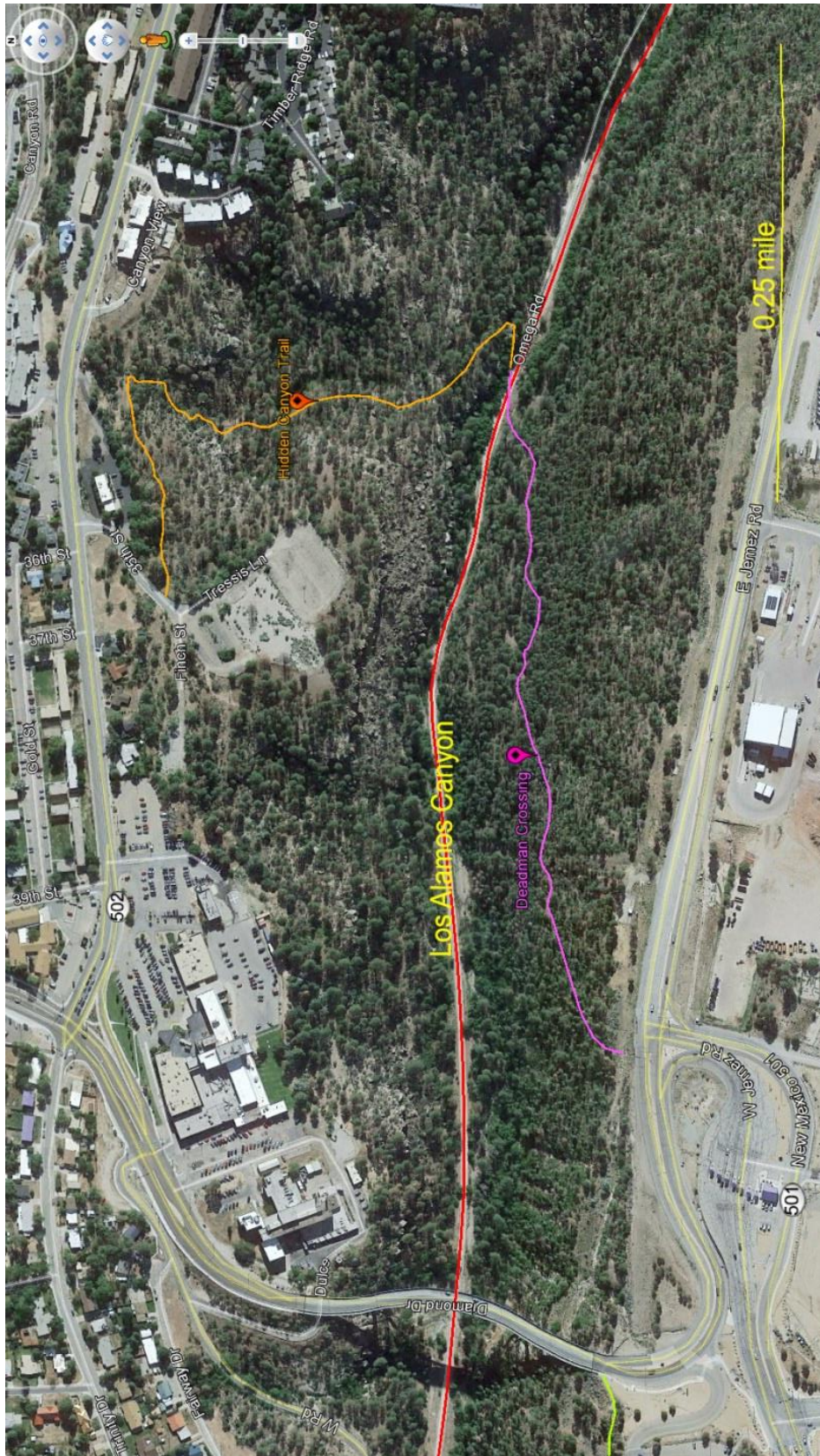


Figure 16. Hidden Canyon Trail shown in orange.

## LANL Fitness Trails

### ***Description:***

These popular trails are open only to LANL badge holders. The LANL Fitness Trails are actually a series of connected exercise trails to the southwest of the Wellness Center in TA-58 on Twomile Mesa North (Figure 17). These trails traverse ponderosa pine woodlands and forest at roughly 7500 feet above sea level. The length of the trails as shown in Figure 15 is 2.25 miles with an elevation change of 320 feet. In 2009, the LANL Protective Force constructed an all-weather running track on the eastern edge of the mesa. While reserved for their use during certain times of the week, the track is otherwise open to LANL badge holders. These trails previously linked to the Twomile Mesa Trail south of old Anchor Ranch Road and to a trail that connected to TA-16; however, parts of the connecting trail were obliterated by construction of the Tactical Training Facility, while other segments are in disrepair because of erosion between NM State Road 4 and the LANL exclusion fences.

### ***Special Characteristics:***

There are no cultural or sensitive biological areas on Twomile Mesa North; however, sightings of deer, elk, bear and mountain lions are reported frequently by trail users.

### ***Special Restrictions/Hazards:***

These trails are open to LANL badge holders only. Escorting individuals without LANL badges is prohibited. Horseback riding and photography are prohibited.

### ***Current Trail Conditions:***

Trails Management Program and Wellness staff walked these trails in July 2015 and observed three highly eroded sections. While there are two small trailhead information signs posted, there are no information kiosk or trail markers. The par course is in disrepair and should be improved or removed.

### ***Recommended Actions:***

- Perform interim repairs to halt the most serious erosion on selected trail segments.
- Work with the Wellness Center, Utilities and Infrastructure Division and LANL volunteers to address longer-term maintenance of these heavily used and popular trails.
- Install informational kiosk to replace older trailhead sign and install trail wayfinding markers.



# LANL Fitness Trails



Figure 17. Main LANL Fitness Trails are shown in blue.

## Los Alamos Canyon Trail

### ***Description:***

The Los Alamos Canyon Trail follows the existing paved and gravel road in the canyon between West Road and NM State Road 4. While closed to public access since the Las Conchas Fire in 2011, it previously was a popular hiking link that connected with the Hidden Canyon, Deadman's Crossing/Duran Road, Mattie Brook, and Breakneck Trails (Figure 18). The trail runs through ponderosa pine forest for 6 miles with an elevation change of about 780 feet. There are numerous stream crossings.

### ***Special Characteristics:***

This trail traverses habitat for the threatened and endangered Jemez Mountains Salamander and Mexican Spotted Owl and can be closed for biological resources protection issues if deemed necessary by LANS biologists (LANL 2014). There is ongoing interest in reopening this trail pending resolution of operational and maintenance concerns. This trail could provide access to sites associated with the new Manhattan Project National Historic Park. This trail has also been proposed as part of a large loop trail connecting Los Alamos townsite to White Rock and Bandelier National Monument. LANL has completed consultation with the U.S. Fish and Wildlife Service on recreational non-motorized use of this trail.

### ***Special Restrictions/Hazards:***

This trail is currently closed to all public use. Los Alamos Canyon is prone to flash flooding, especially during the seasonal summer monsoon. It may also be closed temporarily for safety reasons to accommodate environmental remediation work.

### ***Current Trail Conditions:***

According to LANS subject matter experts who frequent the area during field work, and the Utilities and Infrastructure Division, the roadbed would be adequate for trails use. There are no informational kiosks and no trail markers, although there are trailhead signs for the Hidden Canyon and Deadman's Crossing/Duran Road trails in Los Alamos Canyon.

### ***Recommended Actions:***

- Perform a trail assessment.
- Work with the Field Office and LANS subject matter experts on a plan for reopening the Los Alamos Canyon Trail if compatible with LANL operations.
- Install informational kiosks at each end of the trail and trail markers at trail intersections.
- Assure that the Mattie Brook and Breakneck Trail intersections with Los Alamos Canyon Trail are signed for indeterminate closure.

# Los Alamos Canyon Trail

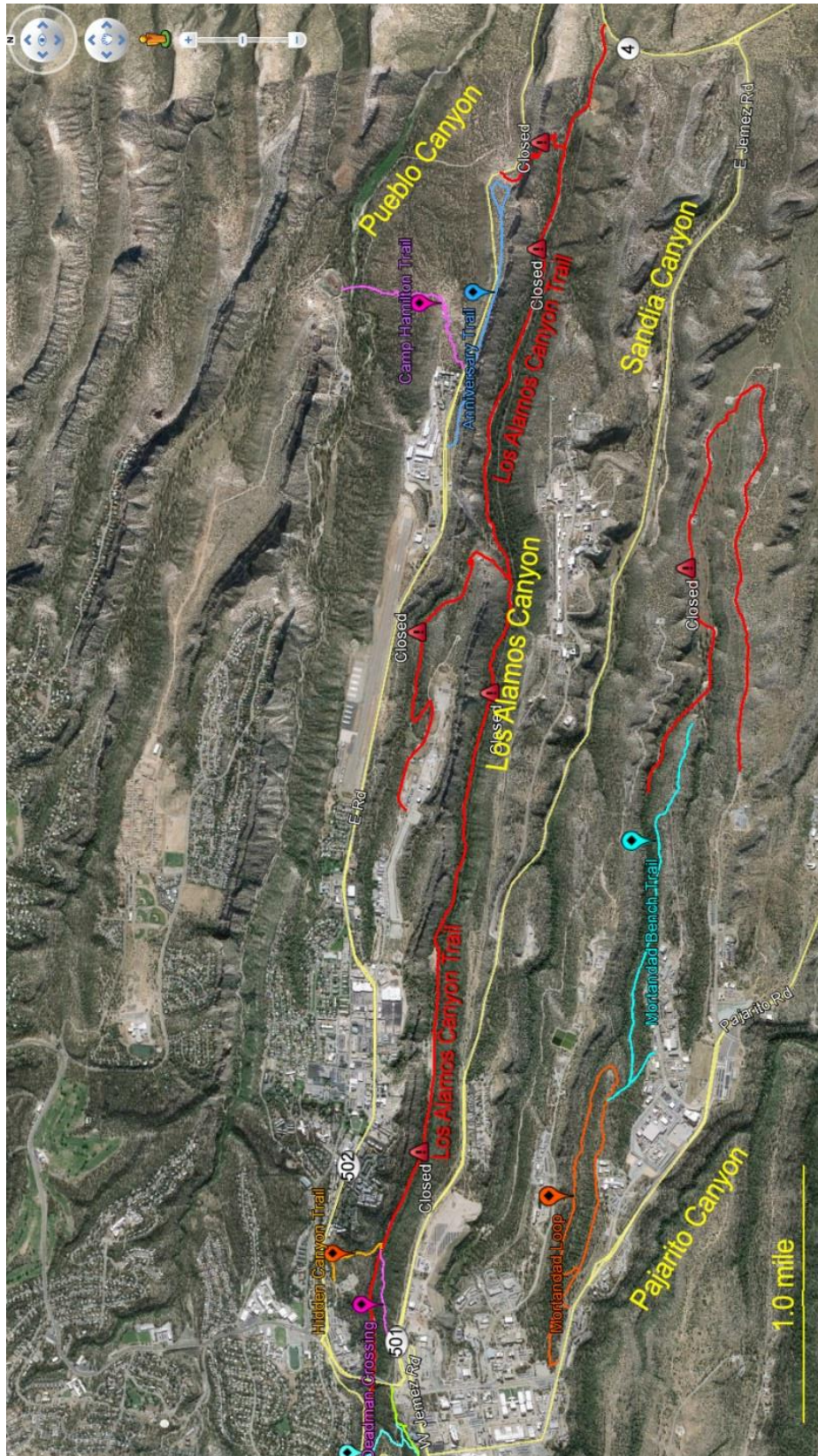


Figure 18. Los Alamos Canyon Trail is shown in red.

# Mortandad Bench Trail

## Mortandad Bench Trail

### ***Description:***

This trail is open to LANL badge holders only. Access is from the east end of the Mortandad Loop or off of Pecos Drive in TA-35 between buildings 213 and 455 on the north side of the road. The trail heads east following a natural bench above the canyon floor in ponderosa pine forest (Figure 19). The trail is 1.94 miles long with an elevation change of 310 feet. The trail ends at the end of the mesa overlooking lower Mortandad Canyon.

### ***Special Characteristics:***

This trail traverses habitat for the threatened and endangered Mexican Spotted Owl and can be closed for biological resources protection issues if deemed necessary by LANS biologists (LANL 2014).

### ***Special Restrictions/Hazards:***

Access to the floor of Mortandad Canyon is currently prohibited because of ongoing environmental remediation work. Trail users must stay on the bench or mesa top above the canyon floor. Horseback riding and photography are prohibited. This trail is open to LANL badge holders only. Escorting of individuals without a LANL badge is prohibited.

### ***Current Trail Conditions:***

Current trail conditions are unknown. There is no designated parking area although there is limited parking in parking lots adjacent to buildings 213 and 455. There are no informational kiosks or trail markers.

### ***Recommended Actions:***

- Perform a trail assessment.
- Install informational kiosk and trail markers.

# Mortandad Bench Trail

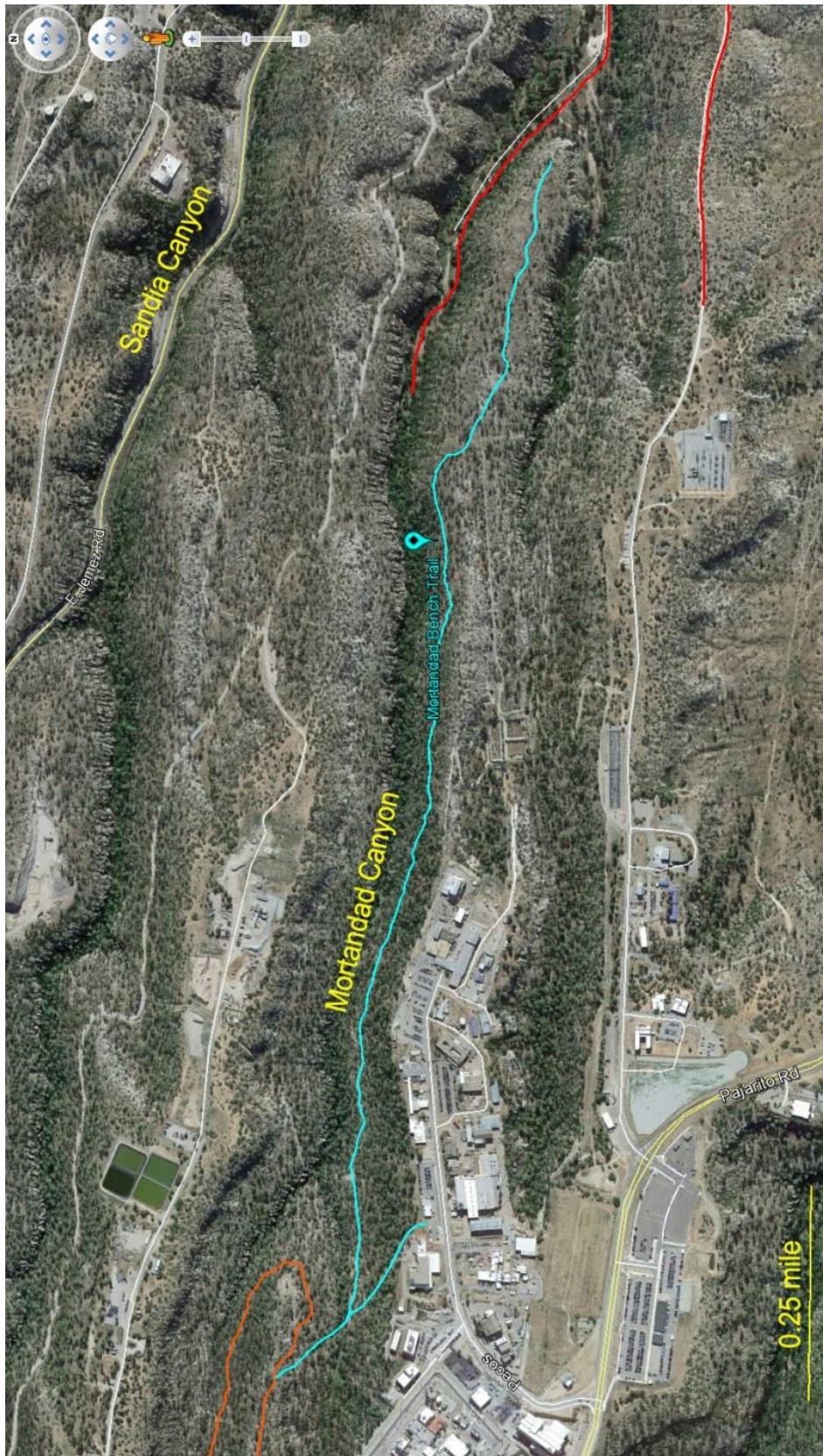


Figure 19. Mortandad Bench Trail is shown in light blue.

# Mortandad Canyon Trail

## Mortandad Canyon Trail

### **Description:**

This trail is closed indefinitely. It is located in the lower reaches of the bottom of Mortandad Canyon (Figure 20).

### **Special Characteristics:**

None

### **Special Restrictions/Hazards:**

This trail is currently closed to entry for safety reasons because of extensive remediation work occurring in the canyon. This trail traverses habitat for the threatened and endangered Mexican Spotted Owl (LANL 2014).

### **Current Trail Conditions:**

Current trail conditions are unknown.

### **Recommended Actions:**

- Perform a trail assessment once remediation activities are complete and it is safe to reopen this trail for recreation.

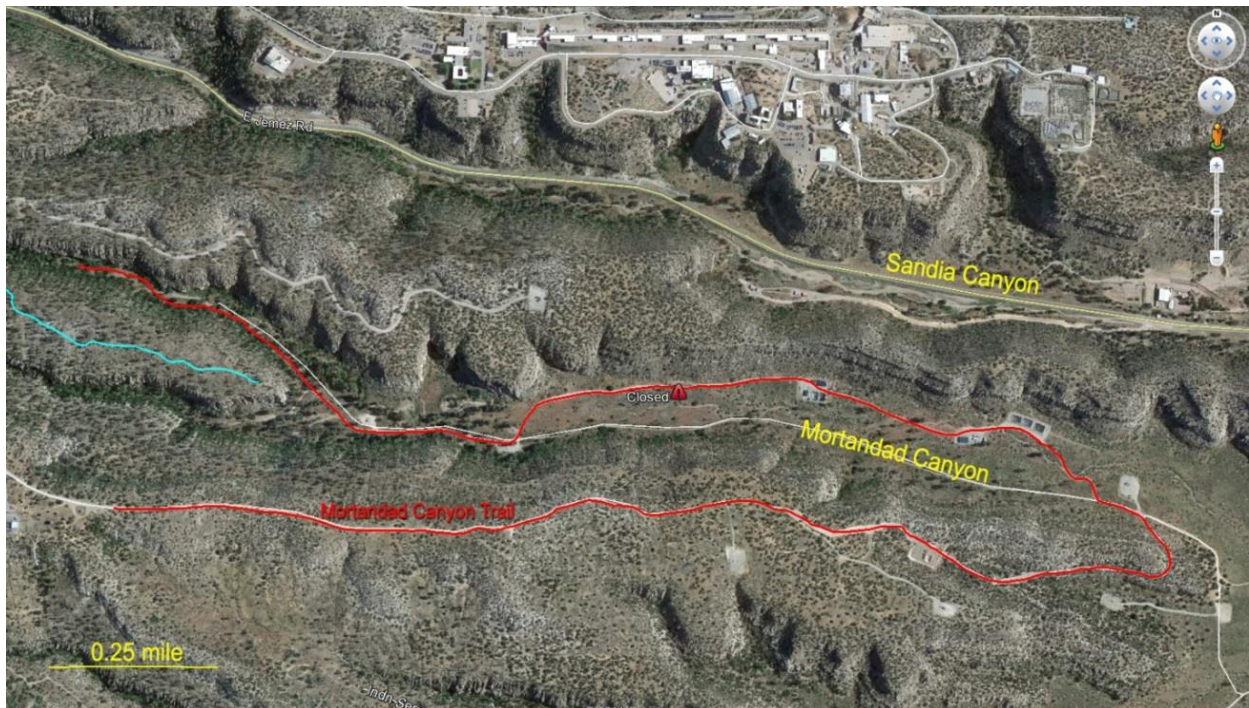


Figure 20. Mortandad Canyon Trail is shown in red.

# Mortandad Loop Trail

## Mortandad Loop Trail

### ***Description:***

This trail is open to LANL badge holders only. The trailhead is in the southeast corner of the parking lot at the southeast corner of Diamond Drive and Pajarito Road. There is also access from the north side of Pajarito Road directly north of TA-59, building 1 (Figure 21). Total length of this loop trail is 2.51 miles. The trail passes through ponderosa pine forest and has an elevation change of 225 feet.

### ***Special Characteristics:***

None

### ***Special Restrictions/Hazards:***

This trail is open to LANL badge holders only. Escorting of individuals without LANL badges is prohibited. Horseback riding and photography are prohibited.

### ***Current Condition:***

Current trail conditions are unknown. There is no designated parking area although there is limited parking in lots adjacent to buildings 213 and 455. There are no informational kiosks or trail markers.

### ***Recommended Actions:***

- Perform a trail assessment.
- Install informational kiosk and trail markers.
- Clean up litter and debris at the western end of the trail.

# Mortandad Loop Trail

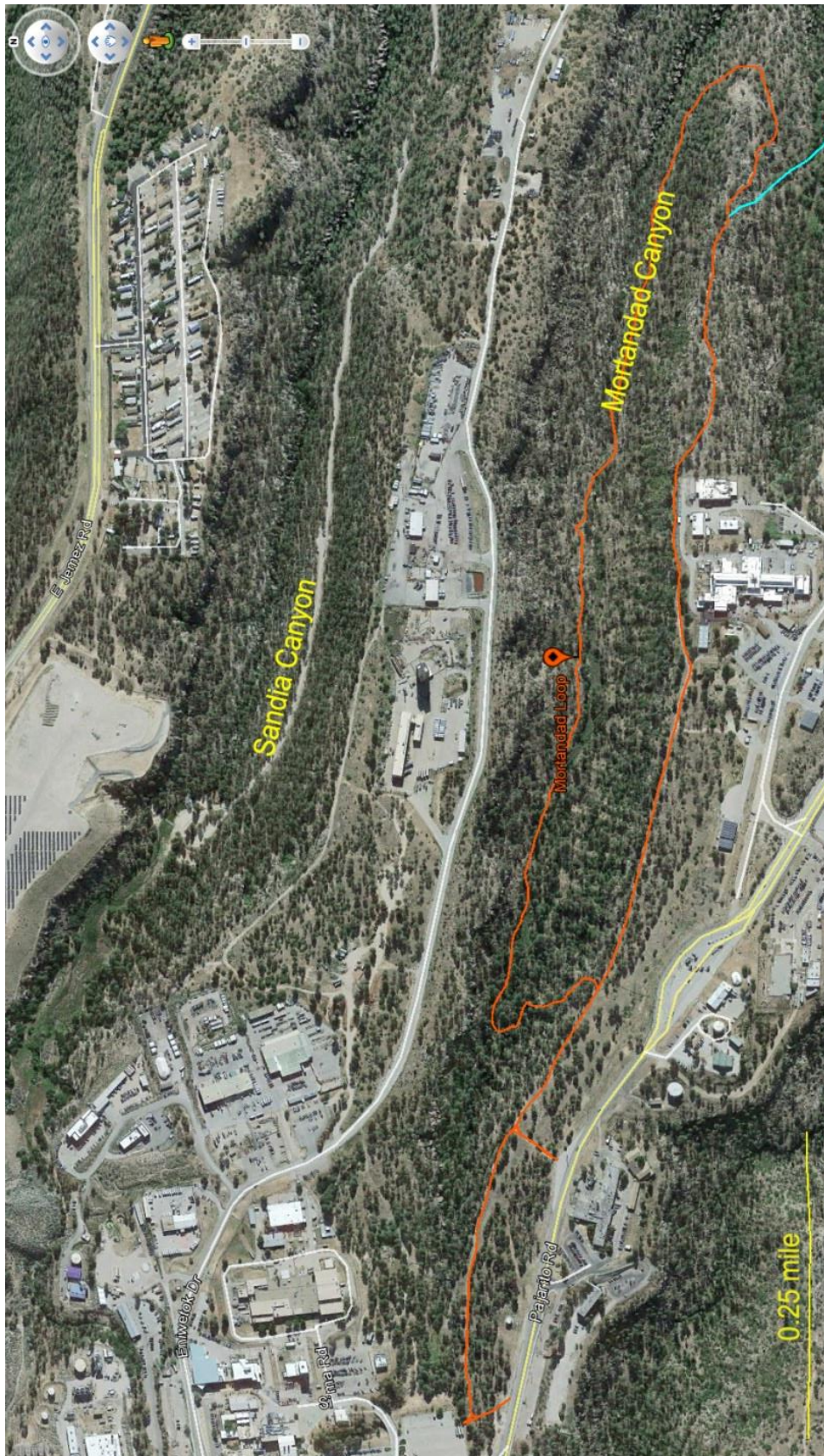


Figure 21. Mortandad Loop Trail is shown in orange.



### Research Park Trail

***Description:***

This trail is open to the public and runs through the Los Alamos County Research Park on property leased from the DOE. It is accessed from the southern end of the pedestrian walkway across the Omega Bridge over Los Alamos Canyon, the parking area just northeast of the Motorola Building, and also at the intersection of West and West Jemez Roads (Figure 22). The trail traverses piñon-juniper-ponderosa-mixed conifer forest for 0.55 mile with an elevation change of 140 feet. The Research Park Trail provides access to the Devaney-Longmire Trail. It also terminates at West Road (which is blocked to vehicular access) where there is a pedestrian access across from the Wellness Center across West Jemez Road.

***Special Characteristics:***

Small portions of this trail traverse habitat buffer area for the threatened and endangered Jemez Mountains Salamander and can be closed for biological resources protection issues if deemed necessary by LANS biologists (LANL 2014).

***Special Restrictions/Hazards:***

Future construction projects in the Los Alamos Research Park may result in trail closures for safety reasons. Horseback riding and photography are prohibited.

***Current Trail Conditions:***

Current trail conditions are unknown. There are no informational kiosks or trail markers. There is no designated parking area although there is ample parking in the Research Park and Wellness Center parking lots.

***Recommended Actions:***

- Perform a trail assessment.
- Install informational kiosks and trail markers.

# Research Park Trail

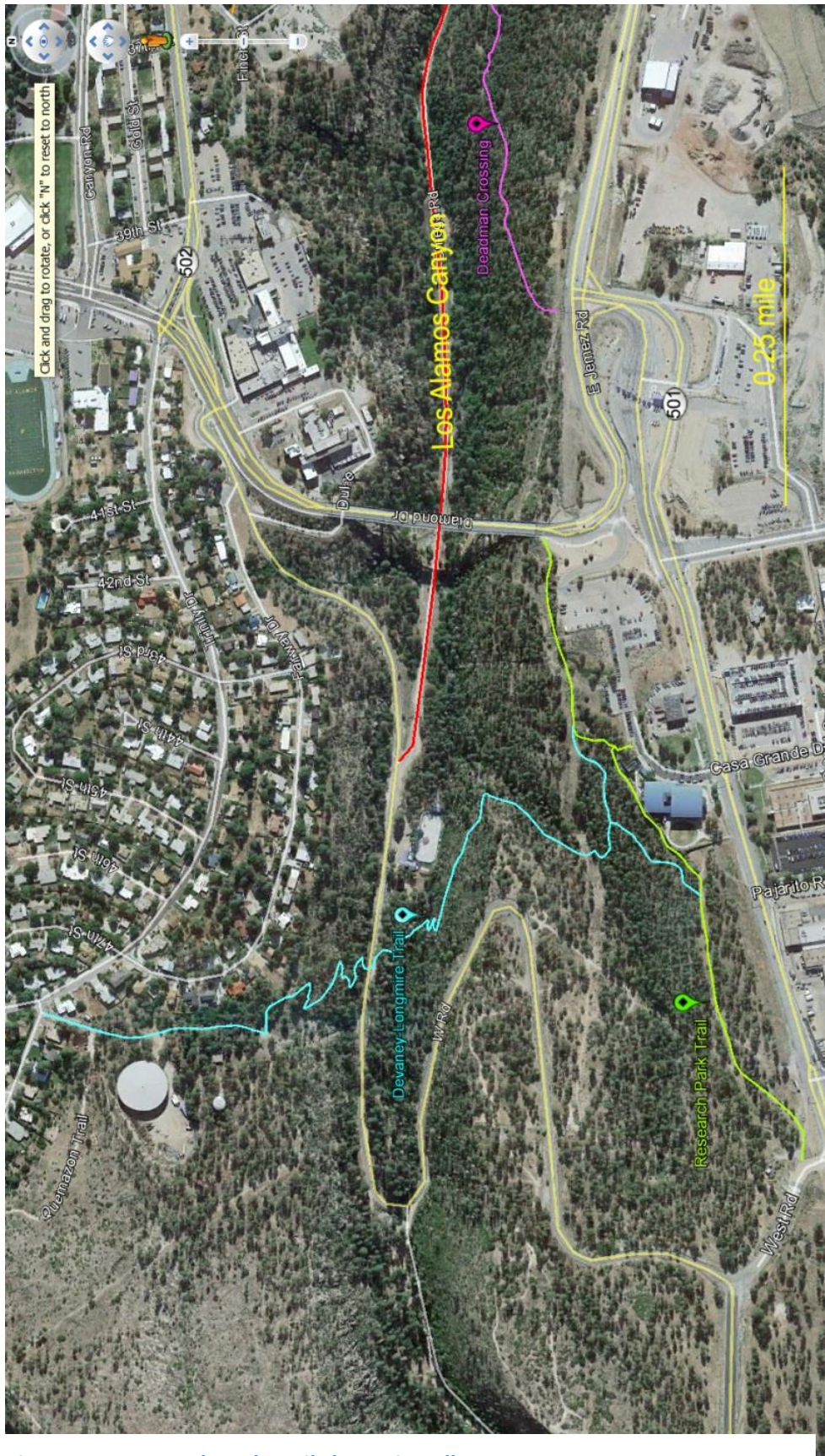


Figure 22. Research Park Trail shown in yellow-green.

## Twomile Mesa Trail

### Twomile Mesa Trail

***Description:***

This trail is open to LANL badge holders only. Access is from the western end of the LANL Fitness Trails in TA-58 and the other side of the old Anchor Ranch Road (Figure 23). The trail heads southwest through ponderosa pine forest and loops back along NM State Road 501. The length of the trail including the loop is 1.94 miles with an elevation change of 170 feet.

***Special Characteristics:***

None

***Special Restrictions/Hazards:***

Portions of the trail border NM State Road 501. This trail is open to LANL badge holders only. Escorting of individuals without LANL badges is prohibited. Horseback riding and photography are prohibited.

***Current Trail Conditions:***

Current trail conditions are unknown. There are no informational kiosks or trail markers. There is no designated parking area.

***Recommended Actions:***

- Perform a trail assessment.
- Install informational kiosks and trail markers.
- Update map of this trail to include newer trail sections.

# Twomile Mesa Trail

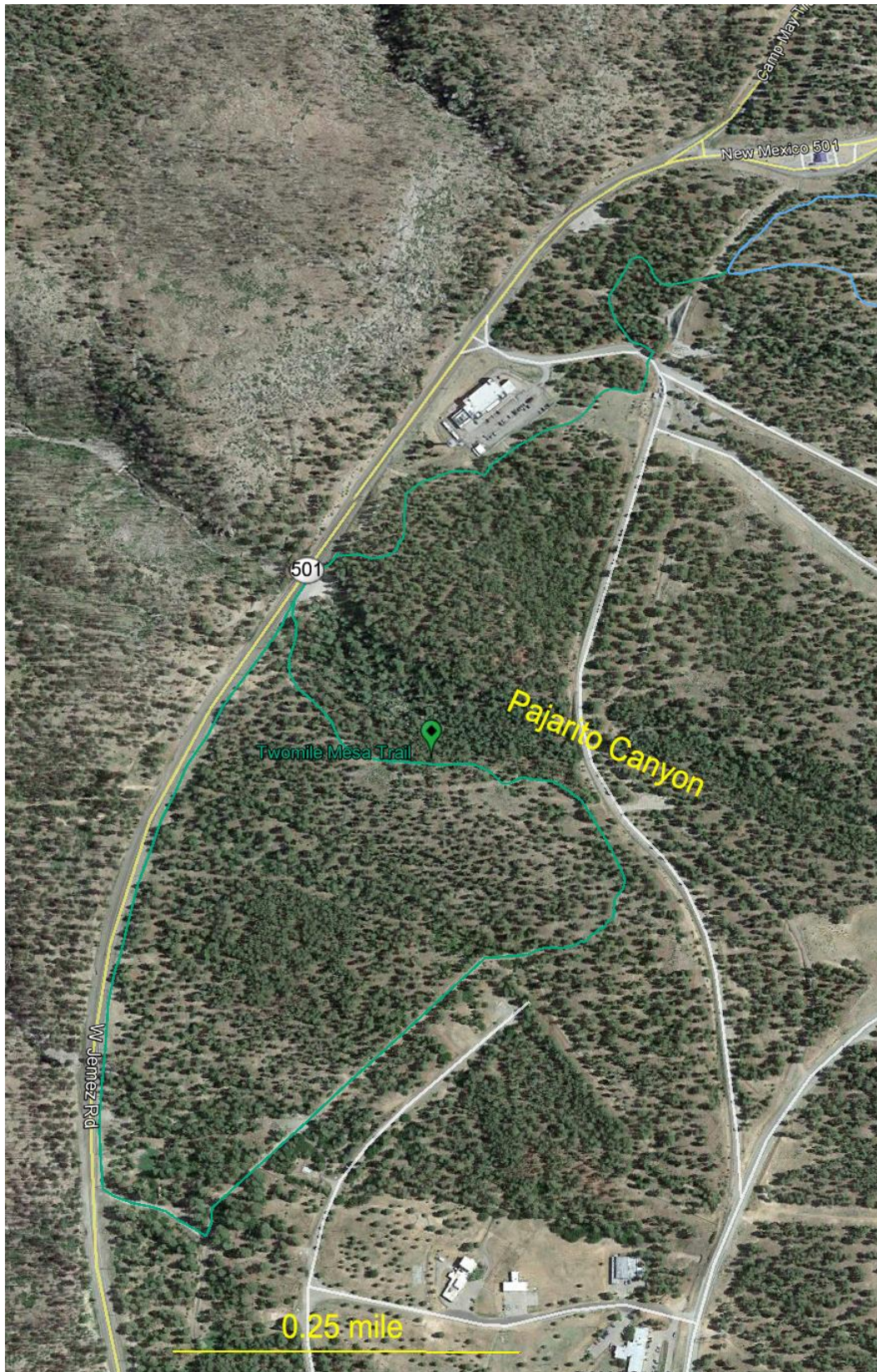


Figure 23. Twomile Mesa Trail shown in green.

## Ancho Canyon Trail

### Ancho Canyon Trail

***Description:***

This trail is located in TA-70 and is closed indefinitely. While the trailhead is easily seen from NM State Road 4, it is situated between TAs 33 and 39 which are restricted areas (Figure 24).

***Special Characteristics:***

None

***Special Restrictions/Hazards:***

This trail is currently closed to all entry for safety reasons because of the possible presence of unexploded ordnance in the canyon. This trail is prone to flash flooding, especially during the summer monsoon season.

***Current Trail Conditions:***

Current trail conditions are unknown.

***Recommended Actions:***

- If this trail reopens, perform a trail assessment.

# Ancho Canyon Trail

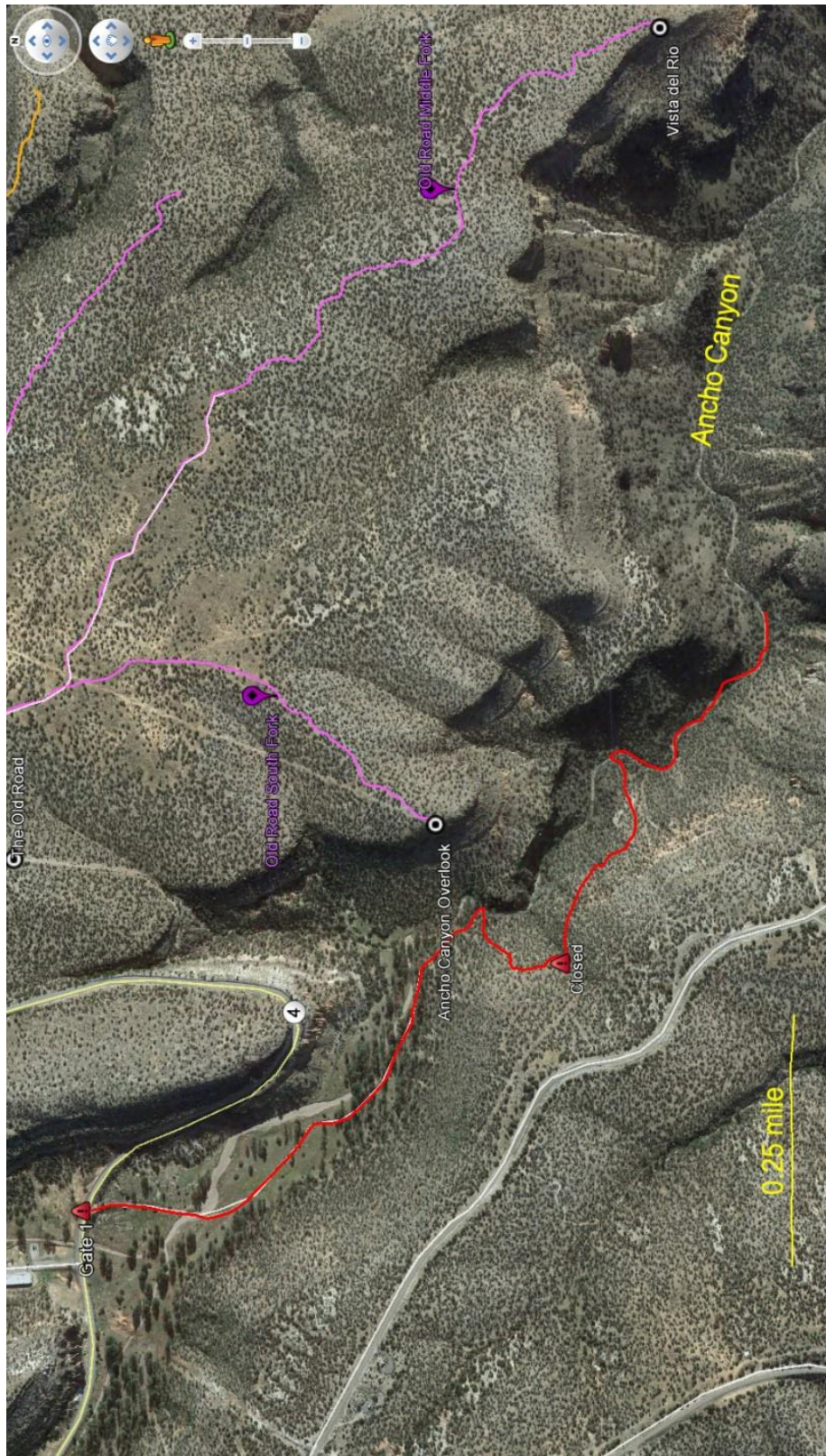


Figure 24. Ancho Canyon Trail shown in red.

## Ancho Springs Trail

### Ancho Springs Trail

#### ***Description:***

The Ancho Springs Trail is open to the public and accessed within TA-70 from near the eastern end of the Powerline Point Trail. The Ancho Springs Trail heads southeast traversing piñon-juniper savannah before dropping over the edge of White Rock Canyon (Figure 25). This is a steep and strenuous trail. The trail descends about 1000 feet in 1.82 miles to the banks of the Rio Grande.

#### ***Special Characteristics:***

This is a very steep and strenuous trail with little shade or cover. A 1.5-mile hike on the Powerline Point Trail is required to reach the Ancho Springs Trailhead. This is the only LANL trail that reaches the Rio Grande. Ancho canyon forms ancho rapids at this reach of the Rio Grande.

#### ***Special Restrictions/Hazards:***

The trail is steep, rocky, hot, and strenuous. Rattlesnakes, mountain lions, and bighorn sheep may be present. Unexploded ordnance may be present.

#### ***Current Trail Conditions:***

The trail is poorly defined in some areas. There is no informational kiosk at the Ancho Springs Trailhead but there is one at the Powerline Point Trailhead. There are no trail markers. Limited parking exists at Gate 4 on NM State Road 4.

#### ***Recommended Actions:***

- Perform a trail assessment
- Conduct necessary repairs and maintenance.
- Install trail markers where the Ancho Springs Trail intersects the River Trail.

# Ancho Springs Trail

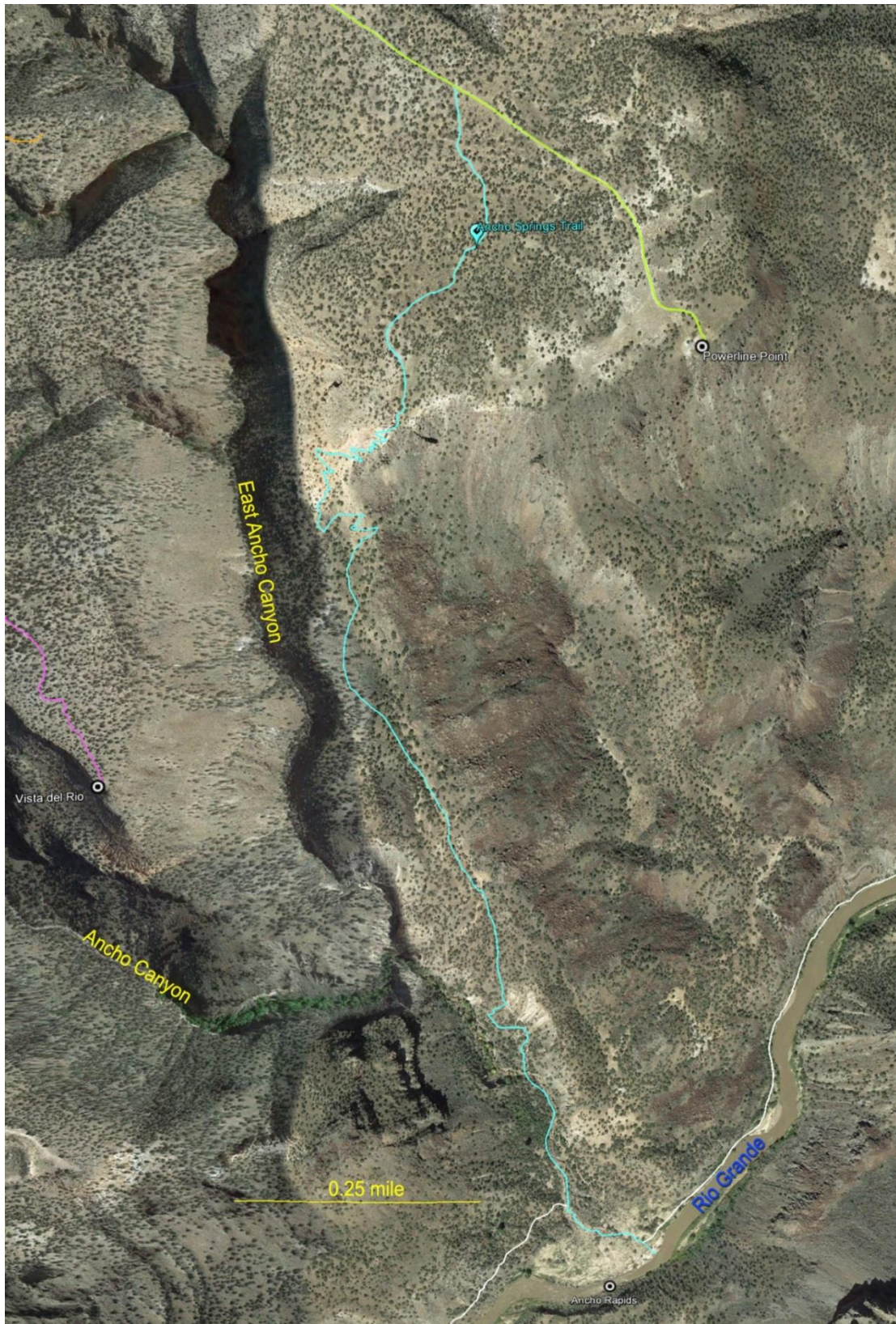


Figure 25. Ancho Springs Trail shown in light blue.



# Broken Mesa Trail

## Broken Mesa Trail

### ***Description:***

The Broken Mesa Trail is open to the public. The trail is accessed in TA-70 0.9 miles east of Gate 4 on the Powerline Point Trail. From this point the trail heads north and zig-zags over a narrow mesa (ridge) turning northwest and descending into Lower Water Canyon. The trail connects to the Lower Water Canyon Trail and the Lion Cave Trail (Figure 26). The trail is 1.4 miles long with an elevation change of 245 feet. The terrain is sparse piñon-juniper forest.

### ***Special Characteristics:***

There is a crude trail from the intersection of the Broken Mesa Trail and the Lower Water Canyon Trail that goes south-southeast up to the ridge of Broken Mesa. This trail is in poor condition and is contributing to erosion.

### ***Special Restrictions/Hazards:***

None

### ***Current Trail Conditions:***

Current trail conditions are unknown. There is no informational kiosk for this trail although there are kiosks at the trailheads of nearby trails. There are no trail markers.

### ***Recommended Actions:***

- Perform a trail assessment.
- Install trail markers.
- Close and cover (with brush) the crude trail from the intersection of the Broken Mesa Trail and the Lower Water Canyon Trail that goes south-southeast up to the ridge of Broken Mesa.

# Broken Mesa Trail

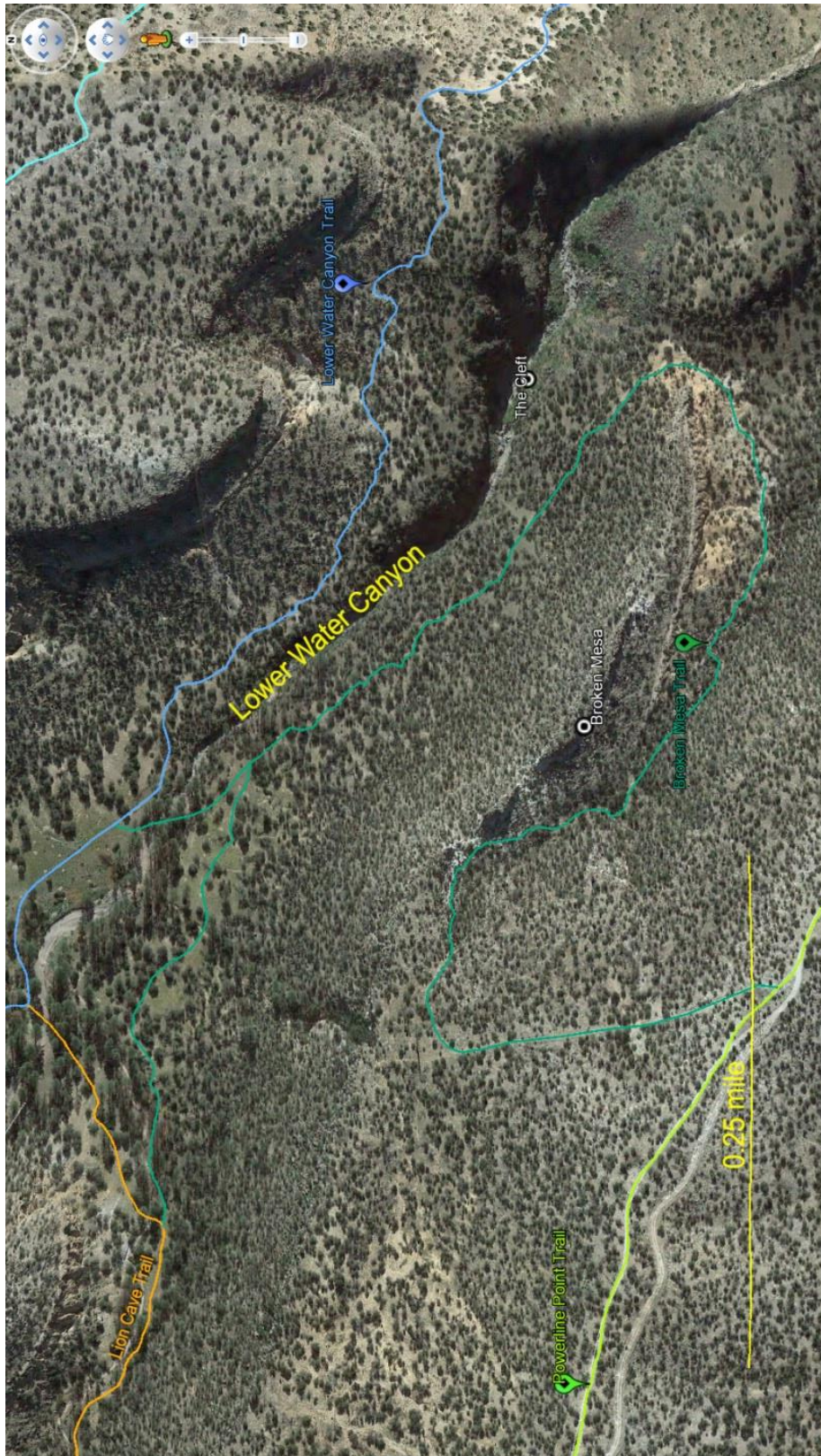


Figure 26. Broken Mesa Trail shown in green.

## Boundary Trail

### ***Description:***

The Boundary Trail roughly parallels NM State Road 4 through piñon-juniper forest in TA-71 from Potrillo Canyon west to Water Canyon. Access to the Boundary Trail can be gained along NM State Road 4 from the Lower Water Canyon Spur Trailhead (Gate 7), The Potrillo Mesa Trailhead (Gate 8A), The Water Canyon Overlook Trail (Gate 10), and the Potrillo Canyon Loop (Gate 11), (Figure 27). The trail is 1.24 miles long with an elevation change of 35 feet.

### ***Special Characteristics:***

None

### ***Special Restrictions/Hazards:***

None

### ***Current Trail Conditions:***

The Boundary Trail is in good condition. There are no informational kiosks for this trail but other nearby trailheads do have kiosks. There are no trail markers.

### ***Recommended Actions:***

- Perform a trail assessment.
- Install trail markers.

# Boundary Trail

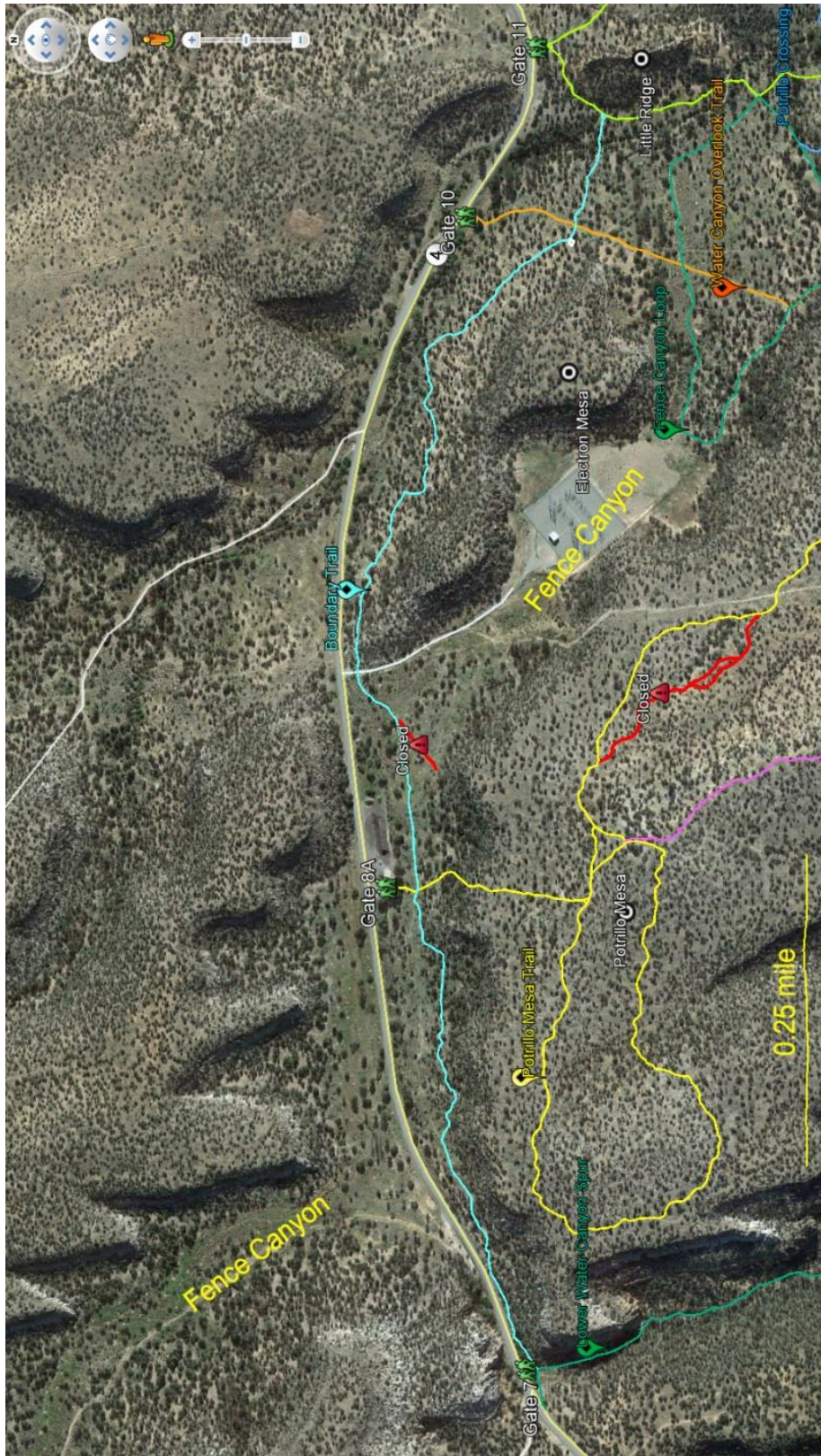


Figure 27. Boundary Trail is shown in light blue.

## Fence Canyon Loop

### Fence Canyon Loop

***Description:***

The Fence Canyon Loop in TA-71 is open to the public. This easy trail is 0.87 mile long with an elevation change of 50 feet through piñon-juniper-ponderosa forest. Access to the trail is from the northwestern end of the Potrillo Loop and from the Water Canyon Overlook Trail (Figure 28).

***Special Characteristics:***

None

***Special Restrictions/Hazards:***

None

***Current Trail Conditions:***

The trail is in fair condition but with numerous areas of erosional damage. This trail has no informational kiosk or trail markers. There are kiosks at nearby trailheads.

***Recommended Actions:***

- Perform a trail assessment.
- Install trail markers.

# Fence Canyon Loop

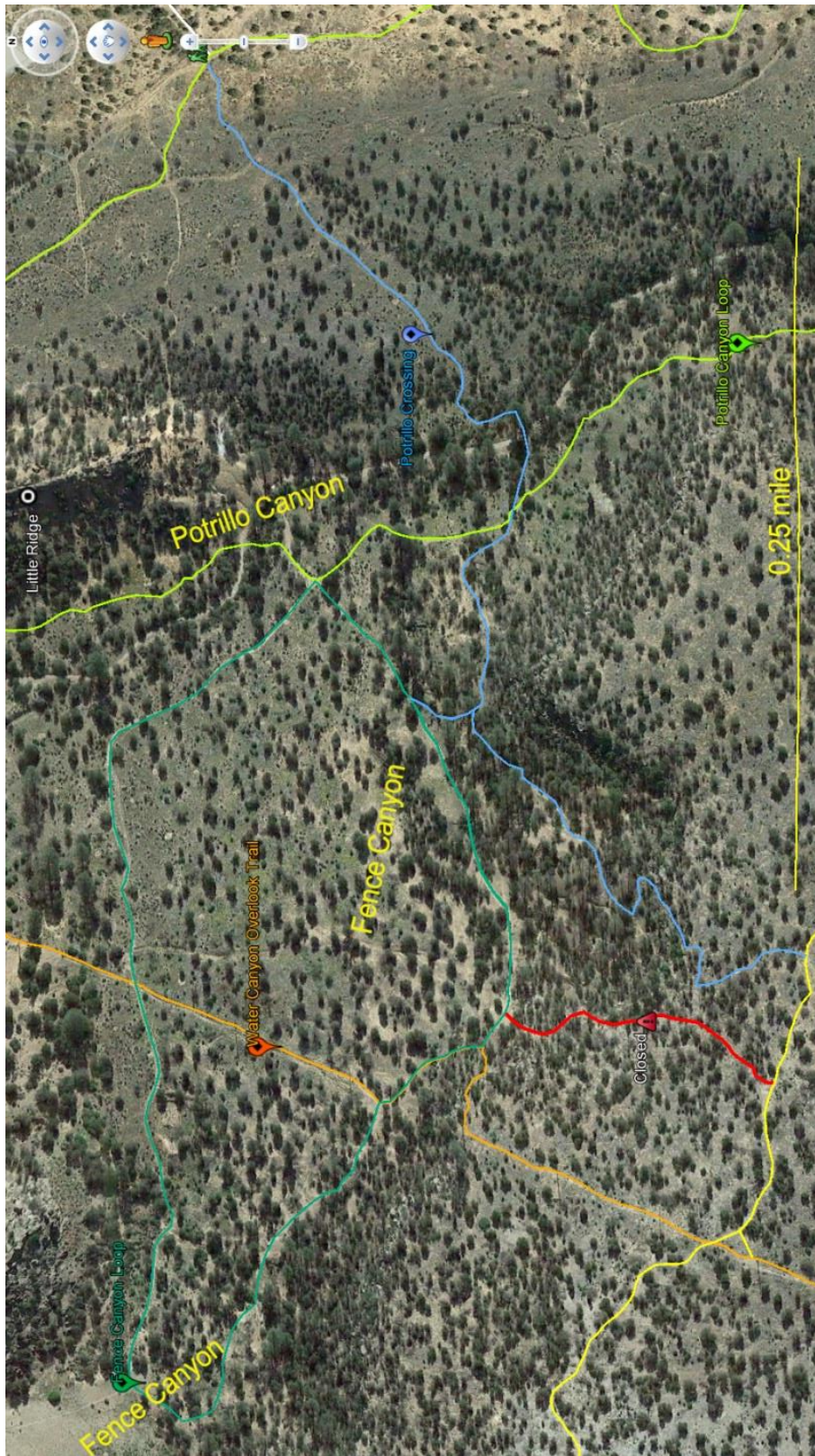


Figure 28. Fence Canyon Loop is shown in green.

## Knife Edge Trail

### Knife Edge Trail

***Description:***

The Knife Edge Trail is open to the public. The trail begins in TA-70 at Gate 3 on NM State Road 4 where there is an information kiosk and heads southeast through sparse piñon-juniper forest to a narrow ridge between two forks of East Ancho Canyon (Figure 29). The trail is 1.23 miles long with an elevation change of 190 feet. The trail follows an old road for most of the way.

***Special Characteristics:***

None

***Special Restrictions/Hazards:***

None

***Current Condition:***

The trail is in good shape with little erosion. At the western edge of the “knife edge” the trail is a little hard to see. Trail markers are not necessary since there are no trail intersections.

***Recommended Actions:***

- Perform a trail assessment.
- Improve access road and parking area.
- Improve the western end of the “knife edge” part of the trail.

# Knife Edge Trail

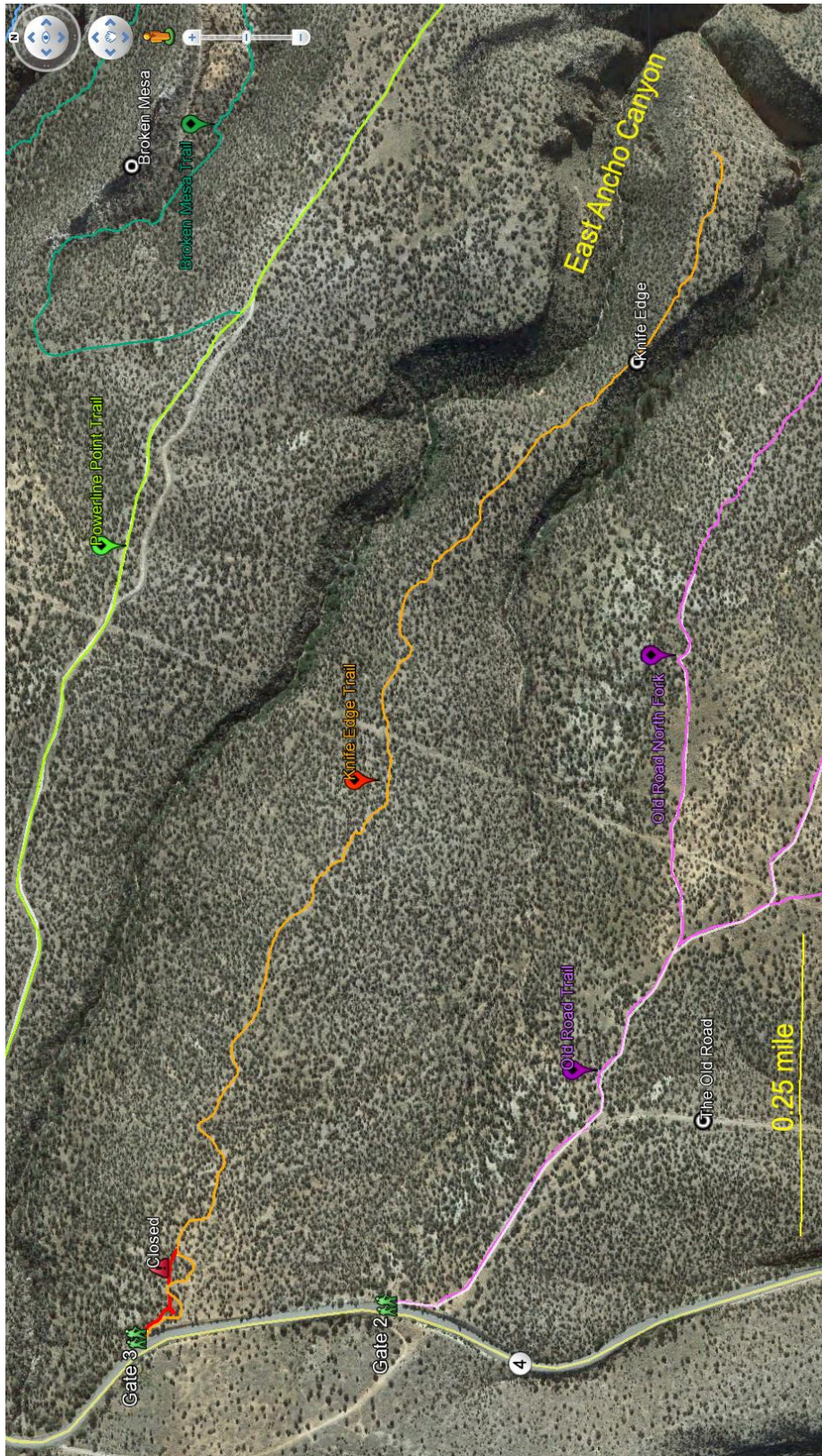


Figure 29. Knife Edge Trail is shown in orange.



## Lion Cave Trail

### ***Description:***

The Lion Cave Trail is open to the public. This trail starts in TA-70 and follows a canyon streambed below Jagged Mesa from Gate 4A on NM State Road 4 to its intersection with the Lower Water Canyon Trail in Lower Water Canyon (Figure 30). The trail is 1.18 miles long with an elevation change of 250 feet. The trail can also be accessed from Gate 5 on NM State Road 4 since it connects with Lower Water Canyon via a short trail running parallel and above the highway. There is limited parking in pullouts on NM State Road 4 near the trailhead.

### ***Special Characteristics:***

This is a particularly scenic trail. The canyon contains piñon-juniper-ponderosa trees and scenic cliffs of volcanic tuff.

### ***Special Restrictions/Hazards:***

This trail follows a stream bed for most of its length and is prone to flash flooding, especially during the summer monsoon season.

### ***Current Trail Conditions:***

This trail is in fair condition with many areas of the trail covered by sediment deposited by floods in 2013. There are a few areas where erosional damage needs to be repaired. Some dead trees have fallen across the trail and need to be removed. This trail has an informational kiosk at Gate 4A on NM State Road 4. There are no trail markers.

### ***Recommended Actions:***

- Perform a trail assessment.
- Conduct trail maintenance and repairs, including access walk from NM State Road 4.
- Install trail markers.

# Lion Cave Trail

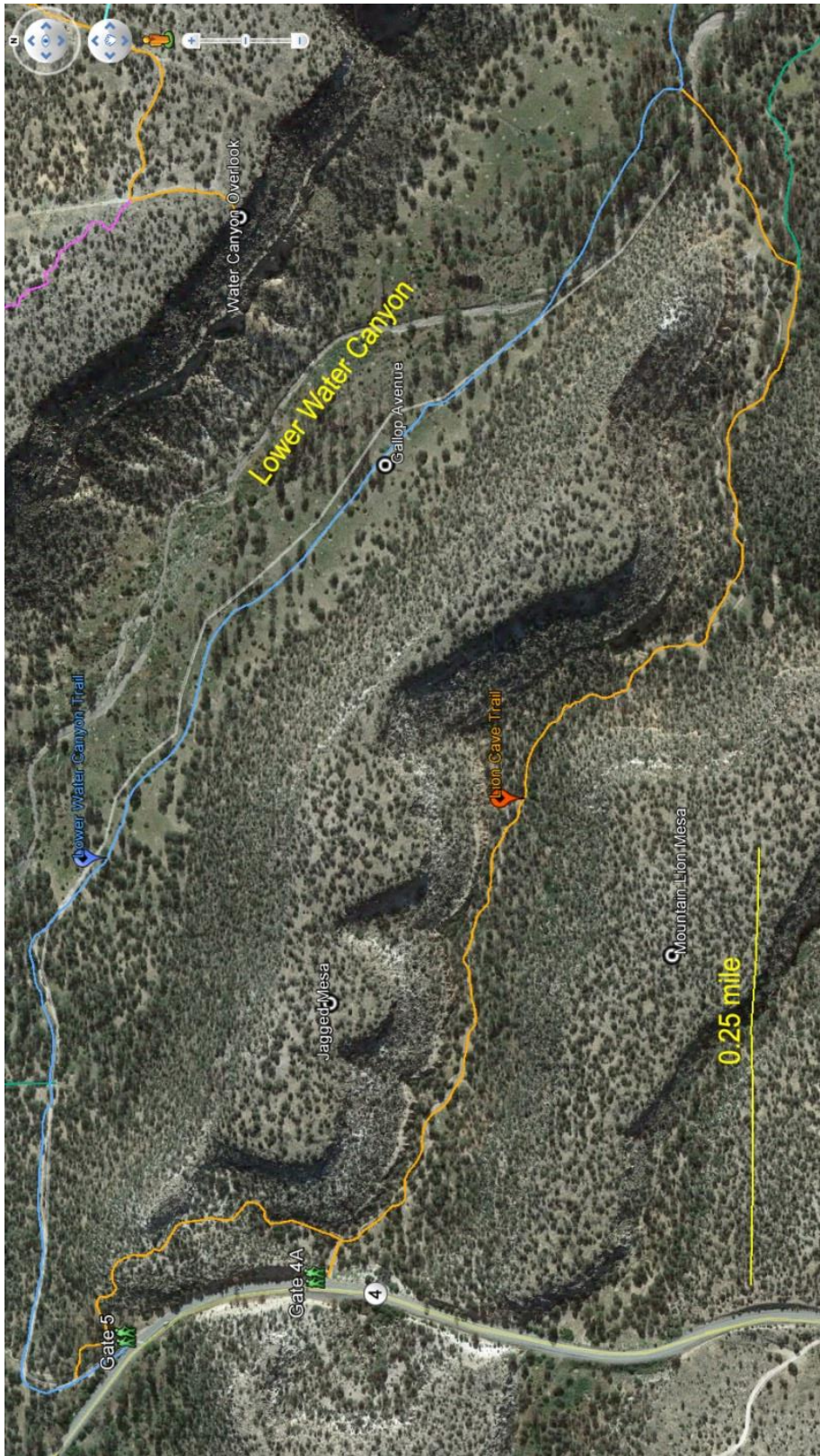


Figure 30. Lion Cave Trail is shown in orange.

## Lower Water Canyon Trail

### Lower Water Canyon Trail

#### *Description:*

The Lower Water Canyon Trail is open to the public. This very popular trail along the boundary between TAs 70 and 71 follows Water Canyon from Gate 5 on NM State Road 4 eastward to its intersection with the Ruin Mesa Trail and the Potrillo Canyon Loop in Lower Water Canyon (Figures 31 and 32). The trail is 2.13 miles long with an elevation change of 210 feet. The trail follows an old road for roughly half its length. The canyon contains piñon-juniper-ponderosa trees, wildflower-filled meadows, and scenic cliffs of volcanic tuff. The Broken Mesa Trail and the Lion Cave Trail both connect with the Lower Water Canyon Trail at about the midpoint of the trail. The Lower Water Canyon Spur reaches the Lower Water Canyon Trail at about 0.2 mile from gate.

#### *Special Characteristics:*

None

#### *Special Restrictions/Hazards:*

There is no improved parking area for this trail and parking is dangerous because of the loose gravel, erosion and trenching, and limited sight distance on NM State Road 4. This canyon is prone to flash flooding, especially during the summer monsoon season.



**Figure 31. Flood debris piled high in Lower Water Canyon in 2013.**

## Lower Water Canyon Trail

### ***Current Trail Conditions:***

The trail is in good condition. The trail follows an access road that services a stream gauge station. Parts of this road are entrenched and actively eroding. A few trees have fallen across the trail but because of the popularity of this trail, new trails around the fallen trees have already been established. This trail has an informational kiosk at Gate 5 on NM State Road 4. There are no trail markers.

### ***Recommended Actions:***

- Perform a trail assessment.
- Repair access road from Gate 5 for 0.3 miles to the gauge station.
- Repair erosional damage at NM State Road 4/Gate 5 access road and create a new parking area for this trail adjacent to NM State Road 4. This parking area should be larger than most because of the popularity of this trail and frequent horseback riding.
- Install trail markers.
- Remove fallen trees from trail and discourage development of alternate trails.

# Lower Water Canyon Trail

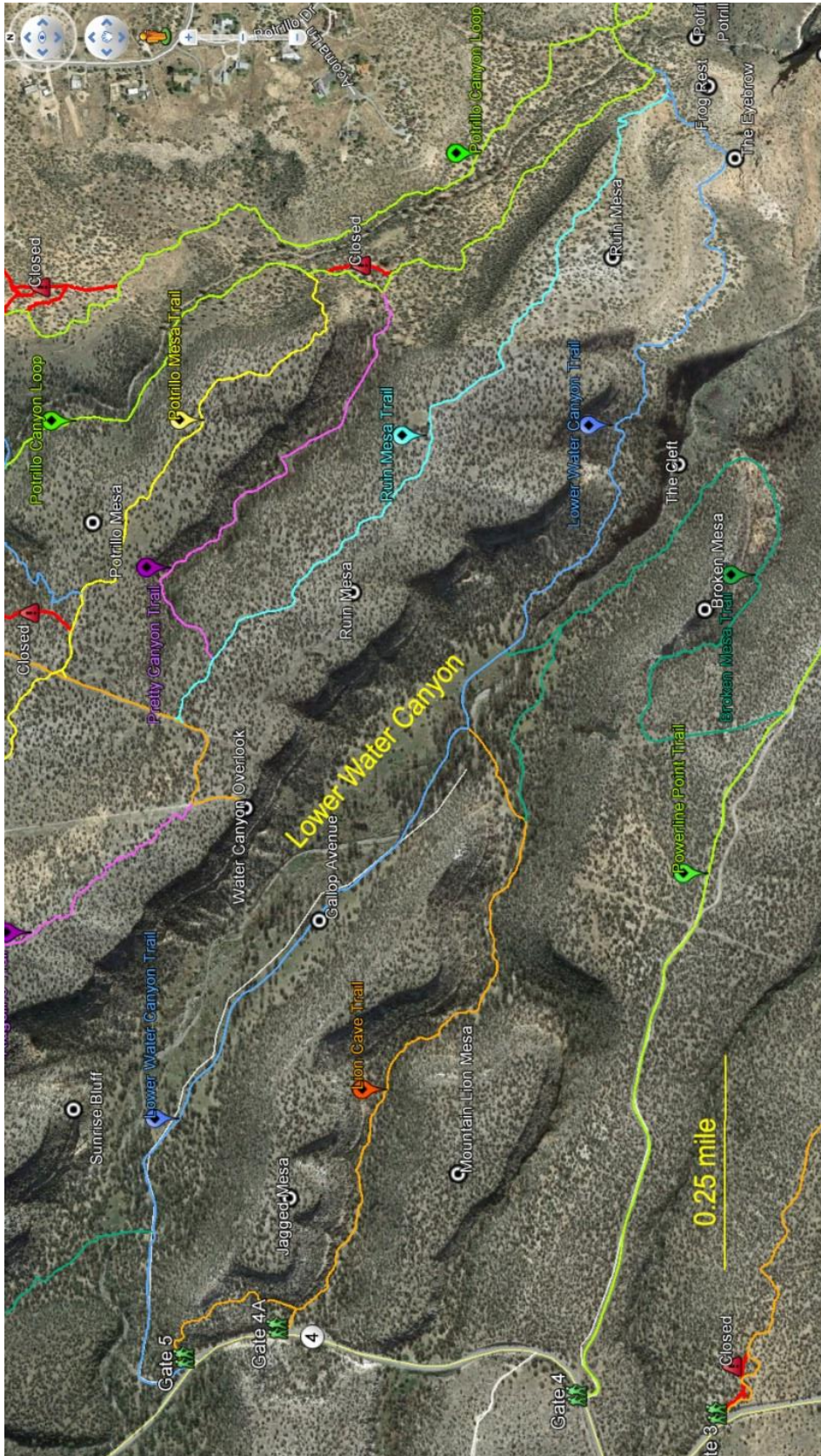


Figure 32. Lower Water Canyon Trail is shown in blue.

### Lower Water Canyon Spur

***Description:***

This trail is open to the public. The trail begins in TA-71 at Gate 7 on NM State Road 4 and heads south for 0.52 mile dropping 165 feet to its intersection with the Lower Water Canyon Trail about 0.25 mile east of Gate 5. The trail follows a small side canyon and passes through piñon-juniper-ponderosa forest. Gate 7 also provides access to the Boundary Trail (Figure 33).

***Special Characteristics:***

There are scenic rock formations including “Bird Rock” and “The Needle” on this trail.

***Special Restrictions/Hazards:***

This trail is prone to flash flooding, especially during the summer monsoon season. There is no designated parking area although there is some space to park on both sides of NM State Road 4. Access from the road is steep and uneven.

***Current Trail Conditions:***

This trail is in good condition. There is an informational kiosk at Gate 7 but there are no trail markers. The access road from NM State Road 4 to the gate and kiosk is heavily damaged by erosion; in some places 3-foot-deep ruts have formed. Vehicles using this short, steep access road would likely get stuck.

***Recommended Actions:***

- Perform a trail assessment.
- Install trail markers at the junction with the Lower Water Canyon Trail.
- Improve access by foot from NM State Road 4 pullout area.

# Lower Water Canyon Spur



Figure 33. Lower Water Canyon Spur Trail is shown in green.

# Old Road Trail

## Old Road Trail

### ***Description:***

This trail is open to the public. The trail begins in TA-70 at Gate 2 on NM State Road 4 and heads southeast through sparse piñon-juniper forest. At about 0.4 mile the trail splits and the north fork of the Old Road Trail goes left for about another 0.63 mile to the end of a mesa. The trail splits again about 0.1 mile from where the north fork branches off. The south fork heads south for about another 0.43 mile to the Ancho Canyon overlook. The middle fork of the trail heads southeast for another 1.0 mile to the Vista del Rio overlook above the Rio Grande (Figure 34). The total change in elevation is 185 feet. Most of the trails follow old roads.

### ***Special Characteristics:***

Part of this trail follows a historic road.

### ***Special Restrictions/Hazards:***

None

### ***Current Trail Conditions:***

The three forks of this trail are all in good condition. There is an informational kiosk at Gate 2 on NM State Road 4. There are no trail markers. There are areas where bonfires and parties have been held in the past. These areas contain large fire rings and large amounts of broken glass. There are some areas of erosional damage.

### ***Recommended Actions:***

- Perform a trail assessment.
- Install trail markers where trails diverge.
- Improve access road and parking area.
- Clean up broken glass and fire rings.



# Old Road Trail

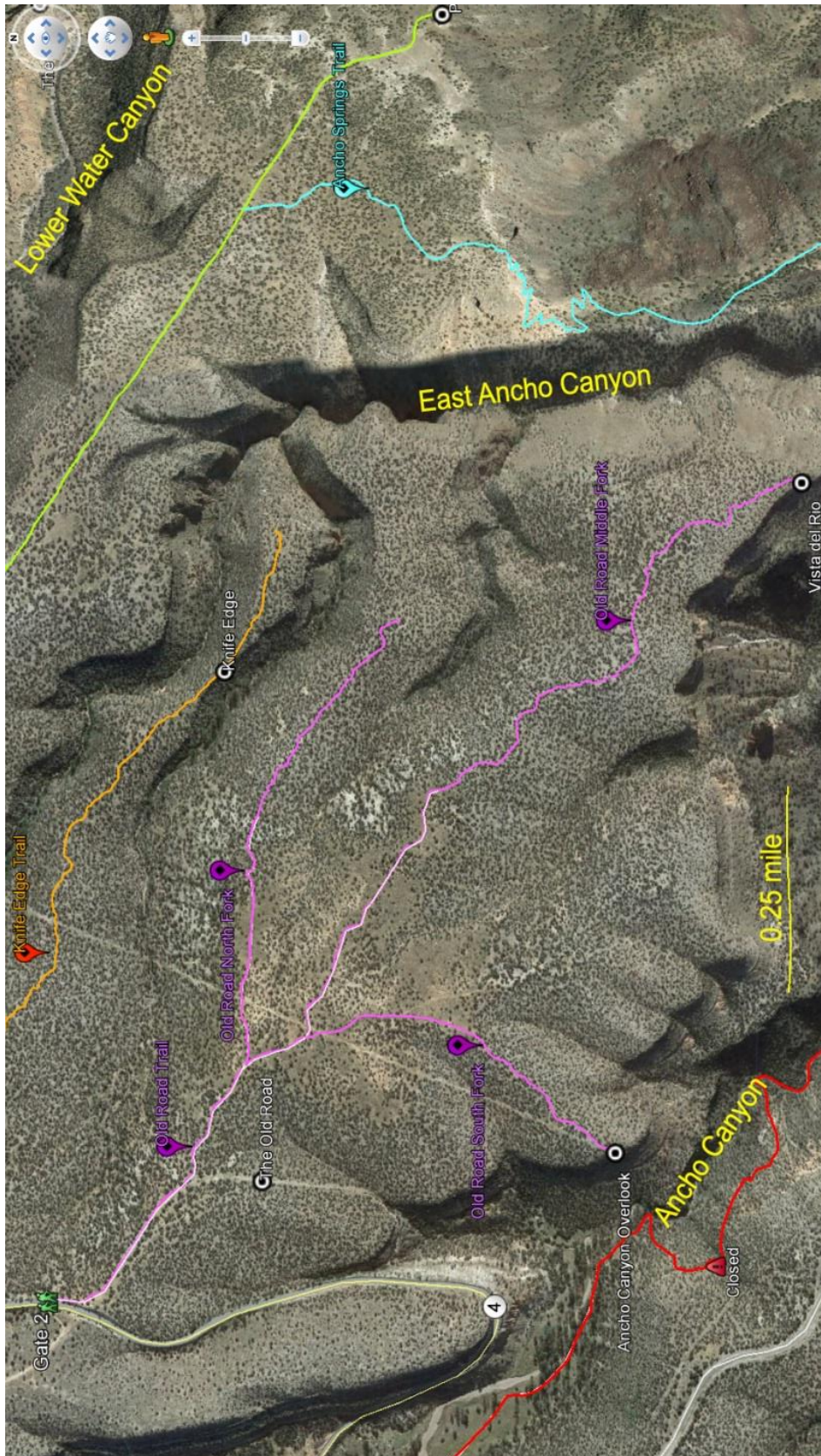


Figure 34. Old Road Trail is shown in purple.

# Potrillo Canyon Loop

## Potrillo Canyon Loop

### *Description:*

This popular trail is open to the public. The trail starts in TA-71 at Gate 11 on NM State Road 4 and makes a long loop around Potrillo Canyon. On the northwestern end, in addition to the Gate 11 access, there is access via an equestrian easement from Monte Rey South Drive 0.2 mile from NM State Road 4 on the southwest side of the road. At the southeastern end there is access on the southwest side of Potrillo Drive 0.35 mile from the intersection of Monte Rey South and Potrillo Drive. There is also access from the southwest side of Estante Way 0.3 miles from the intersection of Potrillo Drive and Estante Way. The trail follows the usually dry wash of Potrillo Canyon through sparse piñon-juniper-ponderosa forest. Numerous trails connect to the Potrillo Canyon Loop including Boundary Trail, Fence Canyon Loop, Potrillo Crossing, Potrillo Mesa Trail, Pretty Canyon Trail, and the Lower Water Canyon Trail. The Potrillo Canyon Loop is 3.33 miles with an elevation change of 180 feet. The trail is popular with local equestrians (Figures 35 and 36).



**Figure 35. New emergency and equestrian gates and informational kiosk installed at the Potrillo Canyon Loop trailhead, Gate 11 on NM State Road 4.**

### *Special Characteristics:*

At the southeastern end, the trail is perched high above the canyon floor with great views to the south.

### *Special Restrictions/Hazards:*

There is very limited parking at Gate 11 and the three other access points described above. This canyon is prone to flash flooding, especially during the summer monsoon season.

## Potrillo Canyon Loop

### ***Current Trail Conditions:***

The trail is in good condition with a few areas of erosional damage. There are informational kiosks at Gate 11 and at the Monte Rey South and Estante Way access points. There are numerous unofficial trails in the area and no trail markers. The intersection of the Potrillo Mesa Trail and the Potrillo Canyon Loop is easy to miss.

### ***Recommended Actions:***

- Perform a trail assessment.
- Install trail markers.
- Cover unofficial trails with brush to discourage use and establish official trails.
- The intersection of the Potrillo Mesa Trail and the Potrillo Canyon Loop is easy to miss and needs to be cleaned up and marked.

# Potrillo Canyon Loop

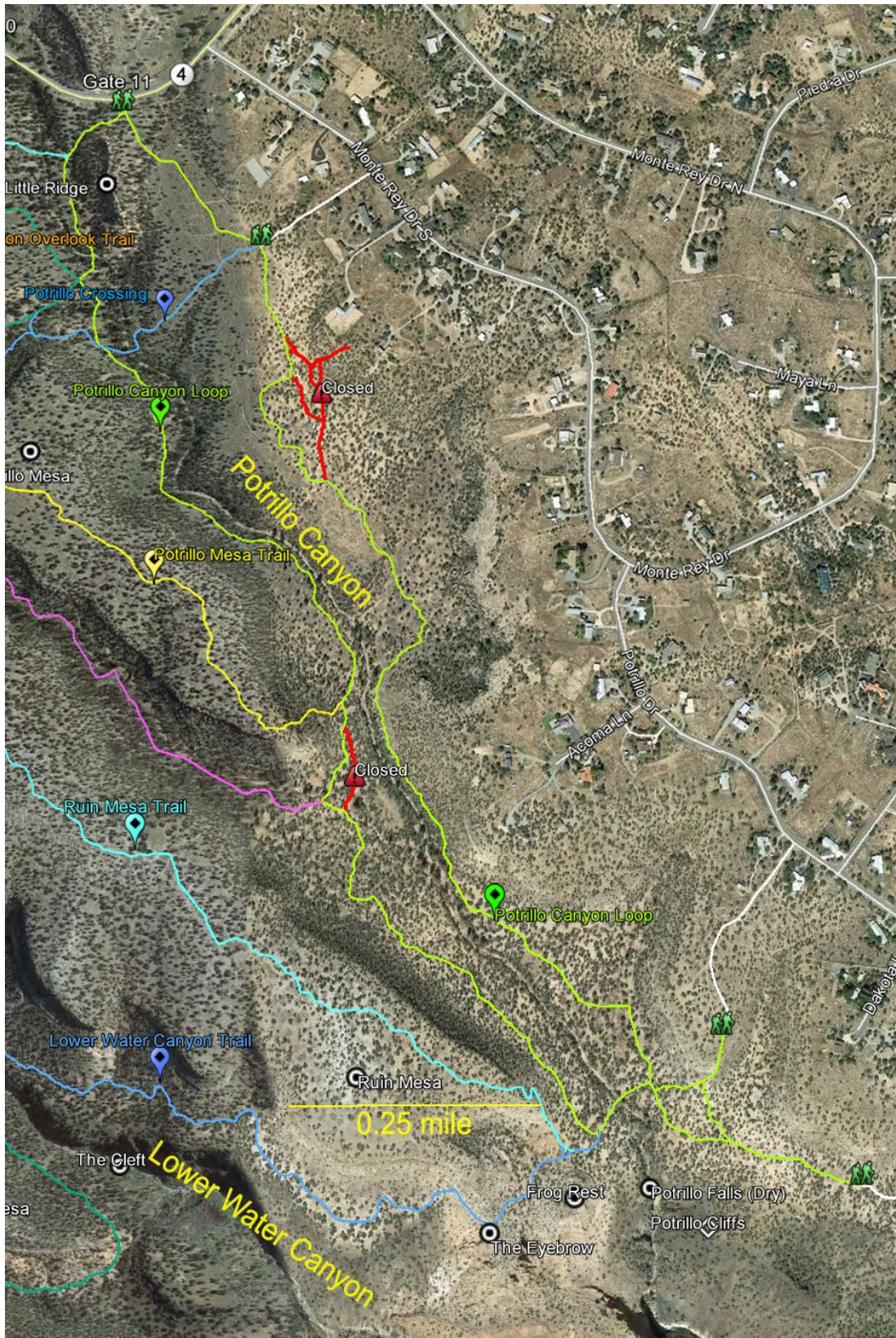


Figure 36. Potrillo Canyon Loop Trail is shown in green.

### Potrillo Crossing

***Description:***

This trail in TA-71 is open to the public. Access is from Monte Rey South Drive 0.2 mile from NM State Road 4 on the southwest side of the road through a well-worn equestrian easement. The trail heads southwest through sparse piñon-juniper forest crossing the Potrillo Canyon Loop and connecting to the Fence Canyon Loop and ending at the Potrillo Mesa Trail (Figure 37). The trail is 0.54 mile long with an elevation change of 90 feet.

***Special Characteristics:***

None

***Special Restrictions/Hazards:***

None

***Current Trail Conditions:***

Current trail conditions are unknown. There is an informational kiosk at the Monte Rey South access point at the end of the equestrian easement. There are no trail markers.

***Recommended Actions:***

- Perform a trail assessment.
- Install trail markers.

# Potrillo Crossing

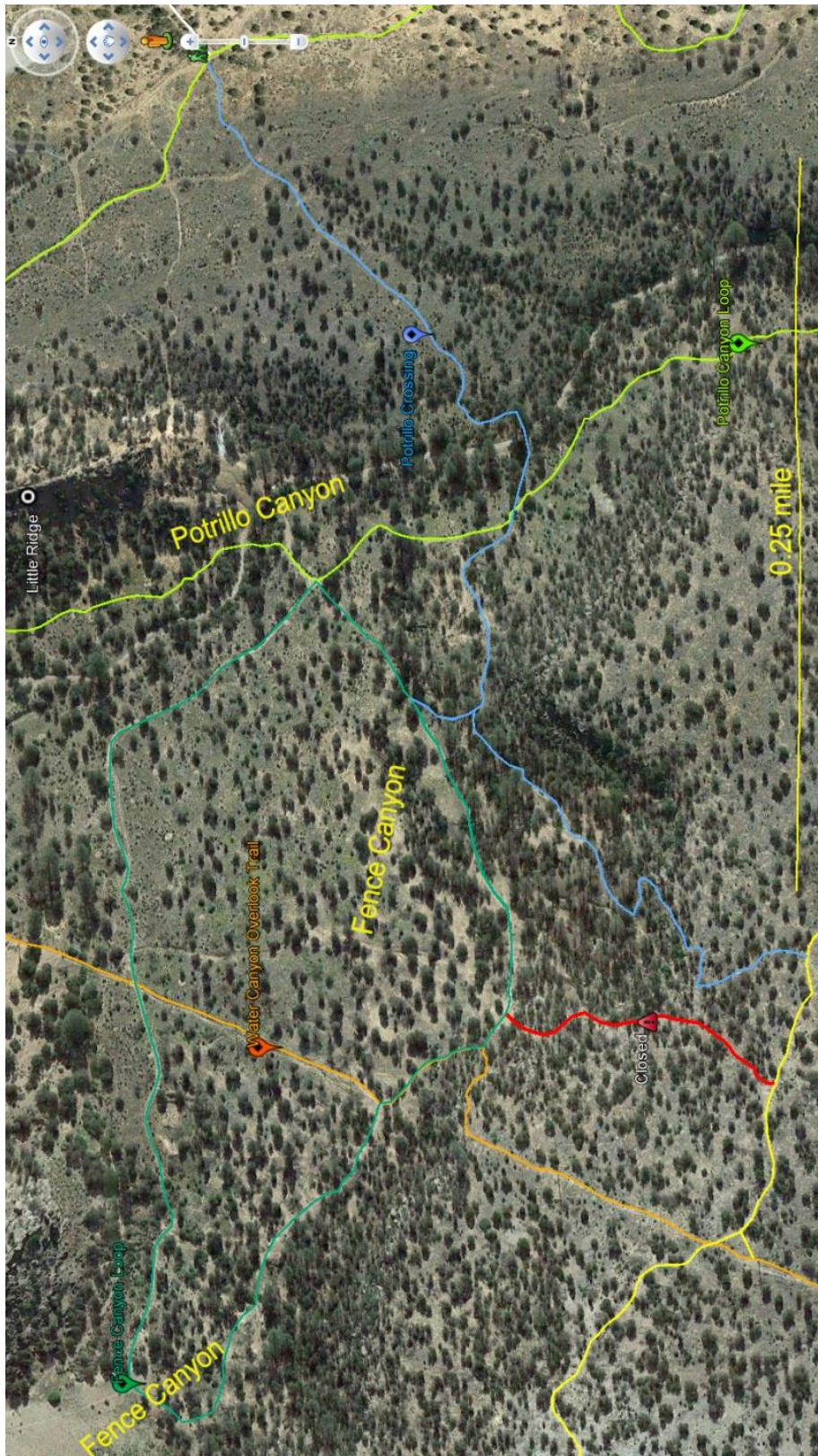


Figure 37. Potrillo Crossing Trail is shown in blue.

# Potrillo Mesa Trail

## Potrillo Mesa Trail

### ***Description:***

This trail is open to the public. The Potrillo Mesa Trail in TA-71 is accessed from Gate 8A on NM State Road 4 where there is an information kiosk. The northwest portion of the trail is a loop on a mesa top. Southeast of Gate 8A the trail heads southeast to its intersection with the Potrillo Canyon Loop (Figure 38). The trail is 2.57 miles in length and has an elevation change of 233 feet. The trail is mostly on mesa tops and passes through sparse piñon-juniper forest. Numerous trails connect to the Potrillo Mesa Trail including Boundary Trail, Ridgeline Trail, Water Canyon Overlook Trail, Potrillo Crossing, and the Potrillo Canyon Loop.

### ***Special Characteristics:***

This trail is popular with equestrians and mountain bikers.

### ***Special Restrictions/Hazards:***

None

### ***Current Condition:***

Most of the trail is in good condition. The southeast end of the trail where it connects to the Potrillo Canyon Loop has some erosional damage where it descends the mesa, and the intersection is easy to miss. The parking area is large and also used by the NM Department of Transportation for storing asphalt, fill dirt, crushed tuff, and other materials. Some dumping occurs behind these piles. The boundary fence is down in two locations behind the asphalt piles.

### ***Recommended Actions:***

- Perform a trail assessment.
- Create a short, well-marked trail suitable for horses, mountain bikes, and hikers going up to the top of the mesa from Gate 8A.
- Install trail markers.
- Repair erosion damage at southeast end of trail.
- Work with the NM Department of Transportation to fence off the material storage area (to reduce the dumping of trash) and also create an official trailhead parking area at the west end.
- Repair damaged boundary fence.

# Potrillo Mesa Trail

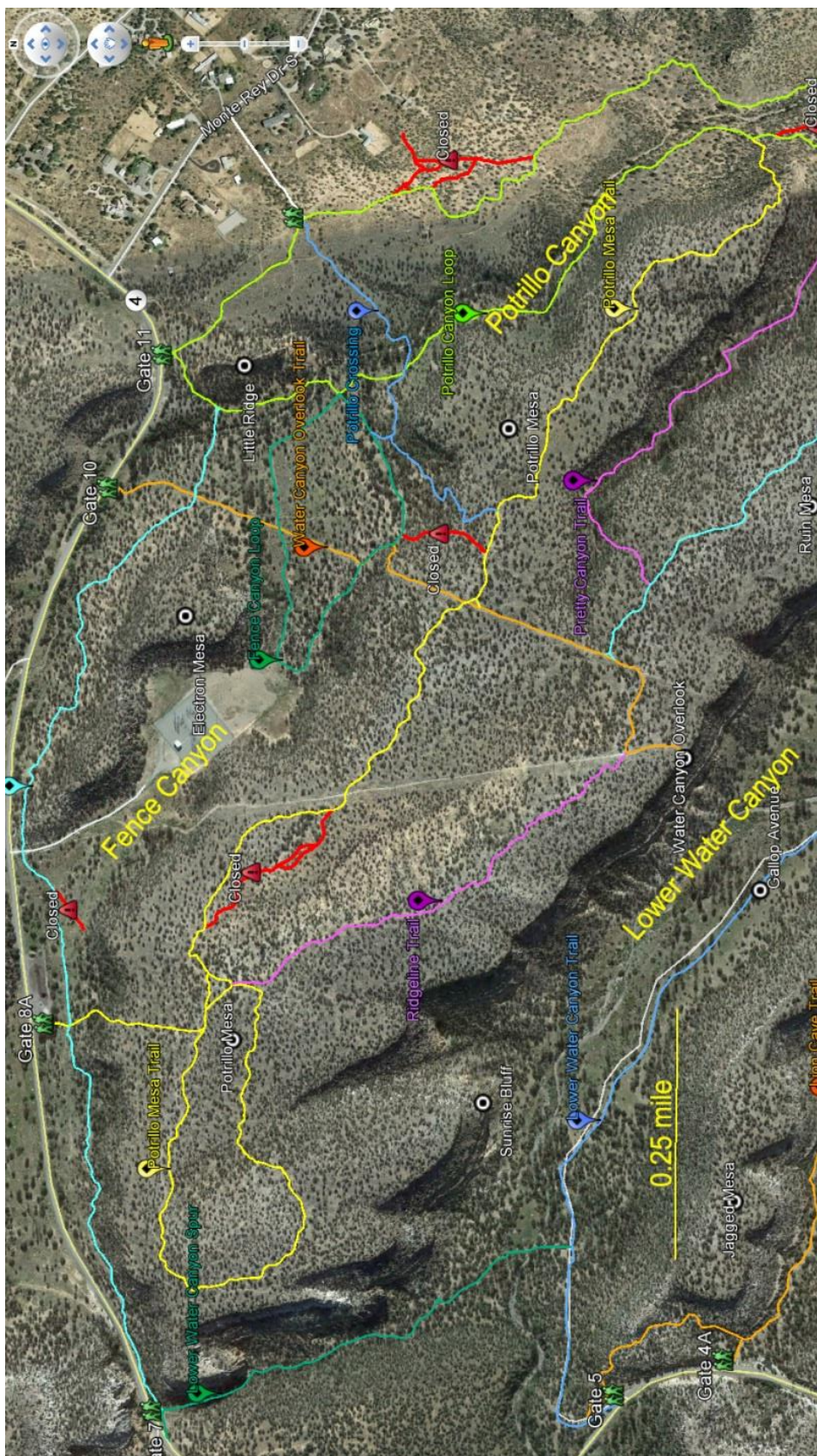


Figure 38. Potrillo Mesa Trail is shown in yellow.



## Powerline Point Trail

### Powerline Point Trail

***Description:***

This popular trail in TA-70 is open to the public. Access is from Gate 4 on NM State Road 4. The trail heads southeast following an access road for the powerline. The Broken Mesa Trail intersects at about 1.0 mile from NM State Road 4 (Figure 39). The trail passes through sparse piñon-juniper forest on mesa tops for 1.88 miles to Powerline Point overlooking White Rock Canyon and the Rio Grande. Elevation change is 180 feet. The trail intersects the Ancho Springs Trail at about 1.5 miles from NM State Road 4.

***Special Characteristics:***

The first mile of trail has been cleared of vegetation in a 40-foot-wide swath for use as a fire break.

***Special Restrictions/Hazards:***

None

***Current Trail Conditions:***

The trail is in good condition. There is an informational kiosk at Gate 4 on NM 4. There are no trail markers.

***Recommended Actions:***

- Perform a trail assessment.
- Improve access road and parking area.
- Install trail markers at intersection with Ancho Springs Trail.

# Powerline Point Trail



Figure 39. Powerline Point Trail is shown in green.

# Pretty Canyon Trail

## Pretty Canyon Trail

### ***Description:***

This trail is open to the public. The trail is in TA-71 and can be reached from the Ruin Mesa Trail approximately 0.1 mile southeast of the intersection of the Water Canyon Overlook Trail and the Ruin Mesa Trail. Alternatively, the trail can be reached from the Potrillo Canyon Trail approximately 0.1 mile south of the intersection of the Potrillo Mesa Trail and the Potrillo Canyon Loop (Figure 40). The trail follows a scenic small canyon between Ruin Mesa and Potrillo Mesa passing through sparse piñon-juniper-ponderosa forest. The trail is 0.69 mile long and has an elevation change of 135 feet.

### ***Special Characteristics:***

None

### ***Special Restrictions/Hazards:***

This trail is prone to flash flooding, especially during the summer monsoon season.

### ***Current Trail Conditions:***

The trail is in good condition although there are a few areas with erosional damage. There is no information kiosk for this trail and no trail markers.

### ***Recommended Actions:***

- Perform a trail assessment.
- Install trail markers where trail intersects other trails.

# Pretty Canyon Trail

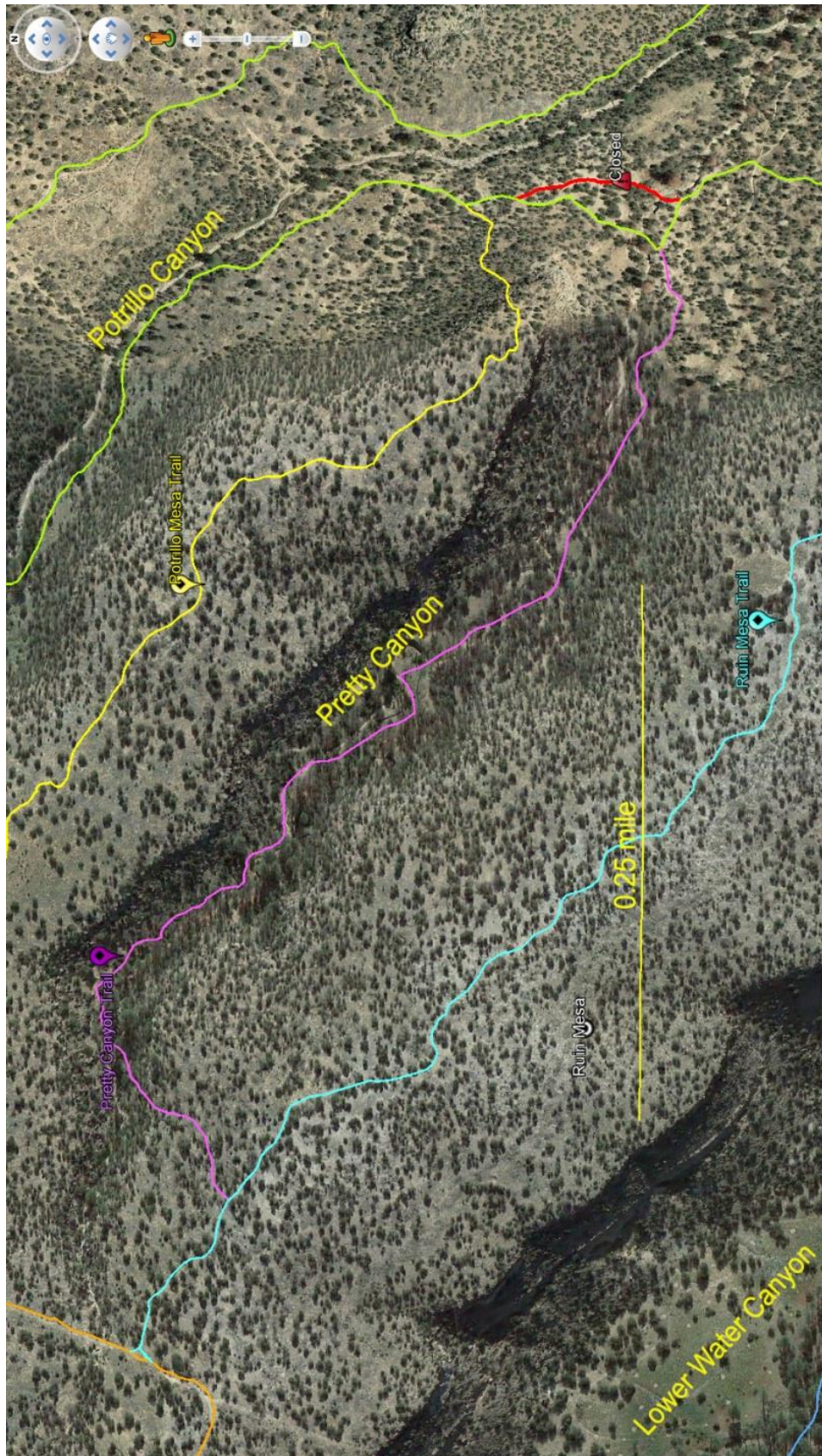


Figure 40. Pretty Canyon Trail is shown in purple.

### Ridgeline Trail

***Description:***

This trail is open to the public. The trail begins in TA-71 south of Gate 8A on NM State Road 4 on the Potrillo Mesa Trail at the east end of the loop. From there the trail heads southeast along a small ridge through sparse piñon-juniper forest (Figure 41). The trail is 0.53 mile long with an elevation change of 80 feet. This trail intersects the Water Canyon Overlook Trail at the southeast end.

***Special Characteristics:***

None

***Special Restrictions/Hazards:***

None

***Current Trail Conditions:***

The trail is in good condition although it is hard to discern in some places. The trail is nonexistent for the last 100 yards before reaching the Water Canyon Overlook Trail. There is a cultural site near the southeast end of the trail that will need to be avoided. There is no informational kiosk for this trail and there are no trail markers.

***Recommended Actions:***

- Perform a trail assessment.
- Install trail markers at intersections with other trails.
- Establish the last 100 yards of the trail using hand tools.
- Protect cultural site near the southeast end of the trail.

# Ridgeline Trail

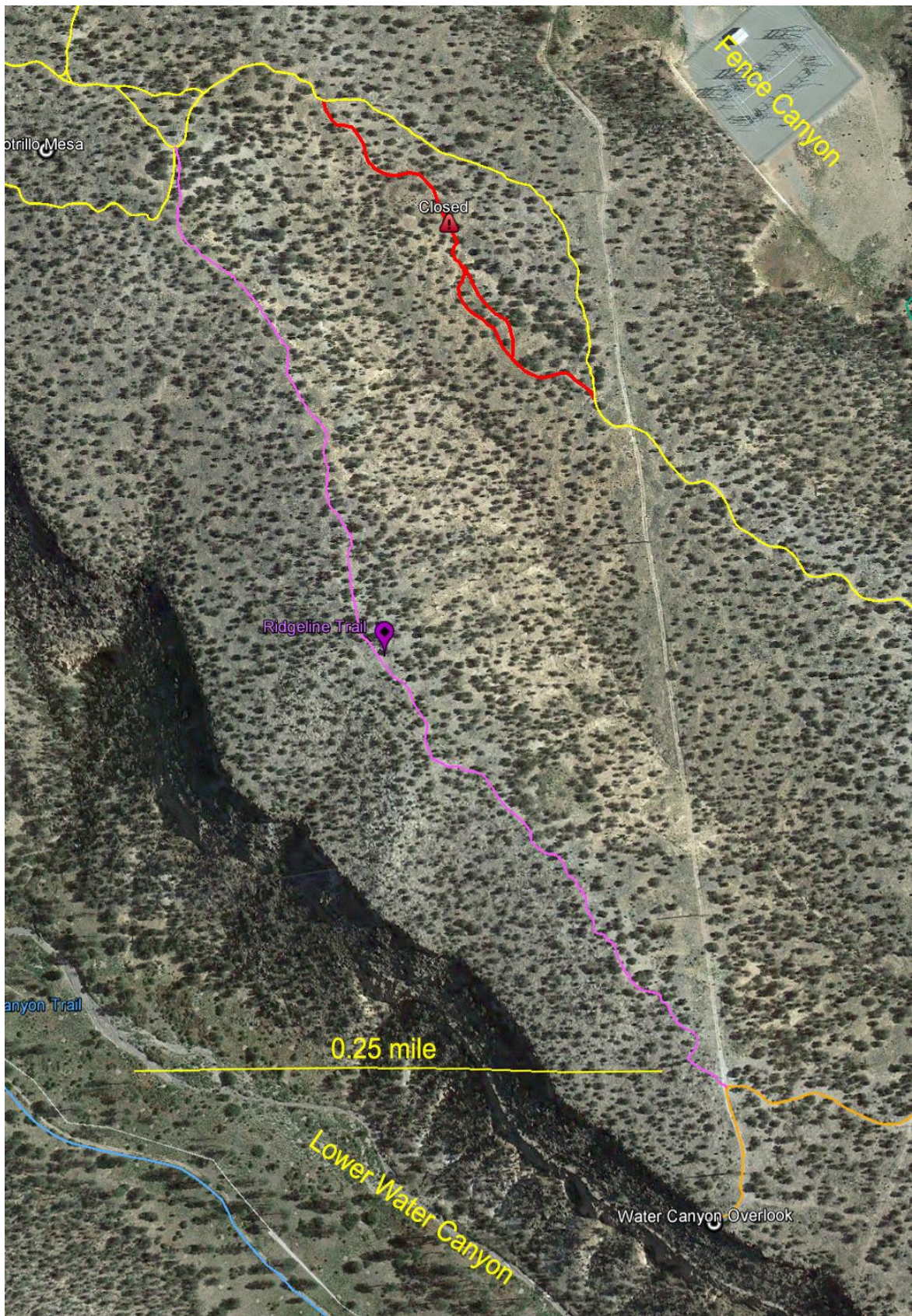


Figure 41. Ridgeline Trail is shown in purple.

### Ruin Mesa Trail

***Description:***

This trail is open to the public. The trail starts in TA-71 at an intersection with the Water Canyon Overlook Trail approximately 0.6 miles from Gate 10 on NM State Road 4. The trail heads southeast from the Water Canyon Overlook Trail for 1.1 miles through sparse piñon-juniper forest with an elevation change of 85 feet. The trail follows a mesa top until reaching the southeast end where the trail descends the mesa and joins the Lower Water Canyon Trail (Figure 42).

***Special Characteristics:***

None

***Special Restrictions/Hazards:***

At the southeast end of the Ruin Mesa Trail where it intersects with the Lower Water Canyon Trail, an unsanctioned mountain bike trail was constructed. Access to this trail has been blocked in several locations and signs posted prohibiting use. Recent visits affirm that these measures remain in place.

***Current Trail Conditions:***

This trail is in very good condition. There is no informational kiosk for this trail and no trail markers.

***Recommended Actions:***

- Perform a trail assessment.
- Install trail markers at intersections with the Water Canyon Overlook and Lower Water Canyon Trails.

# Ruin Mesa Trail

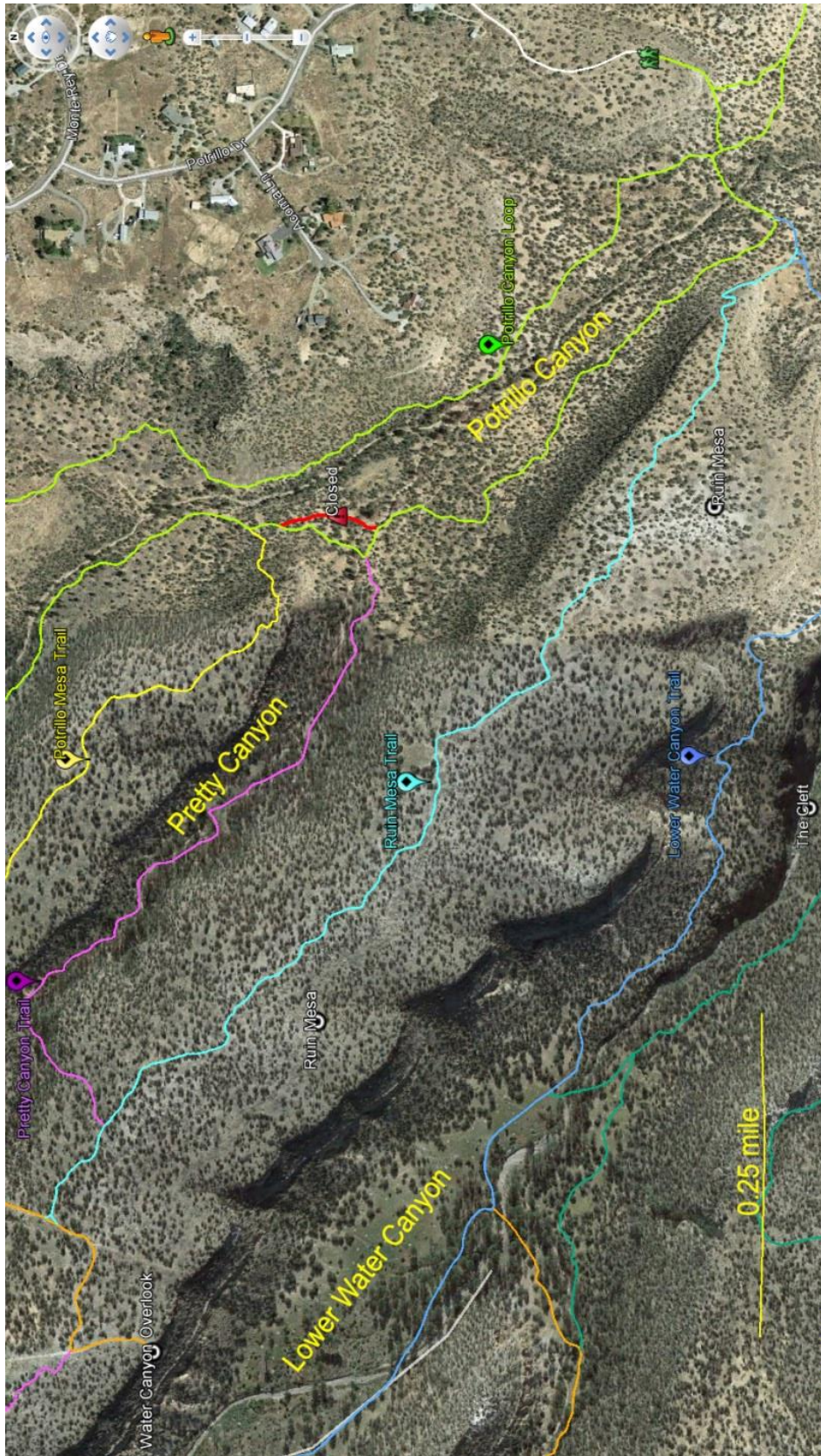


Figure 42. Ruin Mesa Trail is shown in light blue.



# Water Canyon Overlook Trail

## Water Canyon Overlook Trail

### ***Description:***

This trail is open to the public. The Water Canyon Overlook Trail begins in TA-71 at Gate 10 on NM State Road 4 and heads southwest for 0.8 mile through sparse piñon-juniper forest to the edge of Water Canyon (Figure 43). The trail has an elevation change of 85 feet. For the most part, the trail follows power lines and intersects several other trails including Boundary Trail, Fence Canyon Loop, Potrillo Mesa Trail, Ruin Mesa Trail, and the Ridgeline Trail.

### ***Special Characteristics:***

The trail follows power lines.

### ***Special Restrictions/Hazards:***

There is a small parking area for this trail but access is very steep from NM State Road 4.

### ***Current Trail Conditions:***

This trail is in good condition but does have a few areas of erosional damage. At 0.3 mile from NM State Road 4 the trail climbs up onto a mesa. This small section that climbs the mesa has some erosional damage and needs to be reworked to direct rain water off the trail. This trail has an informational kiosk at Gate 10 but no trail markers are installed.

### ***Recommended Actions:***

- Perform a trail assessment.
- Repair erosional damage.
- Install trail markers at intersections with the Boundary, Fence Canyon Loop, Potrillo Mesa, Ruin Mesa, and Ridgeline Trails.
- Rework the parking area to lessen the slope and account for stormwater flows.

# Water Canyon Overlook Trail

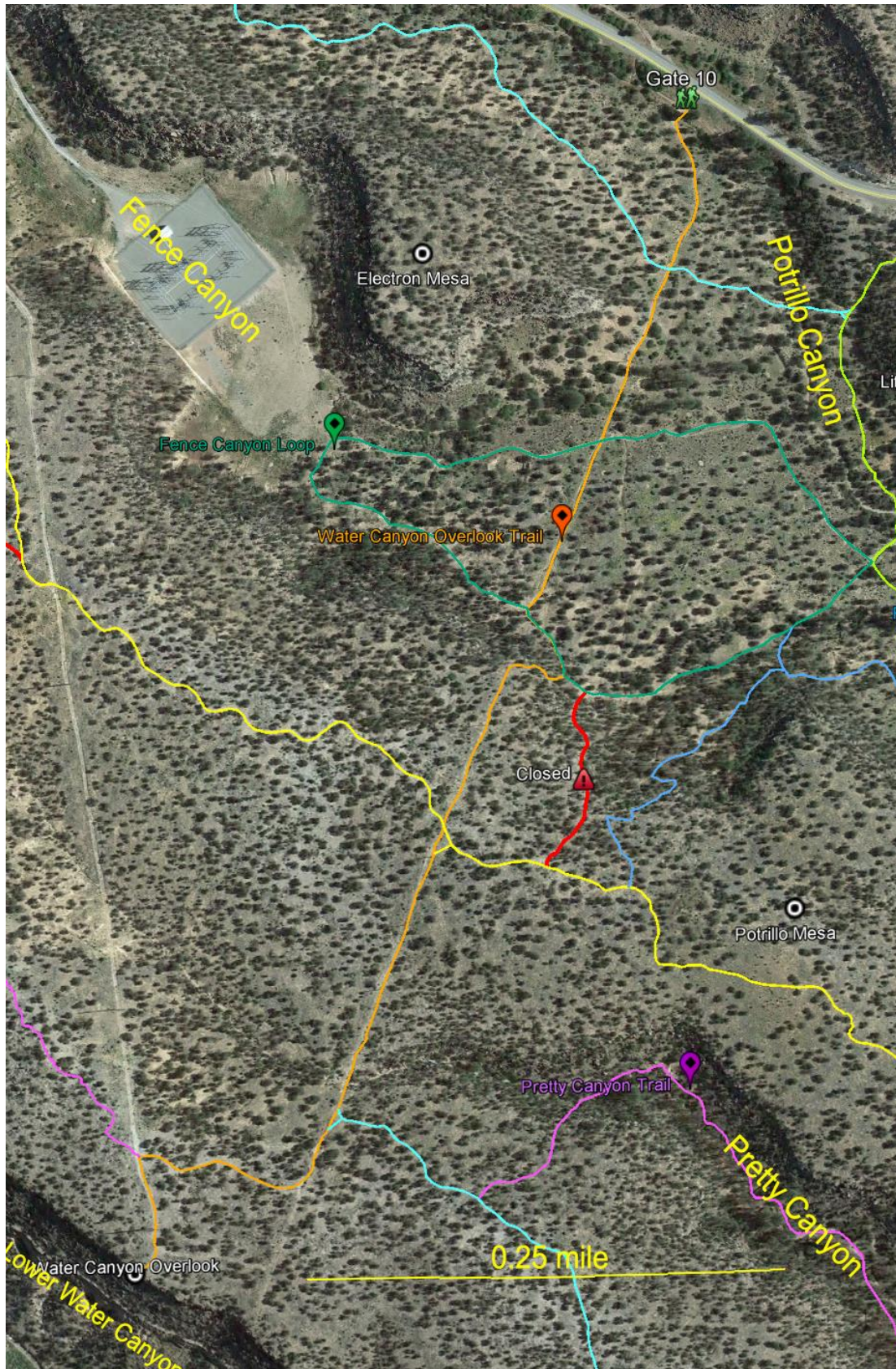


Figure 43. Water Canyon Overlook Trail is shown in orange.

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