

APPENDICES



Appendix A - Policies for Additions, Realignments, and Deletions to Trail Network

Criteria for Additions of New Trails

- A proposed trail must have a function that may be but is not limited to connecting two trails on the network, leading to a point of interest, leading to an existing or proposed residential or commercial area, or enhancing public access to the network.
- A proposed trail must minimize impact on residences within 50 feet of the trail. Minimal impact is defined as having little potential to encourage inadvertent trespass; having little potential to interfere with activities normally considered routine activities on private property; and having little potential to interfere with the privacy of residents.
- A proposed trail must minimize impact on critical wildlife habitat, nesting areas, natural features, and cultural resources.
- A proposed trail must not duplicate the function of an existing trail on the network. If a duplicate trail does provide an advantage over an existing trail, the Parks Division may recommend to the Parks and Recreation Board that the existing trail be closed in favor of the new trail.
- Rerouting an existing trail to correct blockage of a trail section, reduce erosion, or enhance accessibility to the trail is considered maintenance and need not go through this process, provided that the change does not move the trail in excess of 25 feet from its original location.

Criteria for Realignments of Existing Trails

- Trails must be considered in any action that may affect the integrity of the Trail Network. All new construction of housing, utility lines or structures, and other infrastructure should include an evaluation of its impact on trails.

Network trails may be realigned to accommodate development; however, the realigned trail must be equal or better than the existing trail at satisfying the following criteria: security, convenience, efficiency, comfort, welcome, and scenic value. Historic trails should not be realigned, except as a last resort.

Procedures for Additions, Deletions, and Realignments to the Trail Network

Any citizen, citizen's group, private entity, county or other governmental entity may propose a network trail be added, deleted, or realigned. The proposing entity will submit the proposal to the Parks and Recreation Board. The Board may request that OSWG confirm that the proposal meets criteria and that the documentation is complete.

Documentation must include:

- A written rationale detailing why the trail should be added to, changed, or deleted from the network. The rationale shall not exceed one page.
- Maps of the proposed trail change on a recognized mapping base, such as a USGS topographic quadrangle map or a county map. Hand drawn maps or computer sketches are not adequate.
- For a new trail, a narrative description of the trail including length, minimum width, minimum vertical clearance, minimum clearance at breast height, maximum slope, and tread condition.
- A list of possible impacts including, but not limited to, natural and cultural resources, budget, existing developments, and the network itself.

With assistance from the Parks and Recreation Board and its subcommittees, the Parks and Open Space Division will hold a public meeting on the proposal. (This meeting may be in conjunction with other Parks and Recreation public meetings.) The Parks and Recreation Board may request that OSWG modify the proposal in response to public comments or after consultation with the Open Space Specialist.

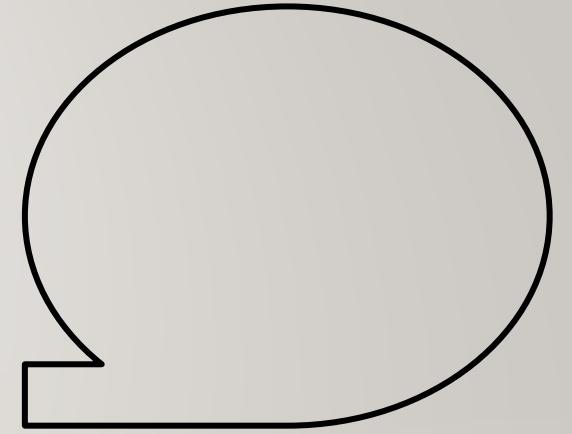
OSWG shall present a recommendation to the Parks and Recreation Board to accept or reject the proposed change to the Trail Network. The Parks and Recreation Board will then make its own recommendations on the proposed change and send it to the Open Space Specialist. The Parks Division Manager will review the proposal and the recommendation and may approve the proposal or conclude that further review and public comment is appropriate.

If the proposal impacts private land, it will be taken for review by the Planning and Zoning Commission, and if approved, taken to the County Council for approval.

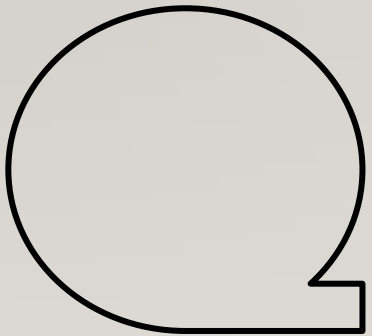
Upon approval, the Parks Division Manager will direct that the trail be added to, deleted from, or realigned on the existing maps of the Los Alamos Trail Network. If necessary, the trail may be added to the annual trail work plan. Upon successful completion of the procedures described herein, the trail map of Appendix A of the Plan shall be updated to reflect the changes to the Trail Network. The updated map shall be part of the County GIS records.

Appendix B – What We Heard: Public Engagement Report

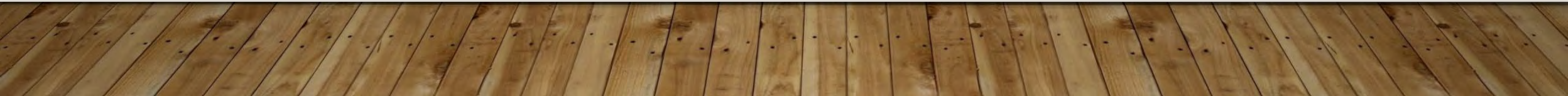
WHAT WE HEARD



Los Alamos County
Trails and Open Space Plan

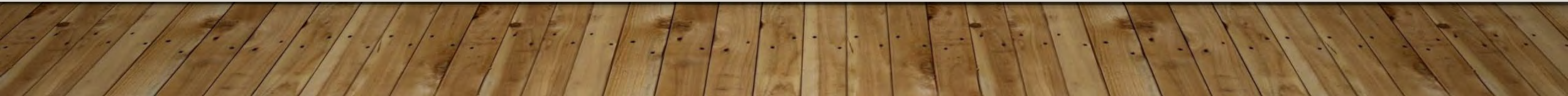
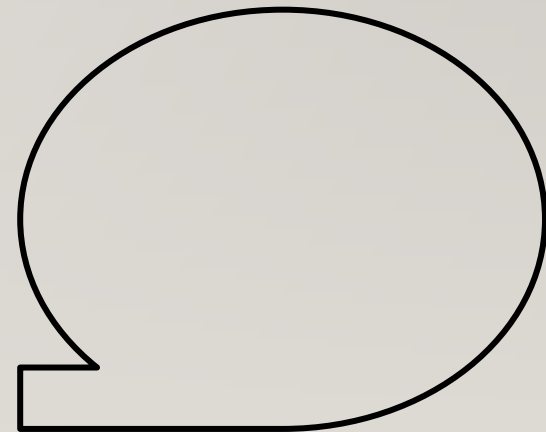


Public Engagement



PUBLIC ENGAGEMENT

- County Project Webpage – Open comment form
- May 21, 2024: In-Person Listening Session
 - 38 sign-ins
- June 1, 2024: Virtual Listening Session
 - 41 sign-ins
- August 29, 2024: In-Person Workshop
 - 52 sign-ins
- Virtual Survey (open 8/29-9/20)
 - 49 responses
- Virtual presentation of proposed text changes & new recommendations to public – 19 participants & Open Space Working Group – 4 participants
 - Presentation posted on project website
- Draft report release to public



8-29 WORKSHOP

KEY THEMES



Where did attendees live?

How was input collected?

- Surveys (virtual and hard copies)
- Voting activity
- Map comments
- Open format comments

Over 90 comments received!

8-29 WORKSHOP

KEY THEMES

Improve trailheads & Review trailhead signage/wayfinding

Trail Maintenance

- better, but still room to improve
- erosion a huge issue
- get all user groups involved

Open Space Amenities Maintenance – disc golf courses

Education on trail etiquette, conservation, trespassing

- Remove social trails
- Improve interactions between user groups

More beginner/intermediate trails for mountain biking

Fire protection

Protect open space and sensitive plant/animal habitats

Preserve historic trails and cultural sites

Regional coordination (Forest Service, LANL, San Ildefonso)

Increased accessibility

Safety – road crossings

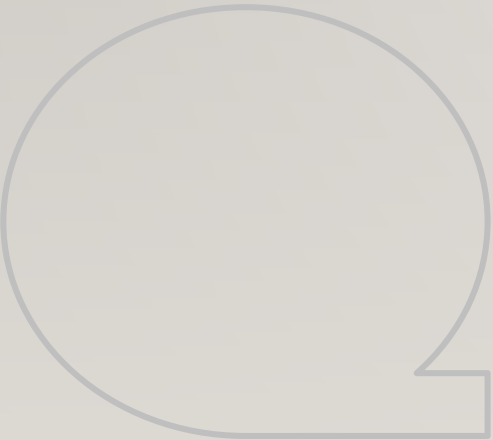
No new development

Trailhead improvements



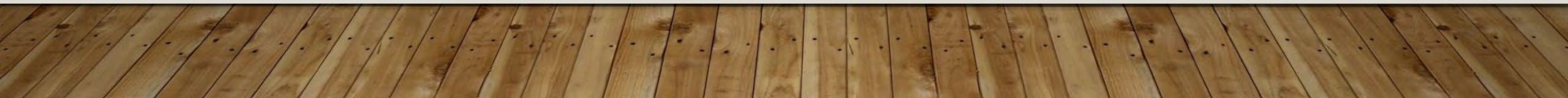
8-29 WORKSHOP

KEY THEMES



Diamond Dr – Safety concerns with crossing
Graduation Canyon – Signage/Maintenance needed
Homestead Crossing – Maintenance
Kwage Mesa – User conflict
Pueblo Canyon – No new development
Quemazon Trail – Maintenance
Red Dot TH – Improvements needed
Tent Rock Trail – Maintenance
Tunnel – Safety concern for equestrians
San Ildefonso – Trespassing concerns
Bayo Canyon TH – Improvements needed

Open comment - Multiple Mentions



SURVEY RESULTS

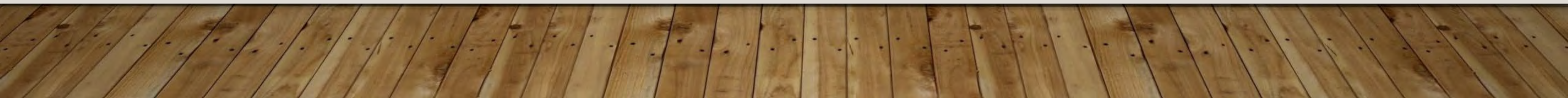
Bayo Canyon/San Ildefonso Roudabout		236
Quemazon/ 48th St		160
Mitchell Trail/Arizona Ave		158
Kwage Mesa/ N. Mesa Park Rd		143
Deer Trap Mesa/Barranca Rd		93
Acid Canyon/Aquatics Center		91
Red Dot/Piedra Loop		72
Los Alamos Mesa Trail/ East Park		50
Blue Dot/Overlook Park		34
Canyon Rim Trail @ East Rd/Entrada Dr. Underpass		17

Which trailhead needs to be improved most?

SURVEY RESULTS

Restroom		203
Dog Waste Station/Trash Can		159
Water Fountain		138
Horse Trailer Parking		112
Paved Parking		59
Bike Tools		52

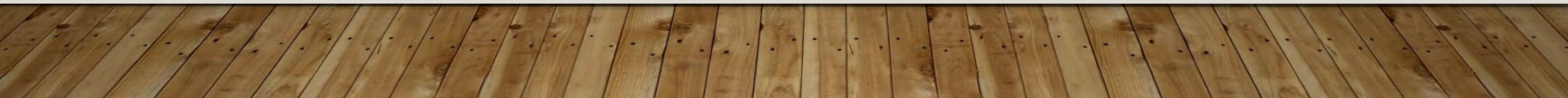
What are your highest priorities for trailhead amenities?



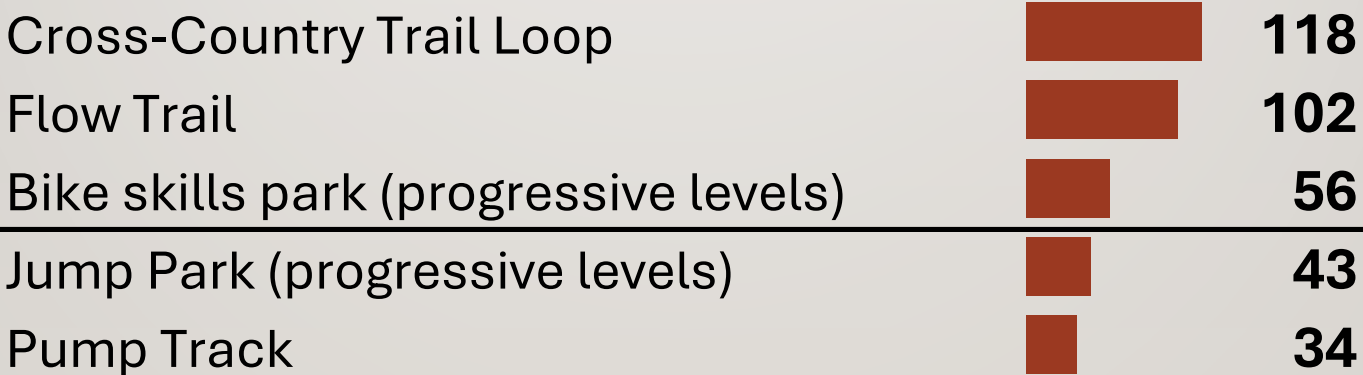
SURVEY RESULTS

Perimeter Connectors		36
Otowi-Deer Trap-Kwage Mesa Connectors		34
Rendija Canyon Addition		33
Pueblo Canyon Trail Extension		24
Canyon Rim Trail Extension (to 15th St)		23
Walnut Canyon to Walnut Rim		21
Quemazon Stacked Loop		19
Connect White Rock River Trail to Rio Grande Trail		14
Urban Multi-Use Trail (North to South)		13
White Rock Loop		9

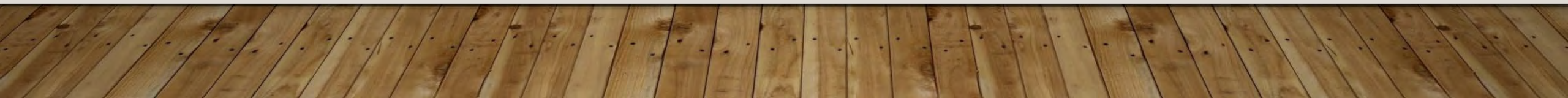
Which trail extension would you use?



SURVEY RESULTS



Which bike amenity would you use most?

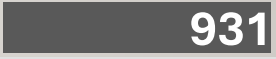
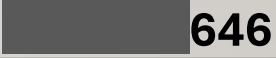
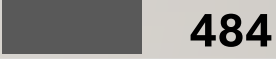
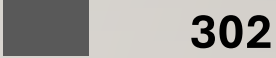
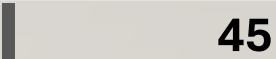


SURVEY RESULTS



Vote for future accessible trails

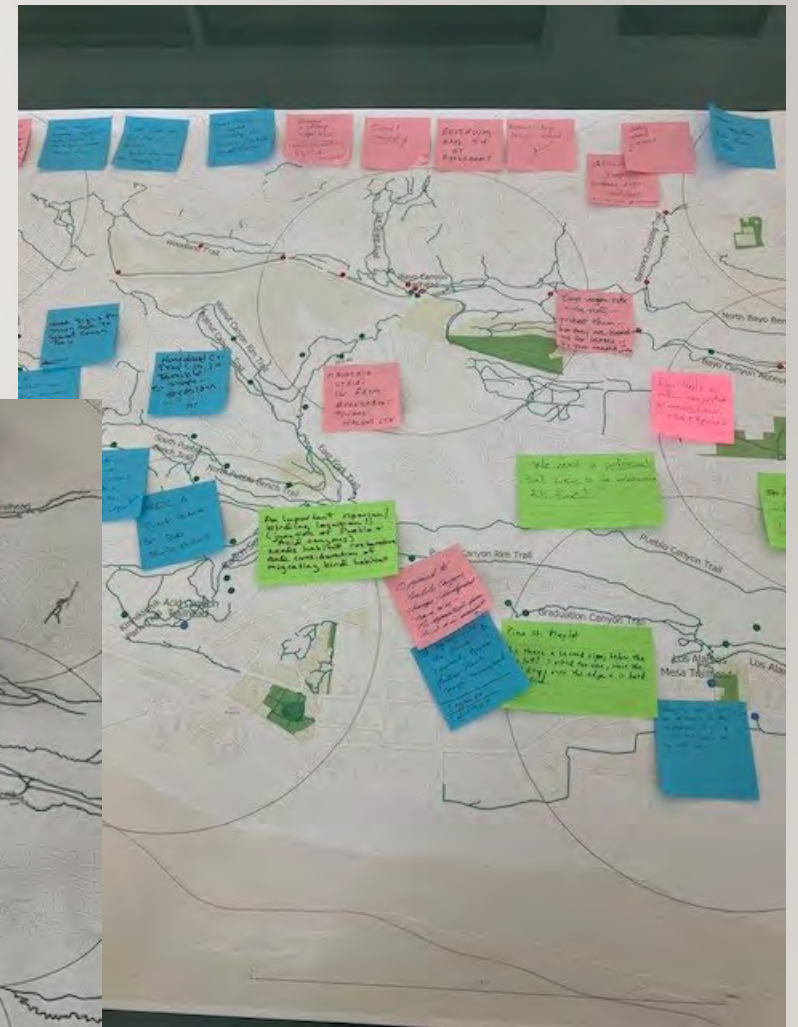
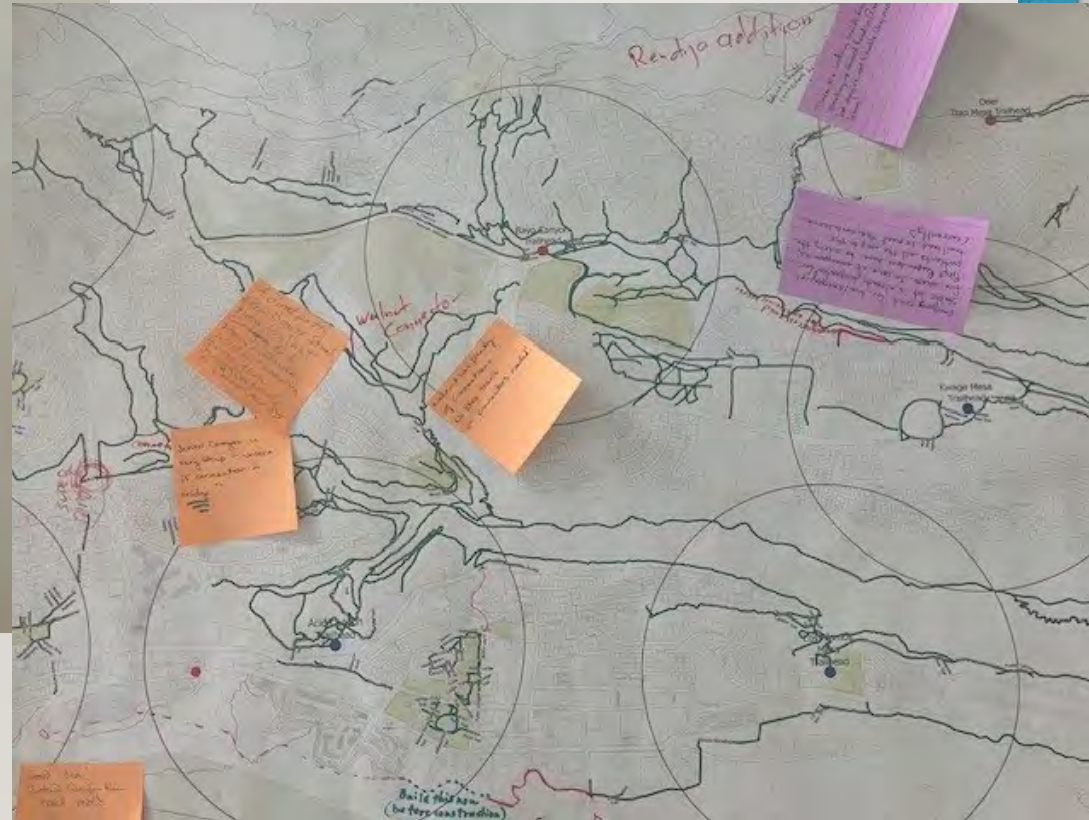
VOTE WITH YOUR \$

Existing Open Space Maintenance (<i>Habitat restoration, wildfire prevention, erosion control</i>)	 942
Existing Trail Maintenance (<i>Removal of social trails, erosion control, vegetation trimming, wayfinding</i>)	 931
Equestrian Access & Improvements (<i>regrading of trails, trailer parking</i>)	 646
Preservation of Historic Trails & Cultural Sites	 484
Bike-Specific Amenities (<i>designed for a variety of skill levels with more attention to beginners</i>)	 477
New Trails & Trail Connections	 302
Improving Amenities at Existing Trailheads	 261
New Trailheads	 149
New Open Space Amenities	 45

Vote for future priorities

Concerns / Recommendations

- Mtb's making lots of extra trails, widening trails, etc to make things more fun contributes to erosion, vegetation loss, etc.
 - Minimize infrastructure impacts on open space
 - Take care of what you have **FIRST!**
 - Ignoring the existing Master Plan
 - Don't encroach on Open Space
 - Too Much emphasis on Mtb's
- Plan needs to mention protection and conservation of open space, not just development
- ~~Plan~~ Protect wildlife passage ways.



9-17-24 ACCESSIBILITY ROUNDTABLE

KEY THEMES

Maintained trails might still have obstacles for people with limited sight/mobility

Big accessibility gap on weekends because no public transit for people with limited sight

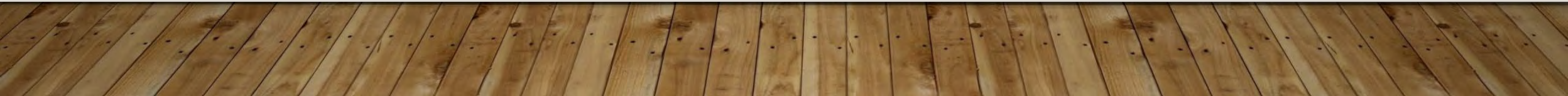
PEEC is a main resource for trail recommendations, but do not currently have accessibility-specific information. Also, steep hill prevents people from accessing trails immediately adjacent to PEEC.

Desire to be in trail-like environments or have access to nature/solitude in safety – does not necessarily have to be a whole, brand new trail

Physical access is important, but you also have to feel like you belong/are welcome (social access)

Considerations: Safety buttons (if cell service is poor), vegetation, audio guides with trail information, websites with trail information that are formatted correctly for a screen reader, Scale as Spoons trail rating system, safe areas for sitting,

Groups: Canines & Canes, Disabled Hikers (Washington state), Happy Ramblers



OSWG OPEN SPACE SURVEY

KEY THEMES

My interest in trails is...

- Importance of Open Space
- Adjacent property
- Trails, Hiking, Wildlife & Nature
- Other

What are the biggest challenges for passive, open space?

- Development Pressures
- Maintenance, Use, Fire Protection, & Erosion
- Need for Enhancements
- Natural/Historic Resource Protection – more public education
- Integrated land management with adjacent agencies

a mountain biker	32%
a hiker	95%
an equestrian	4%
a birder/naturalist	43%
a trail runner	26%
a conservationist	50%
resident of a property or neighborhood bordering open space	55%
as a representative of a community group (please provide group name in comments)	7%
as a representative of a land manager (please provide name of land management unit in comments)	0%
as a County employee	3%

OPEN COMMENT FORM

KEY THEMES

70 comments from 44 individuals

Theme	
Open Space Protection/Restoration	18.6%
Trail Maintenance/Improvements	12.9%
Deliverable/Scope	12.9%
Report Recommendation	11.4%
Better for Bikes/E-Bikes	10.0%
Open Space Amenities	7.1%
User Conflict	5.7%
Trail Connectivity	4.3%
Accessibility	4.3%
Trailhead Amenities	2.9%
Wayfinding	2.9%
Safety	1.4%
Cultural/Historic Preservation	1.4%
Communications	1.4%
Implementation	1.4%

Appendix C – Trail Assessments & Maintenance Needs



PART 2.

TRAIL ASSESSMENTS AND MAINTENANCE NEEDS

ACID CANYON TRAIL

Trail Status: Constructed	Length: 0.6 Mile	Elevation Gain: 200 feet
Parking: Aquatic Center	Used by: Hikers/ Mtn. Bikers	Use: Heavy

Narrative

The Acid Canyon Trail functions as a major entry to the Los Alamos County Trail Network. It serves to link North Community with the downtown area and connects the Denver Steels, Pueblo Bench, and the Walnut Street area. The trail also provides access to Kinnikinnik Park. It also has excellent parking at the Larry R. Walkup Aquatic Center and a trailhead information kiosk is located at the parking area. The kiosk provides information on the central portion of the LAC Trail Network, on the wildlife of the canyon, and on the historic routes in the area. Maps on the information board provide orientation material necessary for the trail users.

The south leg of the Acid Canyon Trail is exposed to elevated stormwater runoff levels due to adjacent development. Peak flows from parking areas periodically erode the trail. Stormwater management structures along the first half mile of the trail require periodic maintenance.

Bridges span the main and tributary drainages along this trail. The bridges should be inspected and repaired as needed. The largest bridge, a solid, fiberglass structure, needs an annual structural inspection and the decking should be replaced within 3 years.

Maintenance Needs

1. Fire access is blocked by vehicles parking at the aquatic center. A no parking zone should be created.
2. Monitor runoff from the parking lots along Canyon Road and clean out the four drainage outlets as required.
3. Monitor the condition of the Acid Canyon Bridge. Decking should be replaced in 2015.



Provide permanent access to fire road.



Replace bridge decking.



Monitor bridge condition.

BARRANCA CROSSING TRAIL

Trail Status: Constructed	Length: 0.8 Mile	Elevation Gain: 300 feet
Parking: None	Used by: All users	Use: Moderate

Narrative

The Barranca Crossing Trail is an old route that links trails in Rendija and Bayo canyons. A homestead-era road ascends steeply from Rendija Canyon to a narrow crossing of Barranca Mesa. On the south side, the trail descends a side canyon of Bayo Canyon to the North Bayo Bench Trail. It serves as an important connection for several loop trips from Barranca and North mesas.

Barranca Crossing is currently a multi-jurisdictional trail shared by Los Alamos County, the DOE, and the Santa Fe National Forest. North of Barranca Road, the trail corridor is slated to be purchased by or transferred to the County in the future.

This trail will form a segment of the proposed trail network in and around Rendija Canyon (see Rendija Additions in the Proposed Trails section).

The Los Alamos County portion of the trail has long suffered from problems with storm water runoff from the streets above. Almost the entire south half of the trail should be rerouted.

Maintenance Needs

1. Upon acquisition by the County, the north section of the trail should be improved and access control should be added.
2. Reroute trail where it passes through a narrow cut below Dos Brazos.
3. Reroute the trail from deepening ruts to contours above.
4. Monitor erosion at trailhead on Barranca Road.



Reroute trail where it passes through a narrow cut below Dos Brazos.



Move trail from deepening ruts to contour above.



Monitor erosion at trailhead on Barranca Road.

BAYO CANYON TRAIL

Trail Status: Constructed	Length: 3.2 Mile	Elevation Gain: 600 feet
Parking: At roundabout	Used by: All users	Use: Heavy

Narrative

The Bayo Canyon Trail is in part a homestead route from the bottom of Bayo Canyon to the mesa tops in Los Alamos. The trail leaves the mesa top near the intersection of San Ildefonso Road and Diamond Drive, travels along a narrow bench, then clings to the north wall of Kwage Mesa as it drops to the canyon bottom. Old and more modern roads combine and the trail descends along the bottom of Bayo Canyon before crossing a low saddle and entering the Pueblo Canyon drainage. The all-weather road from New Mexico Highway 4 to Bayo Canyon is considered part of this trail.

The trail provides opportunities for loop trips both for residents of Barranca and North mesas and for others who drive to the trailheads. Hikers, joggers, equestrians, and mountain bike riders use the trail.

The first quarter mile of trail descending from the North Mesa Stable Area to the first bench below has been repaired numerous times remains a problem. The steep drop accumulates water from the stable lots above and repeatedly scours out a rut. Because it is an historic trail, the outside berm cannot be removed. A series of small culverts under the wall may be necessary. Also, an alternate access from the stable area could be developed.

Further down the canyon, the trail once passed through the old Technical Area 10 Firing Site. Because of low-level contamination off of the trail, this segment was closed to public use. A trail reroute was developed in 2007, but some users continue to avoid sandy stretches of the reroute and prefer to use the old trail/road through the firing site. Continued improvements should be made to the rerouted segment. Also, the trail should be connected to the Camp Hamilton Trail via a trail rather than the currently used road.

Informal parking is located at the roundabout trailhead. This area should be redesigned to provide more organized and safer parking.

Maintenance Needs

1. Provide better organized parking at the roundabout trailhead.
2. Connect to Camp Hamilton Trail.
3. Find a solution to the ruts on the descent into the canyon from the stable area canyon.



Provide for parking at the roundabout trailhead.



BLUE DOT TRAIL

Trail Status: Constructed	Length: 1 Mile	Elevation Gain: 900 feet
Parking: Overlook Park	Used by: Hikers	Use: Moderate

Narrative

The Blue Dot Trail was probably developed as a livestock trail during the 1930s. The trail takes advantage of a natural break in the cliffs of White Rock Canyon—with a little assistance from dynamite—to descend from rim level to a broad bench just south of the White Rock Canyon Overlook. Steep sections follow as the trail drops 800 feet to the Rio Grande in less than one mile. Switchbacks ease the grade, but river-worn cobbles (now high above water level) make for slick footing. Traversing old river terraces, the trail parallels the outflow of several springs before meeting the River Trail just above the Rio Grande.

The steep and rocky nature of the trail precludes the use by any but hikers. Most trips are either a direct descent to the Rio Grande and back, or the Blue Dot Trail can be linked with the Red Dot Trail via the River Trail. This journey is described in several hiking guides to New Mexico and is considered one of the state's classic hikes.



Rake river gravels from switchbacks at mid-trail

At mid-trail, switchbacks are constantly damaged by hikers seeking avoid slipping the river gravels. The switchbacks should be cleared of gravel and better defined by vegetation and other natural materials.

Maintenance Needs

1. Rake river gravels from switchbacks at mid-trail
2. Monitor rock steps



CAMP HAMILTON TRAIL

Trail Status: Constructed, DOE property until transfer

Length: 0.8 Mile

Elevation Gain: 400 feet

Used by: Hikers

Use: Light

Parking: Inadequate parking at roadside

Narrative

The Camp Hamilton Trail, originally known as the Devil's Slide, was built by the Los Alamos Ranch School as an alternative route to the school's cabin in Pueblo Canyon. Students constructed a series of switchbacks and intricate rockwork walls support the trail. The trail descends the topmost cliff on these switchbacks, then passes through a man-made crack that bears the marks of pick work during construction. Once around the tip of the mesa, the trail drops to the forested slopes that lap up against the cliffs. Near the site of the pueblo Little Otowi, the trail skirts a conservation easement by heading east along a drainage, then heads north to climb over a low ridge. The route crosses the Pueblo Canyon Trail (an access road) and the bottom of Pueblo Canyon, then ascends to a terrace above the canyon bottom where Camp Hamilton is located.

The trail provides hikers with direct access to Pueblo Canyon and is highly scenic the entire way. It is listed on the National Register of Historic Places. Historic features include the rock walls built by the Ranch School, the historic cabin, and post-Manhattan Era trail signs.

From its initial descent from the mesa top, the trail is on Department of Energy land slated for transfer to Los Alamos County. Until the land is transferred from the DOE to the County, no improvements can be made to the trail.

Interpretive signs should be placed at Camp Hamilton explaining the history of the trail and the cabin.

The trail should be extended across the old wastewater treatment plant site and connected with the Bayo Canyon Trail.

Maintenance Needs

1. Extend trail to Bayo Canyon Trail.
2. Inspect and make necessary repairs to rock work.
3. Improve the trail from the base of the cliff to the conservation easement.
4. Improve the last segment near the Pueblo Canyon crossing and install information sign at Camp Hamilton.
5. Connect trail segments that became disjointed by the re-route around the conservation easements..



Camp Hamilton Trail.



CANADA DEL BUEY TRAIL

Trail Status: Constructed	Length: 0.8 Mile	Elevation Gain: 10 feet
Parking: Overlook Park	Used by: All users	Use: Heavy

Narrative

White Rock is split by the Cañada del Buey. The arroyo drains about 3 square miles, heading in the mesas of the Los Alamos National Laboratory. Extensive work has been done along the cañada to prevent erosion of the banks where structures lie immediately adjacent. In the lower reaches in White Rock, the stream has scoured the channel to basalt bedrock.

In 2000, LAC used TEA-21 funds to improve the dirt pathways along the Cañada del Buey in central White Rock. The trail surface was hard-packed road oil with crusher fines. A bridge was set in place spanning the arroyo near Chamisa Elementary. Near the lower end of the trail, a low-water crossing spans the arroyo.

On the west side of Rover Boulevard, the trail follows the sidewalk along the White Rock Municipal Complex. West the branch library, the dirt trail parallels a small tributary of the Cañada del Buey to Sherwood Boulevard.

The surface durability of the road oil treatment is in question, but overall it shows only minor cracks and a few holes in areas where the base course was improperly laid. The bridge is in excellent condition. The low-water crossing has altered the course of the stream channel, but it appears stable and although it is not an immediate concern, it should be monitored.

The trail entrance on Rover should be landscaped. A small triangle between two entrance points holds the trail entrance post and would benefit from a xeriscape treatment. Restoration of native grasses should take place along the dirt portion between Rover and Sherwood.

The White Rock Downtown Master Plan calls for the western portion of the Cañada del Buey Trail to be upgraded to a hard surface and extended across Highway 4 to proposed developments on the west side of the highway.

Maintenance Needs

1. Install benches along the trail.
2. Continue to monitor the condition of the low-water crossing.
3. Monitor the condition of the road-oil surface.
4. Monitor condition of bridge.



Install benches along trail.



Continue to monitor the condition of the low-water crossing



Monitor the condition of the road oil surface.



Monitor condition of bridge.

CANYON RIM TRAIL

Trail Status: In progress	Length: 1.6 Miles	Elevation Gain: 100 feet
Parking: East Park, east trailhead	Used by: Hiker, runners, cyclists	Use: Heavy

Narrative

The Canyon Rim Trail is a work in progress. When completed it will follow the rim of Los Alamos Canyon from Lavy Lane to the eastern tip of Los Alamos Mesa near the top of the Main Hill Road. With the participation of landowners in the downtown area, this trail could be a major factor in attracting residents and visitors to the downtown area.

The easy, paved trail will provide a safe, non-vehicular avenue of alternate transportation for the citizens of Los Alamos County and their guests. The park-like setting of the trail will be attractively landscaped. The trail will be used by pedestrians, bicyclists, and runners, and will be universally accessible. The trail will provide an opportunity for appropriate business to take advantage of the trail's location that provides spectacular vistas of the canyon and the surrounding mountains.

The Parks Division completed the first segment of the trail in 2010. The completed portion of the trail extends from the area of the Entrada Business Park to East Park on the edge of the downtown area. The trail is heavily used in all seasons.

Extending the trail to the west requires the completion of land transfers from the DOE, development of the Trinity Site, and the acquisition of easements from landowners.



DEER TRAP MESA TRAIL

Trail Status: Constructed	Length: 1.5 Miles	Elevation Gain: 100 feet
Parking: At end of Barranca Mesa	Used by: Hikers	Use: Moderate

Narrative

Named for a small game pit encountered early on the route, most of the Deer Trap Mesa Trails are easy hiking. The mesa has three prongs. The north and south prongs have trails leading to their tips where hikers find fine viewpoints. The entire north mesa is on Los Alamos County Open Space, but access to the tip of south branch is cut off by the San Ildefonso Pueblo boundary. Evidence of the long history of use of the mesa is found in game pits, carved stairways, and ruts worn into the soft tuff on the mesa top. The Atomic Energy Commission transferred the mesa top to the County of Los Alamos as a natural park in 1968.

The trail begins at the end of Barranca Road. The first 0.1 mile is on the flat mesa top, but then the trail drops on steep rock stairs to the game pit. At this low break in the mesa, the trail heads east along a narrow bench just below the topmost cliff. Here the route is on soft pumice powder. An ancient staircase leads again to the mesa top where the trail becomes smooth and level. Traversing piñon-juniper woodland on a knife-edge ridge, the trail continues about 0.6 miles to a fork. The right fork traverses the mesa top to the south prong of the mesa and follows its edge to the County boundary. The more heavily traveled left fork ends at a view-point 0.8 miles from the trailhead.

After the transfer of the Rendija Canyon transfer site, the Deer Trap Mesa Trails could provide a segment of a new recreational trail system. These trails would provide access to Rendija Canyon. From the canyon, new trails could lead to the mesa top between Guaje and Rendija canyons. The northern branch of the Deer Trap Mesa Trails could be extended to the old powerline road that drops into Rendija Canyon.

Maintenance Needs

1. Establish improved parking at trailhead and install mini-kiosk.
2. Monitor condition of deer trap and ancestral pueblo stairs.
3. Extend retaining wall at point where the trail drops from the mesa top.
4. Protect viewshed at trail's end.
5. Connect to Otowi Mesa Trail.



Establish improved parking at trailhead and install mini-kiosk and repair damage from street runoff to the trail.



Deer Trap trailhead.



Monitor condition of deer trap and ancestral pueblo stairs.



Extend retaining wall.

DOT GRANT TRAIL

Trail Status: Constructed	Length: 1 Mile	Elevation Gain: 200 feet
Parking: Near cemetery and at roundabout	Use: Moderate	Used by: All

Narrative

The Dot Grant Trail is named for O. O. Grant, who maintained a homestead at the location of the Guaje Pines Cemetery for many years. Grant used an older homestead road to travel from his home to the top of the mesa and beyond to Los Alamos Mesa. Deep ruts worn into the tuff testify to the use of the trail by wagons during this era. The trail is listed on both the State and National Register of Historical Places. In 2001, a parallel trail that connects the San Ildefonso Roundabout with the cemetery area was built higher up the slope.

From the cemetery, several routes lead south into the forest to the east of Range Road. The old homestead road stays near the canyon bottom while the newer trail climbs on two switchbacks to a junction with a branch of the Rendija Trail. As the Dot Grant Trail swings south, it stays level until it reaches the sidewalk that connects the pedestrian tunnel beneath San Ildefonso Road and Range Road.

The trail ruts on the homestead road should be monitored yearly with repeat photography. The new trail is in good condition. The number of trail branches on the north end of the trail should be reduced.

The Dot Grant Trail shares a trailhead with the Bayo Canyon and East Fork trails. Improved parking at the trailhead is required.

Maintenance Needs

1. Monitor and protect historic features.



Monitor and protect historic features.



Dot Grant Trail.

EAST FORK TRAIL

Trail Status: Constructed	Length: 0.8 Mile	Elevation Gain: 200 feet
Parking: At roundabout	Use: Moderate	Used by: All

Narrative

The East Fork Trail is an old route that descends from North Mesa into Walnut Canyon via the East Fork of Walnut Canyon. The trail elevation changes about 200 feet in less than one-quarter mile. It serves as an important connector between North and Barranca mesas and the downtown area.

The trail begins near the San Ildefonso Roundabout on the west side of that road. It abruptly crosses over a ridge, then parallels the Los Alamos Golf Course. The route crosses the golf course maintenance access road, then drops to a lower bench. After crossing the bench, a set of steep stairs leads to the idyllic floor of the East Fork of Walnut Canyon. Tall ponderosa pines over 300 years old are found along the trail. The trail leaves the canyon floor on a narrow switchback, then crosses a powerline easement before rounding a narrow mesa and joining the Walnut Canyon Road. A continuation of the trail a few hundred feet down the utility road drops on several switchbacks to the floor of Pueblo Canyon.

A connection in the canyon between the two trail segments should be constructed.

Maintenance Needs

1. A trail connection should be completed between the two trail segments.
2. Better mark trail as it passes through disturbed area near golf course maintenance entrance.
3. Monitor condition of bridges.



Better mark trail as it passes through disturbed area.



Monitor condition of bridges.

FIRELINE TRAIL		
Trail Status: Constructed	Length: 0.8 Mile	Elevation Gain: 100 feet
Parking: No connection with roads	Used by: All	Use: Moderate

Narrative

The Fireline Trail is an improved fireline that was established during the Fuel Mitigation/Forest Restoration Project. The line was scratched in by the Santa Fe Hot Shots as an upper boundary for future prescribed fire operations in the canyon bottom. The line is roughly at the edge of the mechanical fuel treatment area in the canyon at the slope break on the north-facing canyon wall.

The trail offers a pleasant alternative to the sandy trail in the canyon bottom. From either end, the trail climbs sharply from the canyon bottom to a rolling contour level about 150 feet above the Bayo Canyon Trail. It traverses open ponderosa pine stands. When used with the Bayo Canyon or North Bayo Bench trails, it provides an opportunity for a lollipop-loop trip. In addition, the traffic on the trail maintains the integrity of the fireline.



Widen trail tread where necessary.

Maintenance Needs

1. Widen trail tread where necessary



GONZALES ROAD

Trail Status: Constructed	Length: 0.7 Mile	Elevation Gain: 150 feet
Parking: None	Used by: Hikers, Mountain Bikers	Use: Light

Narrative

The Gonzales Road was built by the Gonzales family to connect the Bayo Canyon Road with the Gonzales homesteads on Barranca Mesa. The road follows the bottom of a small tributary of Bayo Canyon. In the canyon bottom, the old road passes the finely constructed Roybal Stock Tank. The road leaves the canyon bottom and ascends to the mesa top on the south wall of the canyon. Modern access is blocked by development on the south side. An Eagle Scout project in 2004 connected the trail to Barranca Road on the north wall of the canyon.

The trail receives moderate use by hikers. The route is through a lovely ponderosa pine forest dotted with stately, orange-barked old trees. The canyon bottom, especially in the area of the Roybal Stock Tank, is wet most of the year. Riparian vegetation can be lush in spring and summer.

Because of the historic features along the route, this trail is listed on the National Register of Historic Places. Care should be taken to protect the historic character of the road, and to protect the rockwork at the Roybal Stock Tank.

Maintenance Needs

1. Repair erosion damage from street runoff.
2. Repair erosion damage at the foot of the stairs.
3. Repair stairs on middle switchback.



Repair erosion damage at the foot of the stairs.



Repair stairs on middle switchback.



Repair erosion damage from street runoff.

GRADUATION CANYON TRAIL		
Trail Status: Constructed	Length: 0.6 Mile	Elevation Gain: 100 feet
Parking: Pine Street Playlot	Used by: All Users	Use: Moderate

Narrative

The Graduation Canyon Trail was used by students and masters from the Los Alamos Ranch School to travel to the site of the school’s early graduation ceremonies at the pour off of Graduation Canyon into Pueblo Canyon. The spectacular backdrop of the site was a favorite vista of many of the school’s masters, so much so that Fayette Curtis asked to be buried in an unmarked grave near the site.

On the west, trail access is from the Pine Street Playlot. Once the trail drops to the bottom of the canyon, it offers a pleasant stroll amid tall pines. The vista from the pour-off is among the most spectacular in the County. From the pour-off, the trail climbs on switchbacks to intersect the Los Alamos Mesa Trail.

Maintenance Needs

- 1. Entrance has been improved.
- 2. Maintain viewshed from Graduation Point.
- 3. Control poison ivy on west portion of the trail.



Graduation Canyon Trail.



Maintain viewshed from Graduation Point.



Control poison ivy.

HOMESTEAD CROSSING

Trail Status: Constructed	Length: 0.6 Mile	Elevation Gain: 100 feet
Parking: Along 33rd Street	Used by: All Users	Use: Moderate

Narrative

Homestead Crossing is a historic road that connected homesteads on Barranca, North, and Los Alamos Mesas. The trail was built around 1920 by the Lujan family as a way to travel to nearby homesteads on the Pajarito Plateau. As the road descends into Pueblo Canyon, it was picked and blasted onto a man-made bench. At the foot of the grade, a bridge spanned Pueblo Canyon, and it is at this location that the Homestead Bridge spans the canyon today. The road is listed on the State Register of Historic Places and has been nominated for the National Register.

The modern trail begins at a trail network entrance on 33rd Street near Aspen School. The route follows a narrow bench between a branch of Pueblo Canyon and houses along 34th Street. With few options, the route makes several short but steep drops over boulders. As the trail swings west, it traverses a broad bench crossed by small drainages. Crossing the blasted-out dugway, the trail drops into Pueblo Canyon and crosses on the Homestead Bridge. At the south end of the bridge, the route splits: the wide road to the right is suitable for bicycles; and the narrower trail to the left climbs more steeply. The two branches join at the top of the first hill at the South Pueblo Bench Trail.

Some storm water drainage from the neighborhood above affects the trail on the descent into Pueblo Canyon. Grade dips have helped solve the problem, but they need to be monitored to ensure their effectiveness.

Maintenance Needs

1. Monitor drainage on historic stretch.
2. Use one rock dams to trap sediment on old trail route.
3. Add a stair in the steep part of the descent.
4. Continue to monitor condition of Homestead Bridge.



Monitor erosion on historic portion of trail.



Fill in rut with small rocks to collect sediment.



Add stair at steep section.

KINNIKINNIK PARK TRAIL

Trail Status: Constructed	Length: 0.2 Mile	Elevation Gain: 20 feet
Parking: At Aquatic Center	Used by: All Users	Use: Moderate

Narrative

A short trail in Kinnikinnik Park connects the Ranch School and Acid Canyon trails. The trail passes through an area of scenic beauty, surprising plant diversity, and many trees with unusual growth forms. The short trail has two bridges, both constructed by Eagle Scout candidates. The short bridge was refurbished in 2004.

The trail is well-contoured and requires little maintenance. The addition of interpretive signs for plant identification would enhance the users' experience on the trail.

Maintenance Needs

1. Monitor bridge condition yearly.
2. Install 20 interpretive signs along the trail.
3. Re-establish park entrance and entrance trail.
4. Remove 50% of fallen trees.



Monitor bridges.



Re-establish park entrance trail.



Re-establish park entrance.



Remove 50% of fallen trees.



Install interpretive signs along the trail.

KWAGE MESA TRAIL

Trail Status: Constructed	Length: 2.1 Miles	Elevation Gain: 100 feet
Parking: At rodeo grounds	Used by: All Users	Use: Moderate

Narrative

Kwage Mesa is an eastward extension of North Mesa. It is a long, narrow finger of rock with steep cliffs on either side. Two routes take trail users from the Los Alamos Rodeo Arena to the view point at the end of the mesa, a point on the divide between Bayo and Pueblo canyons. The northernmost route is a wide utility road that provides access to infrastructure near the tip of the mesa. Along the south rim of the mesa, a narrow, winding trail is preferred by most users. Both routes are highly scenic and offer long-range views of the Pajarito Plateau, the Rio Grande Rift, and the Sangre de Cristo Mountains.

The mesa receives heavy use by all trail user groups. The intensive use resulted in a network of interlaced trails that spread across the mesa top. A large-scale erosion control effort in 2004, along with several wet summers, has increased ground cover and reduced the informal trails on the mesa.

Maintenance Needs

1. Monitor previous erosion control work.
2. Move trail tread to stable surface at east end of trail.



Monitor previous erosion control work.



Move trail tread to stable surface at east end of trail.



Kwage Mesa trail signage.



View from the end of Kwage Mesa.

LOS ALAMOS MESA TRAIL

Trail Status: Constructed	Length: 0.5 Mile	Elevation Gain: 20 feet
Parking: At East Park	Used by: All Users	Use: Heavy

Narrative

The Los Alamos Mesa Trail has long been a neighborhood trail used by residents of the Eastern Area. Beginning at East Park, the trail parallels the south rim of Pueblo Canyon on County open space between the canyon and Group 18A housing.

Because of the flat terrain, scenic qualities, and easy access from the assisted living facility at Aspen Ridge, in 2006 this trail was converted to a hard-surfaced, ADA-compliant trail. The Los Alamos Mesa Trail is a segment of the Pueblo Canyon Rim Trail.

Maintenance Needs

1. Maintain trail surface through periodic maintenance.



Los Alamos Mesa Trail.

MITCHELL TRAIL

Trail Status: Constructed	Length: 0.3 mile	Elevation Gain: 100 feet
Parking: At trailhead	Use by: All Users	Use: Heavy

Narrative

The Mitchell Trail is a major route from Los Alamos into the surrounding national forest. It was constructed in 1974 as an Eagle Scout project by David Mitchell. With only a topographic map and a compass, Mitchell laid out a winding route over Guaje Ridge and into Guaje Canyon, ending at Guaje Reservoir.

Only the first third of a mile is on Los Alamos County open space, but the Mitchell Trailhead serves as a major access point to the Perimeter Trail. Trail usage, particularly on weekends, is high. It is a critical place for trail and open space information. As such, a trailhead kiosk is maintained at the site. Also, there is off-street parking for three vehicles. The open space surrounding the County segment of the trail was the site of intensive post-fire restoration efforts. Many seedlings planted by volunteers have grown to sapling size. Seedball restoration is also evident in the form of an assortment of wildflowers that bloom throughout the summer.

Maintenance Needs

1. Maintain up-to-date information on the trailhead kiosk.
2. Periodically clean out water bars on first slope on the trail.



Sign at the top of Mitchell Trail.

NORTH BAYO BENCH TRAIL

Trail Status: Constructed	Length: 2.2 Miles	Elevation Gain: 600 feet
Parking: At roundabout	Used by: All Users	Use: Heavy

Narrative

The North Bayo Bench Trail is a historic route that brought homesteaders from the floor of Bayo Canyon to the top of the mesas of the Los Alamos area. Using picks, shovels, and presumably a bit of dynamite, homesteaders chiseled a steep and rough route up from the canyon floor to the top of a natural bench on the north side of Barranca Mesa. The old road and modern trail follow the bench to the west. Trail ruts from farm wagons are worn into the soft tuff. The modern trail ends at the junction with the Bayo Canyon Trail near the intersection of San Ildefonso Road and Diamond Drive.

The North Bayo Bench Trail is one of the backbones of the Bayo Canyon trail system. It provides access to the north side of Bayo Canyon, staying on the bench between the houses of Barranca Mesa and the canyon floor. The east end of the trail is underlain by a sewer line and elevated manholes are found along the route.

A spur trail heads east to viewpoint of Bayo Canyon. The trail receives heavy use by hikers, runners, and mountain bike riders.

The steep section of trail that drops to the bottom of Bayo Canyon requires constant erosion monitoring.

The trail in the canyon bottom is often difficult to follow.

Manholes should be maintained to blend as much as possible with the landscape.

Maintenance Needs

1. Monitor condition of historic ruts.
2. Better define the route in the canyon bottom by improving or relocating trail tread.



Monitor condition of historic ruts.



North Bayo Bench and Bayo Canyon Trail.

NORTH PUEBLO BENCH TRAIL

Trail Status: Constructed	Length: 1.3 Miles	Elevation Gain: 100 feet
Parking: Walnut Street Playlot	Used by: All Users	Use: Heavy

Narrative

The North Pueblo Bench Trail parallels Pueblo Canyon on a bench below the Walnut/Villa streets neighborhood in North Community. The trail receives heavy use from all user groups as part of recreational loops and for commuting from neighborhoods into the downtown area. It connects over the Pueblo Canyon and Homestead Crossing bridges with the South Pueblo Bench Trail to form easily accessible, popular loop trips. The addition of the bridges was an essential improvement of the trail network in the central canyons.

The west end of the trail is located at the junction of the Homestead Crossing and School Canyon trails. The first half-mile of the route crosses steep dips of drainages entering Pueblo Canyon. Bicycle use is light on this segment. At the Pueblo Canyon Bridge, the trail becomes easy to follow and remains relatively flat. The bench is dotted with gnarled ponderosa pines. At the east end of the trail, a new route leads to a utility access road that becomes the trail route for a few hundred feet. The trail ascends to the end of Walnut Street on rock stairs, and a branch trail leads north to connect with the Walnut Canyon Road.

Maintenance Needs

1. Replace Pueblo Canyon Bridge decking by 2014.
2. Re-seed the restoration area near the east end of the trail.



Replace Pueblo Canyon Bridge decking by 2014.



Re-seed restoration areas.

NORTH PUEBLO TRAIL

Trail Status: Constructed	Length: 0.6 Mile	Elevation Gain: 100 feet
Parking: Sycamore water tank	Used by: All Users	Use: Moderate

Narrative

A well-used trail parallels the western portion of Pueblo Canyon from North Road to the Western Perimeter Tract behind 48th Street. The trail begins near the Sycamore water tank and traverses a broad shelf adjacent to the canyon. The area supports an open stand of ponderosa pine. The trail winds behind 48th Street to the open areas below Burnt Mountain.

The trail was developed and constructed by students from Mountain Elementary School.

Maintenance Needs

1. Clean up debris and provide trailhead parking at Sycamore water tank.
2. Remove bull thistle along trail.
3. Provide better access at new trail easement on 47th Street.



Provide trailhead parking at Sycamore water tank.



Remove bull thistle along trail.



Provide better access at new trail easement on 47th Street.

OTOWI MESA TRAIL		
Trail Status: Constructed	Length: 1.1 Miles	Elevation Gain: 500 feet
Parking: At trailhead	Used by: Hikers	Use: Moderate

Narrative

Before housing development extended along Los Pueblos, hikers used a route aligned with the current road to access the attractive viewpoints and trail along the narrow mesa. A pedestrian access easement was included in the development plats at the point of the upper mesa. The adjacent homeowners accepted the easement and have agreed to a better definition of the trail access to keep trail users off their land.

The trail follows the easement then drops steeply on a rocky slope. The trail is marked by cairns. Once on level ground, the trail heads east just above a sheer drop of 200 feet into Bayo Canyon. Access to the mesa top to the east has been blocked by San Ildefonso Pueblo. At present, hikers can only make the out-and-back trip.

A faint trail descends off the north side of the mesa. This route could be extended to meet the south branch of the Deer Trap Mesa Trail to create an extended loop route.

Maintenance Needs

- 1. Connect the trail to either Bayo Canyon, Deer Trap Mesa, or both.

PERIMETER TRAIL		
Trail Status: Constructed	Length: 5 Miles	Elevation Gain: 600 feet
Parking: Mitchell trailhead, cemetery	Used by: All Users	Use: Heavy

Narrative

The Perimeter Trail coalesced from a collection of neighborhood and USFS trails following the Cerro Grande fire. As a community-based effort, volunteers and the Youth Conservation Corps constructed trail segments. The trail provides access to many portions of the trail network and serves to link most of the neighborhoods in Los Alamos and connects with trails in the Santa Fe National Forest. The trail is a cooperative effort between Los Alamos County and the Santa Fe National Forest. Along its route, the trail crosses the forest/county boundary at least eleven times.

The Perimeter Trail skirts the edge of the developed townsite from Rendija Canyon near the Guaje Pines Cemetery to the boundary with Bandelier National Monument, in total about 11 miles of trail. From its eastern terminus, the trail is located in Rendija Canyon, following the north slope of the canyon bottom. After crossing roads in the Ponderosa Estates subdivision, the trail parallels Arizona Avenue on national forest land. At the intersection with the Mitchell Trail, the Perimeter Trail again enters Los Alamos County open space as it winds across the foothills behind 48th Street. At the crossing with North Pueblo Canyon, the trail climbs on steep switchbacks on national forest land to traverse above the Quemazon Communities. Now heading south, a long stretch of trail leads to the rim of South Pueblo Canyon. Here the trail swings east and twists among boulders and trees to descend steeply to cross South Pueblo Canyon and immediately ascends the other side, coming to the street at the intersection of 47th and Ridgeway. From this point, trail users continuing south onto laboratory and national forest lands must use Sandia and Trinity drives to access the Devaney-Longmire Trail.

The long-term vision for the Perimeter Trail is to connect Barranca Mesa to Bandelier National Monument. Cooperation of the Department of Energy and the forest service are necessary to complete the trail from Omega Bridge to Pajarito Canyon.

This major trail should be continued to be improved. Links to other trails on the network should be maintained and new links developed where possible. An access point on the south side of the Quemazon Communities is critical. Following the proposed county purchase of a portion of South Pueblo Canyon, the trail should be linked to the Quemazon Trail.

Maintenance Needs

1. Resolve the stairs to nowhere by constructing a reroute at the Sonrisa cul-de-sac.
2. Construct link to Quemazon Trail.



Reroute trail at South Pueblo Crossing.



Resolve the stairs to nowhere by constructing a reroute at the Sonrisa cul-de-sac.

PUEBLO CANYON TRAIL

Trail Status: Constructed	Length: 4.5 Miles	Elevation Gain: 700 feet
Parking: Bayo Canyon Road	Used by: All Users	Use: Heavy

Narrative

The Pueblo Canyon Trail travels lower Pueblo Canyon from the confluence with Acid Canyon to the Bayo Canyon Road. This long trail has a long history of use. In the 1920s, the trail was used to run tours out of Coomer Cabin, now Camp Hamilton. The tours focused on the unique tent rocks in the area. The hoodoos (or tent rocks) attracted visitors from all over the nation, and visitors rode horses up the canyon with Coomer as their guide. The Los Alamos Ranch School purchased the cabin around 1925 and used it as a day and simple overnight destination for students. The young men rode horses down the Ranch School Trail to the bottom of Pueblo Canyon, then continued to the camp using the Pueblo Canyon Trail.

The modern trail follows the utility access road for the Pueblo Canyon sewer line. The road crosses the arroyo in the canyon bottom at about six locations. Several of these crossings are armored with gabion baskets.

Trail users must be cautious at these locations. Other sections of trail are subject to washout.

Acquisition of the lower Pueblo tract by Los Alamos County as part of the land transfer process could lead to the construction of an attractive tract segment located out of the canyon bottom and along the south canyon wall.

Maintenance Needs

1. Restoration of canyon bottom
2. Monitor Siberian Elms and Russian Olives



Pueblo Canyon Trail meanders through Ponderosa Pines.

PUEBLO CANYON RIM TRAIL

Trail Status: Constructed	Length: 4.5 Miles	Elevation Gain: 400 feet
Parking: Pajarito Cliffs Site	Used by: All Users	Use: Moderate

Narrative

The Pueblo Canyon Rim Trail travels the south rim of Pueblo Canyon from Acid Canyon to the Camp Hamilton Trail. It incorporates the paved Los Alamos Mesa Trail and a section of the Graduation Canyon Trail in it's central portion. Views of Pueblo Canyon, the Sierra de los Valles, and the Rio Grande rift are spectacular all along the trail corridor. The trail is one of the backbones of the Pueblo Canyon trail system, providing for long trips and a variety of loops on the edge of the townsite.

The western portion of the trail was entirely developed and constructed by volunteer Jim Billens. Working from the Ranch School Trail, he incorporated old trails and utility corridors into a trail. From near Canyon Road, he created a shelf trail on the slope below Rim Road, connecting the Ranch School Trail with the Graduation Canyon Trail.

The Graduation Canyon Trail takes trail users to the top of Los Alamos Mesa and the paved trail along the mesa from East Park to Tewa Loop. Here the Pueblo Canyon Rim Trail veers to the left on a dirt track. The trail traverses along the north fence of the airport on a trail segment improved by the Los Alamos Family YMCA Youth Conservation Corps during the summers of 2009 and 2010.

Maintenance Needs

1. Monitor drainage off of the airport runway following the monsoon season each year.
2. Find a better route at the gasoline crossing on the west end of the trail.



The western section of the Pueblo Canyon Rim Trail was dug into the slopes by volunteer Jim Billens.



The eastern portion of the trail was constructed by the Youth Conservation Corps.

QUEMAZON NATURE TRAIL

Trail Status: Constructed	Length: 0.8 Mile	Elevation Gain: 400 feet
Parking: At trailhead	Used by: Hikers	Use: Heavy

Narrative

In 1971, a group of Los Alamos Girl Scouts designed a nature trail on the hills above the Western Area. The walk through the pine forest, marked with short wooden posts, pointed out the natural features found along the trail. Maintained over the years by local Boy and Girl Scouts as well as neighborhood residents, the trail is a local favorite.

When the Cerro Grande Fire blew across Los Alamos Canyon on May 10, 2000, the flames exploded into the tops of the pines. The resulting crown fire left the area through which the trail passes a black forest covered with a thick layer of ash.

Searching for a way to involve their sixth-grade students in post-fire recovery, Mountain Elementary teachers Laura Patterson and Gerry Washburn began the rebuilding of the nature trail in September 2000. With the assistance of the Volunteer Task Force, Mountain sixth-grade students carefully relocated the trail, cleared it of debris, and constructed rock walls and switchbacks. In the following years, students planted ponderosa pine seedlings, aspen trees, native grasses and wildflowers. They improved the trail construction, cleared fallen trees, and redeveloped the trail guide to fit the changed landscape, all while studying and monitoring the recovery of the forest. Los Alamos County officially reopened the Quemazon Nature Trail on May 22, 2004.

Maintenance Needs

1. Replace weathered trail logos.



Replace wethered trail logos.



Forest Service trail signage.



Wildflowers are bundant along the Nature Trail.

QUEMAZON TRAIL

Trail Status: Constructed	Length: 1.1 Miles	Elevation Gain: 500 feet
Parking: At trailhead	Used by: All Users	Use: Heavy

Narrative

The Quemazon Trail is a historic route that offered sheepherders, loggers, and homesteaders a crossing of the Sierra de los Valles to the Valle Grande. The route is shown on maps dating from around 1900, and it still bears the deep ruts carved by logging sleds in the early part of the 20th century. The route is currently a popular recreational trail for hikers and mountain bikers. The lowermost mile of the trail is on the Western Perimeter Tract and managed by Los Alamos County; the remaining two miles of trail is on the Santa Fe National Forest.

The trailhead is located off Trinity Drive in the Western Area of Los Alamos. The main branch of the trail follows a utility access road for the first quarter mile. Other trail branches split off to the left and offer a more scenic alternative to the road. A gate protects the road from vehicle traffic at the point where the Quemazon Nature Trail bears to the left. The rutted road climbs steeply, often on bedrock. Just before the western fire-break, the trail enters the national forest.

The Quemazon Trail has a durable bedrock surface that protects it from many potential problems. A connection between this trail and the Perimeter Trail across South Pueblo Canyon should be constructed as soon as possible..

For those who are unfamiliar with the area, the trailhead is difficult to locate. A small directional sign should be placed at the corner of Trinity Drive and the entrance road to the trailhead. An existing wooden directional sign at the parking area should be refurbished and moved slightly to make it visible from Trinity Drive. The trailhead information kiosk should include maps that clearly delineate the route to the national forest.

Maintenance Needs

1. Install directional signs to the trailhead from Trinity Drive.
2. Install additional access control at water tanks.
3. Monitor condition of historic ruts.
4. Connect trail to Perimeter Trail across Pueblo Canyon.



Quemazon trailhead.



Monitor condition of historic ruts.



Trail runner along Quemazon Trail.

RANCH SCHOOL TRAIL

Trail Status: Constructed	Length: 0.6 Mile	Elevation Gain: 300 feet
Parking: At Aquatic Center	Used by: All Users	Use: Moderate

Narrative

The Ranch School Trail was constructed by the Los Alamos Ranch School as an equestrian route from the school on Los Alamos Mesa to the bottom of Pueblo Canyon. The trail provided access for students to the cabin at Camp Hamilton. As a 10-mile round-trip ride, the route served well as a weekend outing for younger boys at the school.

The trail begins directly behind the Larry Walkup Aquatic Center. At the edge of Acid Canyon, the trail drops about 100 feet on two broad switchbacks. Eroding log stairs provide some grade control along the descent.

After crossing the South Fork of Acid Canyon, the trail traverses a bench until it reaches the main branch of Acid Canyon. Here the trail again drops on a switchback, this one held in place by a magnificent stone wall.

The wall was probably constructed under the direction of Pedro Gonzales, a ranch hand at the school who was skilled in carpentry and rock work. Crossing a narrow dugway, the trail descends along the south wall of Acid Canyon. At the junction of this canyon and Pueblo Canyon, the trail crosses the Pueblo Canyon wash and descends down that canyon to meet the Pueblo Canyon and East Fork trails.

This trail is listed on the State Register of Historic Places, mainly due to the rock wall at Acid Canyon. The condition of this wall should be monitored yearly. Repairs, when necessary, should be accomplished by rock-work preservation specialists.

Maintenance Needs

1. Landscape trailhead area with native plants.
2. Divert water from Aquatic Center runoff off of the trail.
3. Monitor the condition of the stonewall switchback on an annual basis.
4. Rebuild the bridge over Pueblo Canyon.



Water flowing down the Ranch School Trail.



Rebuild bridge over Pueblo Canyon arroyo.

RED DOT TRAIL

Trail Status: Constructed	Length: 1 Mile	Elevation Gain: 1000 feet
Parking: At trailhead	Used by: Hikers	Use: Heavy

Narrative

The Red Dot Trail offers the easiest access into the rugged and grand White Rock Canyon. Easy is a relative term for the trail is steep and loses 800 feet from rim to river in just over mile. Much of the trail is on rocks set like a staircase, but two benches moderate the grade for short stretches. The trail follows an ancient route from the canyon rim to Pajarito Springs. Although more properly called the Pajarito Springs Trail, the Red Dot Trail is named for the trail markers painted on rocks.

The trailhead is located at a pull out on Piedra Road. The trail crosses a flat on the canyon rim, then begins the steep descent at a narrow crack in the rocks. After traversing south just below the rim, the trail drops on constructed rock stairs through a succession of three level benches. Passing through a tunnel of vegetation, the trail swings by Pajarito Springs. The final quarter mile parallels the outflow of the springs. The trail ends at the Rio Grande.

The steep, rugged, rocky nature of the terrain in White Rock Canyon makes this trail difficult to maintain.

Continual work is required on the rocky stretches of trail.

Maintenance Needs

1. Protect White Rock Canyon viewshed.
2. Improve trail markings at connection with the River Trail.



Protect White Rock Canyon viewshed.



Improve trail markings at connection with the River Trail.



Petroglyphs along Red Dot Trail.

RIVER TRAIL		
Trail Status: Constructed	Length: 2 Miles	Elevation Gain: 200 feet
Parking: Red Dot, Blue Dot trailheads	Used by: Hikers	Use: Moderate

Narrative

The River Trail parallels the Rio Grande in the depths of White Rock Canyon. It is located on a terrace between the river and the first high cliff in the canyon. The trail connects to two major routes from rim to river, the Red and Blue Dot trails, and the route, although more difficult to follow, continues to Water Canyon and to Frijoles Canyon. The trail was probably developed from sheep and cattle trails worn into the Ramon Vigil Grant during the period from 1910 to 1935. Springs and flowing streams are encountered on the northern section of the trail. Near the Red Dot Trail, the route enters a deep thicket and passes the remains of a huge stone corral from the sheep grazing era. After crossing the outflow from Pajarito and other springs, the trail crosses Ancestral Pueblo agricultural fields. The route is distinct to Water Canyon. Beyond that location, the tread is difficult to follow.

The River Trail makes several steep climbs and descents, but for the most part crosses level terrain. The flat nature of the terrain creates few trail maintenance problems. However, in two places the trail passes through disturbed areas where deep erosion channels are cut. The trail should be rerouted in these areas.

Rock cairns should be built at intervals along the trail.

Maintenance Needs

1. Explore methods for removing feral cattle along the trail.
2. Reroute short eroded section just south of the badlands
3. Build rock cairns at intervals along the trail.
4. Reroute short section of trail at major drainages.
5. Cut back overhanging vegetation near Pajarito Springs.



Explore methods for removing feral cattle along the trail.



Reroute short section of trail at major drainages.



Manage vegetation along river trail.



Reroute short eroded section just south of the badlands.



Reroute short section of trail at major drainages.

SCHOOL CANYON TRAIL

Trail Status: Constructed	Length: 0.6 Mile	Elevation Gain: 100 feet
Parking: Along 37th Street	Used by: Hikers	Use: Moderate

Narrative

The School Canyon Trail links the Perimeter Trail area with the central canyons. It is well-developed from the 37th Street Playlot to the Homestead Crossing Trail, but the trail is informal west of the playlot to Diamond Drive and west of Diamond Drive. From the playlot, the developed trail heads south and descends to a bench below 37th Street. The trail drops from the bench into the canyon through a narrow slot and on a steep staircase of rock. At the confluence of School and Pueblo Canyons, the trail turns east and in a few hundred feet intersects the Homestead Crossing Trail near the Homestead Bridge. The informal portion of the trail follows the narrow bench about 100 feet above the bottom of School Canyon. West of Diamond Drive, the original trail access was blocked by development.

Maintenance Needs

1. Improve staircase connection from bench to canyon.
2. Improve trail marking at the head of the stairs.



Improve staircase connection from bench to canyon.



Improve trail marking at the head of the stairs.

SOUTH PUEBLO BENCH TRAIL

Trail Status: Constructed	Length: 1.2 Miles	Elevation Gain: 200 feet
Parking: Olive Street	Used by: All Users	Use: Heavy

Narrative

The South Pueblo Bench Trail is a major part of the Los Alamos Trail Network within the central canyons of the townsite. With other trails paralleling and crossing Pueblo Canyon, this trail is the main stem of many recreational loop trips and forms a trail connection between neighborhoods in North Community and the downtown area. It passes through stands of magnificent ponderosa pines, and offers views down Pueblo Canyon. Most the trail's users are found on the Pueblo Canyon segment.

The trail begins on Diamond Drive at the Pueblo Fill Bridge. Traversing east along a bench to the north of the Denver Steel neighborhood, the trail passes adjacent to Ridgeway Playlot before dropping steeply to a lower bench. After passing the Homestead Crossing Trail, the South Pueblo Bench Trail swings around the tip of Center Mesa past the site of Peggy Sue Bridge. Now heading west, the trail twists among rocks and trees above the bottom of Acid Canyon. Near 34th Street, the trail climbs crude stairs to reach the mesa top, ending at the dead end on 34th Street.

Maintenance Needs

1. Central section treadwork and install of water control structures.
2. Improve stairs near 34th Street.
3. Monitor bridge condition.



Improve stairs near 34th Street.



Monitor bridge condition.

TENT ROCKS TRAIL

Trail Status: Constructed	Length: 1.2 Mile	Elevation Gain: 400 feet
Parking: No road connections	Used by: All Users	Use: Light

Narrative

Hikers and mule deer used an informal trail along the north wall of Pueblo Canyon for many years. In 2006, the trail was used as the basis of a fireline for prescribed burn operations by the Fuel Mitigation/Forest Restoration Project. The Santa Fe Hot Shots widened the trail and joined the separated segments to form a continuous path. The trail functions as a fireline, and the fireline is maintained by trail use.

The attraction of the trail is that it offers spectacular views of the tent rocks in Pueblo Canyon. The conical shaped rocks are composed of welded volcanic ash spewed from a massive eruption of the Valles Caldera about 1.2 million years ago. Each formation is capped with a more erosion resistant rock. The rocks were noted by Adolph Bandelier on his visits to the Pajarito Plateau, and were included on the standard tour of a Santa Fe guide service in the early 20th century.

Volunteers began improvements to the fireline to make it a more inviting trail in 2007. Youth Environmental Service Corps members improved the easternmost quarter mile of the trail, two Eagle Scout candidates worked the next section in the fall of 2007. The Family YMCA Youth Conservation Corps completed the trail construction in 2010.

Maintenance Needs

1. Monitor for erosion and fallen trees



Tent Rocks Trail.



Tent Rocks in Pueblo Canyon.

UPPER WALNUT TRAILS

Trail Status: Constructed	Length: 0.8 Mile	Elevation Gain: 200 feet
Parking: At Nina Marsh Court	Used by: All	Use: Moderate

Narrative

Several interconnecting trails wind through the open space triangles between 35th, 36th, and Arizona. Steep slopes make the trails difficult to route, build, and maintain. One route begins at the 36th Street tennis courts and heads up the drainage. In a few yards, the trail splits. One branch traverses the slopes to the corner of Arizona and 36th Street and the other branch travels the length of the bowl and exits on a pedestrian easement near 35th and Arizona. A linking trail connects the two Arizona Avenue entrance points.

The trails are used by neighborhood residents for walking and bicycling. The routes are also used to connect loops with the Perimeter and Walnut Canyon Rim trails.

Maintenance Needs

1. Access from 35th Street needs to be better defined. The existing wall needs to be made into stairs.



Re-establish trail easement at 35th and Arizona.

WALNUT CANYON TRAIL

Trail Status: Constructed	Length: 0.6 Mile	Elevation Gain: 200 feet
Parking: None	Used by: All Users	Use: Moderate

Narrative

Although an informal trail has long been located in Walnut Canyon, this route was developed in 2007-2008 as a fireline for a burn operation in Walnut Canyon. The fireline was converted into a trail that follows the drainage bottom from the West Fork Trail to the mid-point of the Walnut Canyon Rim Trail at the golf course. The trail, including a steep switchback, was entirely constructed by eighth grade students from the Los Alamos Middle School. Improvement is needed at the west entrance where the trail first drops from the mesa top into a side drainage.

Maintenance Needs

1. Add drainage to trail as it starts climb out of canyon.
2. Improve stairs at west entrance.



Add drainage to trail as it starts climb out of canyon.



Remove boulder from trail.



Improve stairs at west entrance.

WALNUT CANYON RIM TRAIL

Trail Status: Constructed	Length: 0.9 Mile	Elevation Gain: 100 feet
Parking: None	Used by: All	Use: Heavy

Narrative

The Walnut Canyon Rim Trail is an important connecting trail between the townsite, North Community, and Barranca and North Mesas. From its trailhead on 34th Street, the trail makes a hairpin turn around the head cut of Walnut Canyon, crossing the arroyo on a small bridge. As the trail swings east, it parallels the back side of the Los Alamos Golf Course. After crossing the Walnut Utility Road, the trail parallels the cliff edge to meet the East Fork Trail near San Ildefonso Road.

This trail receives heavy use by all types of trail users. It is used both as a recreational trail and as a commuter trail from the far mesas to the townsite and the Laboratory. As much of the land the trail traverses is zoned residential, the trail should be protected or carefully rerouted along the canyon edge if the land is developed.

Maintenance Needs

1. Monitor condition of bridges.



Monitor condition of bridge.



Monitor condition of bridge.

WHITE ROCK CANYON RIM TRAIL

Trail Status: Constructed	Length: 2.8 Miles	Elevation Gain: 50 feet
Parking: At East Park	Used by: All	Use: Heavy

Narrative

The White Rock Canyon Rim Trail follows the rim of White Rock and Pajarito canyons and provides some of the most spectacular hiking in Los Alamos County. The eastern half of the trail closely parallels the canyon rim and trail users find frequent, striking views into the canyon to the Rio Grande 1,000 feet below. The White Rock Canyon Rim Trail, and the canyon below, are one of New Mexico's treasures.

The White Rock Canyon Rim Trail traverses a narrow swath of open space between the canyon rim and the houses of White Rock. As a result, access trails and branch trails proliferate. The abundance of side trails, storm water fed from the streets, and the decrease in canopy cover due to piñon die off have merged to create elevated levels of soil erosion. In the rocky soil of the trail, this creates small gullies that require constant attention.

Maintenance Needs

1. Rock cairns should be constructed in areas where the trail is unclear or needs to be routed in a specific way to reduce erosion.
2. Repair erosion on lower branch of trail near climbing area.
3. Repair erosion damage from street runoff in all major drainages that cross the trail.



White Rock Canyon Rim Trail.



White Rock Canyon Rim Trail.

WOODLAND TRAIL

Trail Status: Constructed	Length: 1.2 Miles	Elevation Gain: 100 feet
Parking: None	Used by: All Users	Use: Heavy

Narrative

The Woodland Trail travels the length of the Los Alamos County open space located between the back nine of the Los Alamos Golf Course and the houses along Woodland Avenue. This narrow strip of public land receives heavy use by neighborhood residents, and the trail is often used by recreational trail users as a part of long loops that incorporate the Perimeter, Walnut Canyon Rim, and other trails.

The trail connects Arizona Avenue with Club Road on an undulating route that is never far from the golf course. From Arizona Avenue just east of the Pajarito Complex, the trail descends quickly to the bottom of a small branch of Rendija Canyon. The trail crosses the canyon bottom and parallels the drainage heading east. About halfway to Club Road, a branch trail splits to the left and continues along the north slope of the canyon. The main trail stays on the south slope, passing within yards of the 11th tee of the golf course. Near the east end, the branch trail rejoins the main route, and the trail skirts around the 10th tee of the golf course to reach Club Road. A continuation of the trail connects to the Dot Grant Trail near the roundabout.

Maintenance Needs

1. Monitor condition of the bridge near the roundabout.
2. Monitor erosion.
3. Re-route unsustainable sections of trail.



Monitor condition of the bridge near the roundabout.



Woodland Trail erosion control.

ZIPLINE TRAIL

Trail Status: Constructed	Length: .75 Mile	Elevation Gain: 400 feet
Parking: None	Used by: All Users	Use: Moderate

Narrative

The Zipline Trail was the first rim-to-canyon bottom trail connector trail constructed in Pueblo Canyon. It connects the Pueblo Canyon Rim and Tent Rocks trails in the vicinity of the Los Alamo Airport. The uses 15 switchbacks to change 400 feet of elevation. It is an ideal trail for creating loop trips in the Pueblo Canyon trail system.

Youth Conservation Corps members constructed the trail during the summers of 2010 and 2011. The crews, sponsored by the Los Alamos Family YMCA, used sustainable trail construction guidelines to create a trail that over the years should require little maintenance.

Maintenance Needs

1. Monitor condition of the switchbacks throughout the trail.



Monitor condition of switchbacks throughout the trail.



Monitor condition of switchbacks throughout the trail.



Monitor condition of switchbacks throughout the trail.

Appendix D – Trail Signage Typologies & Locations

TRAIL SIGNAGE

Standards For Signage of the Los Alamos County Trail Network

Trail signage standards provide for unified marking of the Los Alamos County Trail Network. Trail signage shall be the minimum necessary to identify trails included on the Trail Network and provide for the welfare of trail users. All trail signs will include a logo that identifies the trail as a portion of the official Trail Network. Signs will be unobtrusive, but distinctive enough to be readily identifiable. Signs shall be constructed of material durable enough to resist vandalism and deterioration due to natural causes.

Trailhead signs will be located at important, highly used trailheads. Trailhead signs will be appropriate to each location, although a unifying theme is desirable. At a minimum, trailhead signs will identify the trail. Other desirable information for signs at major trailheads includes a map of the trail, an indication of the difficulty of the trail, a map of the Trail Network, information on trail etiquette and care, information on any historical or natural features of the trail.

The following guidelines will be observed:

- Signage will be kept to the minimum necessary for trail identification and public welfare.
- All junctions of trails on the network will normally be signed. If a junction is not signed, a written justification for the omission will be filed by the Parks Division.
- Junctions with non-system trails will normally not be signed. If such a trail junction is signed, a written justification for the inclusion will be filed by the Parks Division.
- Signage designs will be filed with the Parks Division. Designs may differ with the character of the trail, but should be recognizable as part of the Trail Network. Although composition may change as technology develops better materials, the basic appearance of standard signs will remain the same.
- All trailheads for universally accessible trails will include a symbol designating the trail as such.



TRAILHEAD KIOSK

General Description

Trailhead information kiosks should be placed at major trailheads on the Los Alamos County Trail Network. They are designed to provide directional, interpretive, and current information to trail users at locations where a large number of visitors enter the trail network. Kiosks are designed to be permanent structures that will withstand variable weather conditions and protect informational signs from the elements.

Permanent trailhead kiosks should be located at:

- Kinnikinnik Park/Aquatic Center parking area
- Bayo Canyon Trailhead at the intersection of San Ildefonso Road and Diamond Drive
- Quemazon Trailhead
- Mitchell Trailhead
- Blue Dot Trailhead
- Red Dot Trailhead
- Canyon Rim Trailhead (East and West)

Additional locations of kiosks can be added as required.

Information on the trailhead kiosks should include:

- Trail Network map
- Localized trail map of segments accessible from the trailhead
- Descriptions of trails, including length and difficulty
- Information on trail etiquette
- Interpretive information appropriate for the trails
- Current information on trail conditions, closures, or open space projects in the area

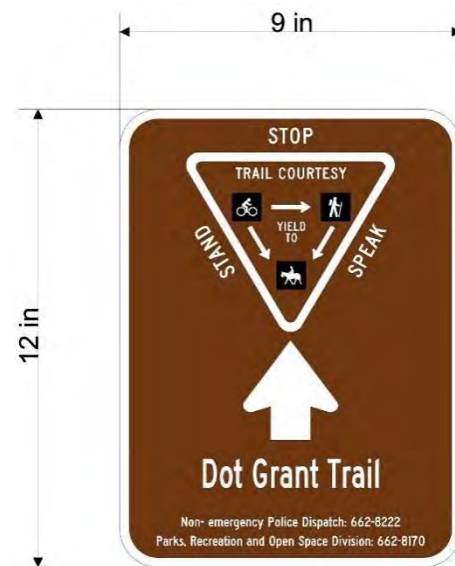


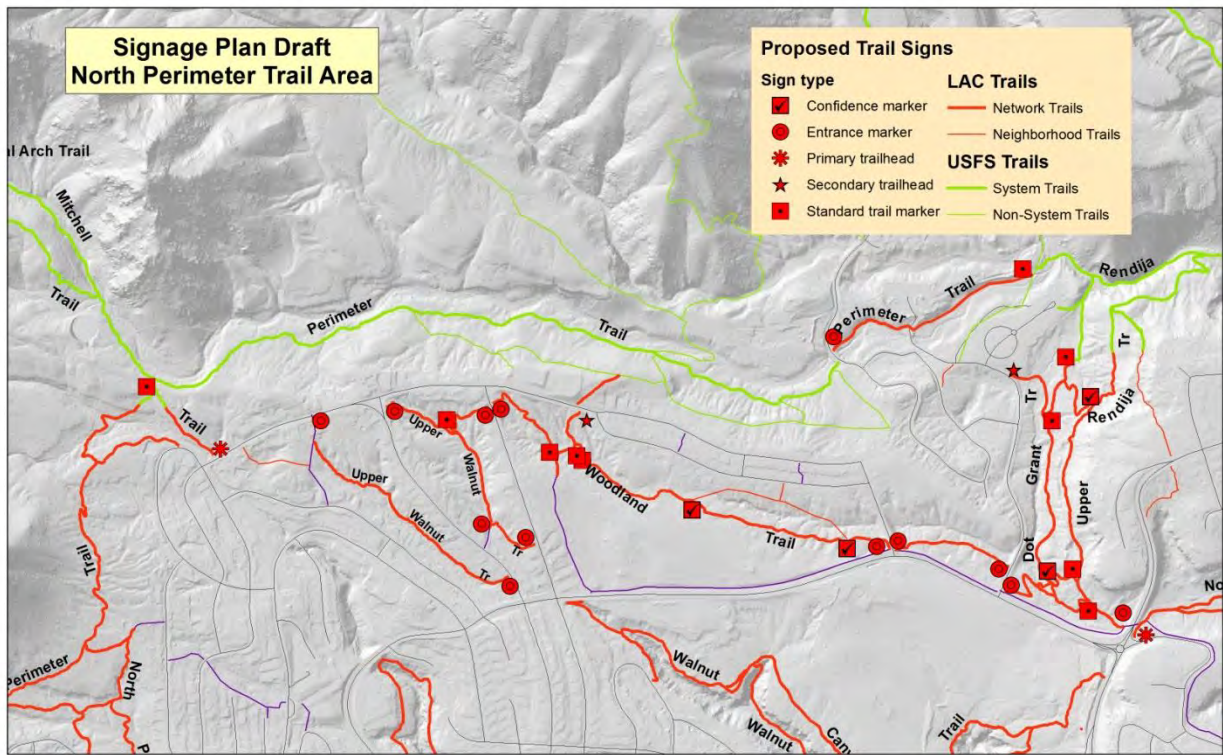
TRAIL SIGNS

General Description

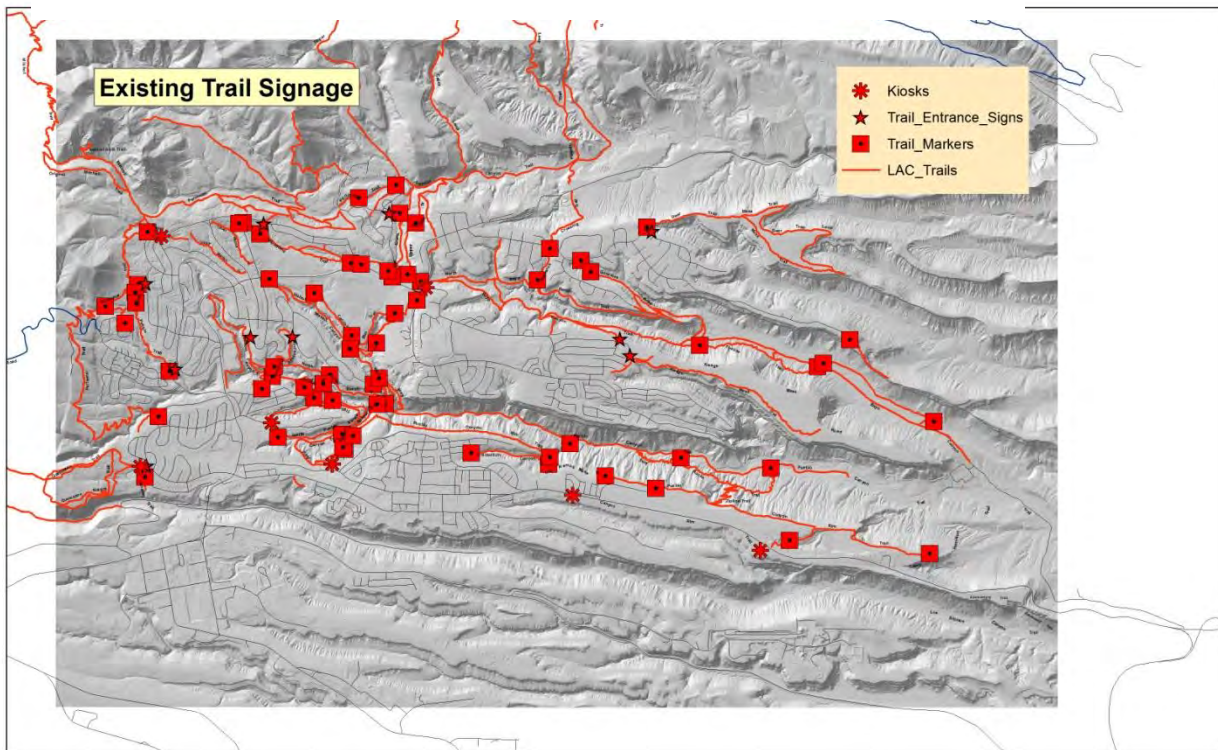
Trail network entrance signs should be placed at locations where access to the trail network is available from roads or sidewalks. The signs are made of aluminum and installed on a wooden 4x4 post.

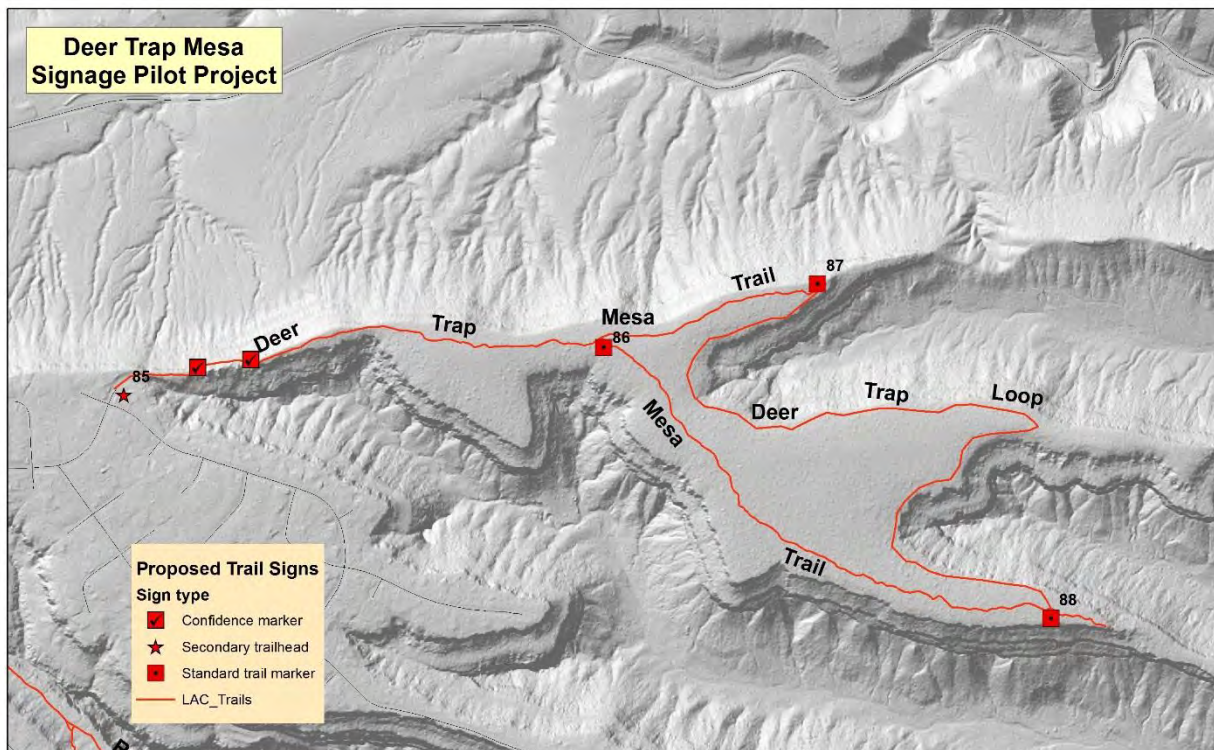
Trail markers are placed at major intersections of trails on the trail network. The trail markers are made of aluminum and installed on a wooden 4x4 post.





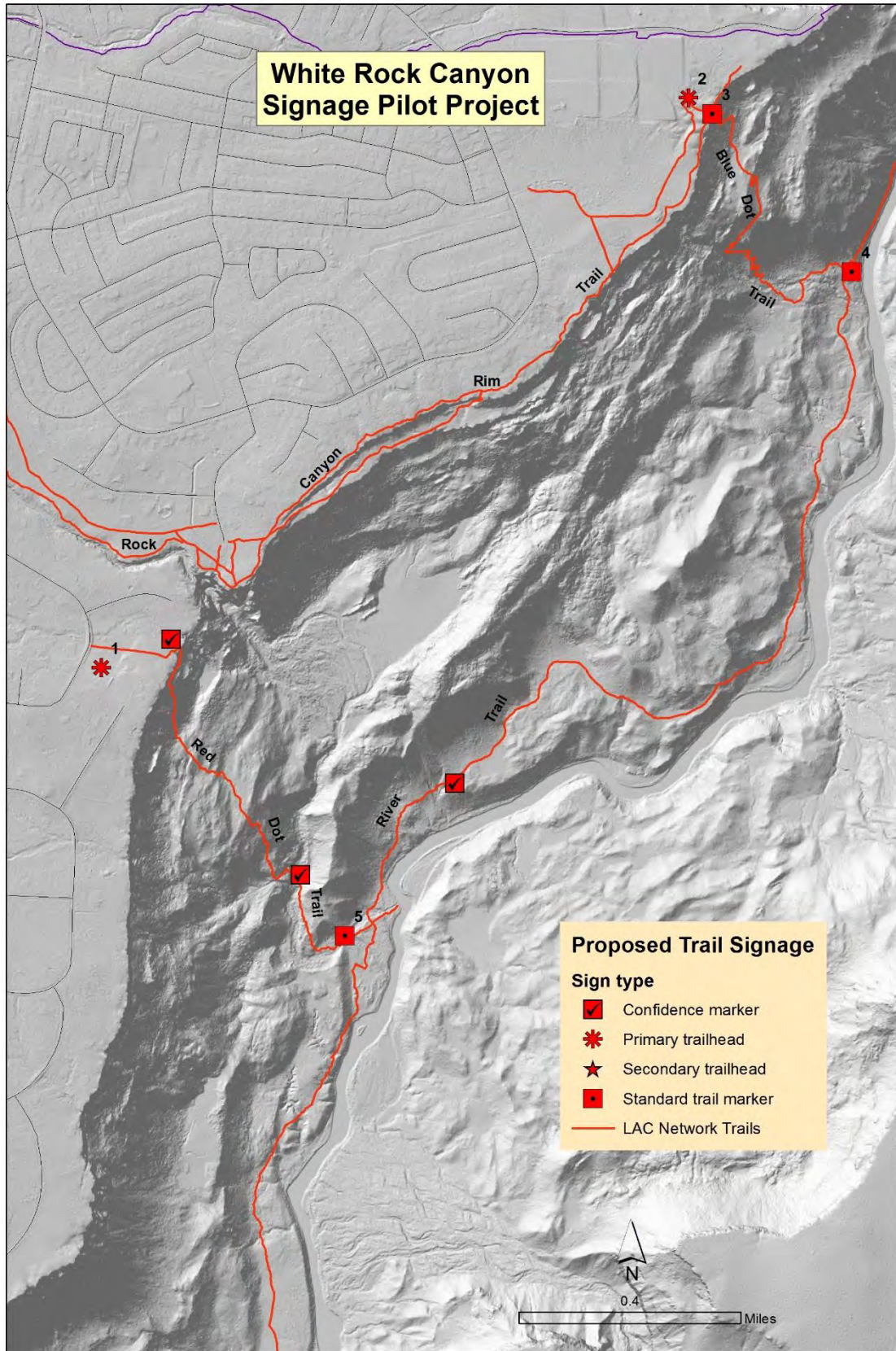
Existing Trail Sign Locations





Sample Signage Proposal for North Perimeter Trail Area

White Rock Canyon Signage Pilot Project



Appendix E – Restoration Potential Assessment

Table 1. Summary Table for Restoration Potential

Criteria: habitat, site potential, channel stability, accessibility for restoration, community engagement, existing wetland areas, active erosion, invasive species. Costs are approximate based on local knowledge of construction costs and methods. Engineering, permitting costs are based on current knowledge of project scope and if a CWA 404 permit will be required. Costs do not represent a bid for services and should be utilized for planning purposes only.

[illegible]

Area	Engineering & permitting	Construction Ballpark	Approx. Total	Notes
Barranca Crossing	NA	\$15,000	~\$15,000	Machine drainage of road into Rendija, hand build one rock dams to restore trail to south
Acid Canyon	\$12,000	\$40,000	\$52,000	Unknown issues with contaminants, length of project could be short or long
Orange Canyon		15,000		Small hand or machine built project
Pueblo Upper	X	X	X	No access to canyon
Pueblo Middle	\$15,000	60,000	\$75,000	Stream crossings of pipe and road could be prioritized, road access exists
Pueblo Lower	+	Included as appendix		Phase 1 in appendix, phase II is wetland above N3B grade control
Rendija	\$12,000			
Walnut Canyon	\$3,000	10,000	\$13,000	Headcutting and erosion control, Russian olive removal
White Rock Canyon	NA	100,000		Indeterminate scope, many floodplains each with differing amounts of Russian Olives, long

Appendix F – Los Alamos County Trail Building Standards

LOS ALAMOS COUNTY TRAIL STANDARDS



Introduction

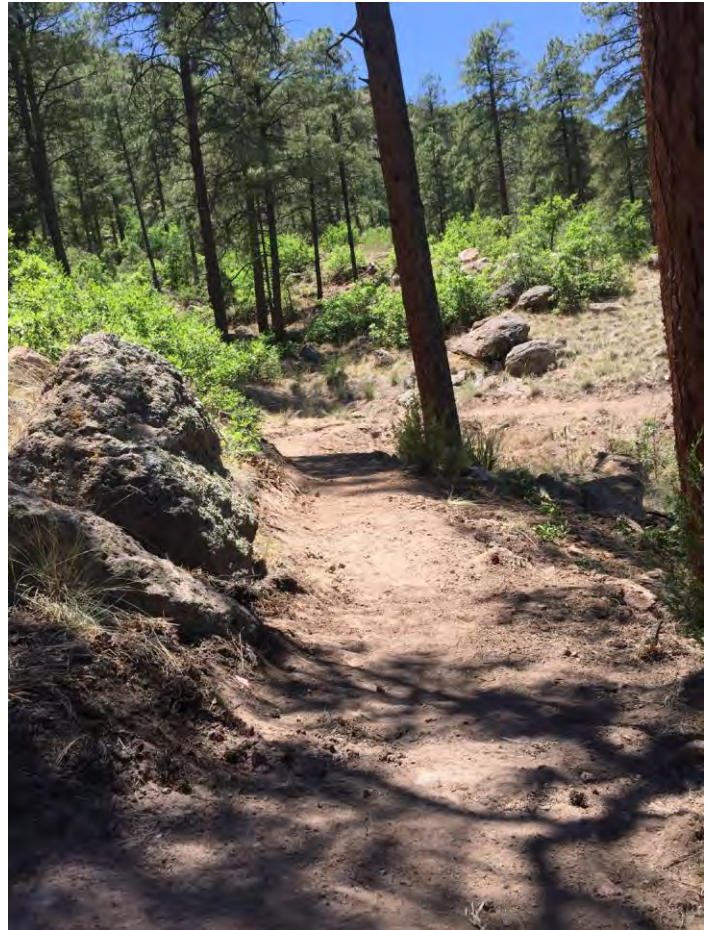
- Purpose and Scope
- Annual Trail Maintenance Program
- General Trail Standards

Trail Tread and Corridor Standards

- Typical Trail Cross-section
- Trail Corridor Clearing
- Crib Wall
- Bridge
- Stairs
- Switchbacks
- Grade Dip
- Water Bar
- Check Dam
- One-Rock
- Dam

Trail Signage Standards

- Trail Signage
- Trailhead Kiosks
- Trail Signs



PURPOSE AND SCOPE

The purpose of the Los Alamos County Trail Standards are to provide trail construction standards and maintenance guidelines for the Los Alamos County Trail Network. The standards are designed to:

- Provide all types of trail users access to safe trails
- Protect and preserve the natural and cultural resources on Los Alamos County open space while inviting non-motorized recreational use of public lands
- Maintain trails to appropriate standards designed to create sustainable trails
- Provide guidelines that minimize the impacts of trails to the landscape, viewsheds, and the sense of solitude in Los Alamos County



ANNUAL TRAIL MAINTENANCE PROGRAM

Spring Trail Maintenance Assessment

Beginning in March of each year, trails should be inspected to assess changes that occurred over the winter. The assessment should include information on problem areas caused by erosion, rockslides, and downed trees. Unsafe conditions, erosion problems, and down trees should be documented in the Trail Maintenance database.

Annual Trail Maintenance Plan

The Parks and Open Space Division, with advice from the Parks and Recreation Board, will draft an Annual Trail Maintenance Plan that will include trail maintenance and improvement plans for existing trails, proposals for unconstructed trail segments within the plan, and remediation recommendations for trail corridors. Following the spring trail maintenance assessment, the Parks and Open Space Division will prioritize trail work needs.

Trail maintenance priorities are:

1. Safety of trail users
2. Protections of natural and cultural resources
3. Prevention of erosion and protection of water quality
4. Enhancement of connectivity on the Trail Network
5. Identify projects that can utilize volunteers for construction work

Fall Trail Maintenance Assessment

To prepare the Trail Network for the winter season, a survey of the trail network should be completed in September. Uncompleted projects should be noted, as well as any erosion damage due to summer storms and downed trees obstructing the trail. Unsafe conditions, erosion problems, and down trees should be documented in the Trail Maintenance database.



Building water bars at Quemazon trailhead.

GENERAL STANDARDS FOR LOS ALAMOS COUNTY TRAILS BUILDING AND MAINTAINING SUSTAINABLE TRAILS

1. Trails will be aligned with natural terrain features and follow contours whenever possible.
2. Trails will be designed to frequently channel water off the trail and to ensure that channeled water does not create erosion problems off the trail.
3. Grade dips will be used in preference to water bars and check dams.
4. Prevention of sediment transport and protection of water quality will be the primary driver of the location and construction of trail structures.
5. The average grade of a trail will not exceed 8%, but short stretches of steeper grades will be permitted as required.
6. Trails will be adequately signed at trailheads, access points, and at major junctions on the trail network.
7. Trails will avoid all cultural resources found on open space
8. When possible, trails will not traverse north-facing slopes



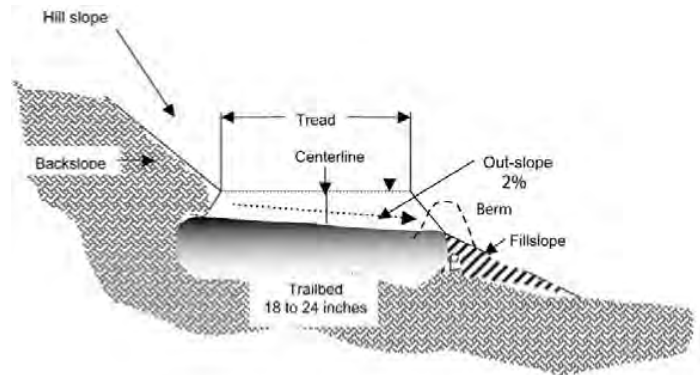
TRAIL TREAD CROSS SECTION GUIDELINES

Material and Construction Guidelines

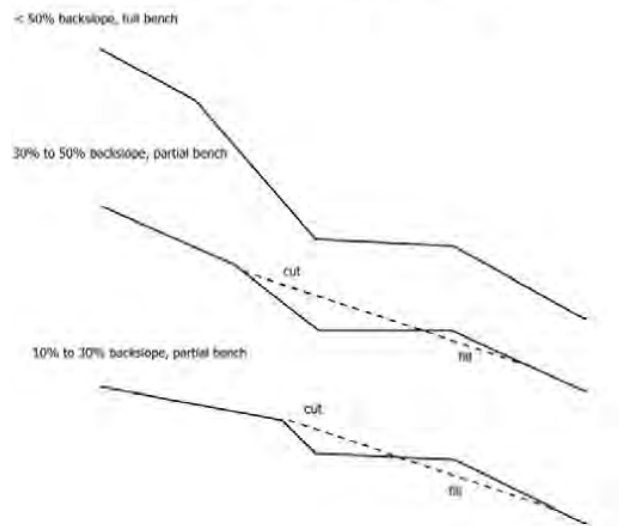
- Trail tread will be made of natural surface material
- Trail tread will be between 18 and 24 inches wide, depending on the terrain and type of trail use
- Trail tread will be outsloped from 2% to 5%. The outslope should be checked with a clinometer or by standing on the trail: If the trailbuilders ankles feel like they are bent down hill, the outslope is at too great an angle.
- Depending on the slope of the terrain where a trail is located, the trail bed may be more of a cut or bench into the hill slope. On steep slopes, the trail may be full-bench, or the full width of the trail. Soil excavated from the hill is cast aside as far as possible from the trail and not used at all in the fillslope. Especially on steep slopes, relying on fill for part of the trailbed is a bad idea. This soft material is likely to erode away quickly, creating dangerous soft spots on the downhill edge of the trail. If fill is used, it often needs to be reinforced with expensive crib or retaining walls. As the slope of the hillside decreases, it becomes more feasible to use fill material as part of the trailbed.
- All berm material should be removed from the downslope side of the trail.

Trail Grade Construction Guidelines

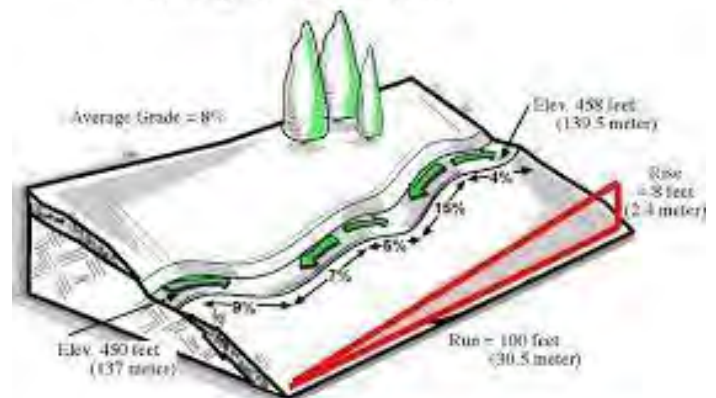
- Trail grades should follow the natural topography whenever possible
- Trail grade should average less than 8% of the length
- Trail grade should not exceed 12% at any point on the trail



Typical Trail Cross Sections



Average or Overall Grade



TRAIL CORRIDOR CLEARING

Trail Corridor Dimensions

The trail corridor should be wide enough to permit safe passage along the route by all types of trail users, including bicyclists and equestrians. The corridor should be free of downed trees, tree branches, protruding live vegetation, and brush. Obstructions should be removed from multi-use trail corridors four to six feet wide and 8 to 10 feet high. The corridors of trails used exclusively by pedestrians should be three feet wide and seven feet high.

Trail Corridor Clearing

Brush and other materials should be removed from a trail corridor in a manner that minimizes the visual impact on trail users.

1. When cutting small woody-stemmed plants or shrubs, cut as close to the ground as possible. Never top small trees along-side the trail, pull them out by the roots instead.
2. Place debris out of view. To help hide the debris, place the cut end away from the trail.
3. Make use of cut material for erosion control by placing all cut branches in contact with the ground surface. Lop-and-scatter material that should be reduced to a height of no more than 18 inches.
4. To protect the health of a tree or shrub, prune branches at the collar. The collar is a wide section at the base of a branch and contains natural healing agents. Pruning further out on the limb or too close to the trunk creates a greater risk of infection. A cut at the collar will naturally heal. Prevent splitting the limb or tearing the bark by starting a small cut from the bottom side, and then cut down from the top until you meet the small cut.

Removal of Downed Trees

To prevent the creation of side trails, trees that are blown down across trails should be removed as soon as possible. Small logs can be removed with a bow saw. Locations of large trees that require the use of a chainsaw should be mapped and removed as crews are available.

- Logs should be cut at an angle to permit the cut section to be rolled off of the trail
- The width of the logged-out section should be as wide as the brush clearing limits for the trail
- Log pieces must be rolled off the trail, outside of ditches or water bar outflows. If a log is adjacent to the trail, and can be safely left in place, cut back the limbs remaining on the log that might be hazards to the trail user and leave the rest.

Hazard Trees

Hazard trees are trees that pose a hazard to cultural or natural resources, property, or people. Only trained and qualified sawyers should remove these trees. Hazard trees along trails should be identified in spring and fall. The location of trees should be mapped and the trees removed as qualified crews are available.

Hazard trees should be identified by the following criteria:

- Tree stands within the tree height of a trail, a cultural resource, or structures or property improvements
- Tree is dead, burned, obviously infested with insects and its health declining, or leaning at more than a 20 degree angle in the direction of the resource
- Tree has a DBH of > 6 inches
- Tree has an obviously weakened root



CRIB WALL

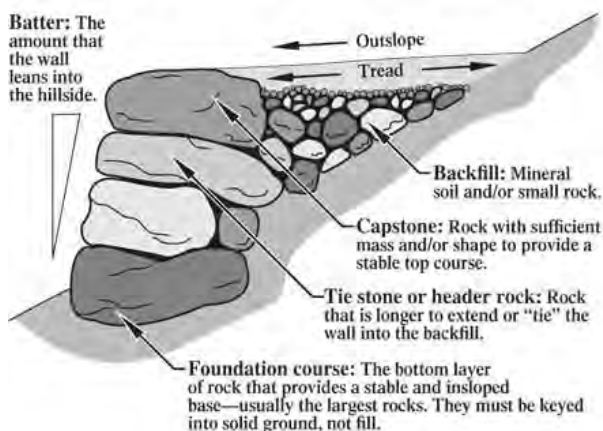
General Description

Crib walls are designed to retain soil, rock, or the trail tread in place. They are commonly used to keep compacted fill making up a trail tread in place. Use of crib walls is found in areas where the solid surface available for placement of a trail tread is not wide enough. The wall permits filling with soil in a manner to create a trail of sufficient width.

Material and Construction Guidelines

- Crib walls will be constructed with rock in preference over timber
- Native rock will be used for all crib walls, and the rocks will be dry stacked in a stable manner
- All native rock will be collected in such a manner as to protect the trail corridor and to ensure that the erosion potential is not increased
- A footing will be dug into the soil that is at least 24 inches wide and deep enough to cover at least one-half of the bottom course of rock. It should be insloped to permit construction of an insloped wall.
- The largest available rocks should be used for the bottom course. The rocks should be at least 60 pounds and 24 inches long. Upper courses of rocks should use as large a rock as possible and be as flat as possible.
- The wall will slope inward toward the trail at least 20 degrees
- The use of shims or chinking will be avoided
- Cobbles and gravel will be used to backfill the bottom layer of trail tread. Compacted soil will be used to raise the tread to the level of the top course of rocks.

Rock Retaining Wall Terminology



BRIDGES

General Description

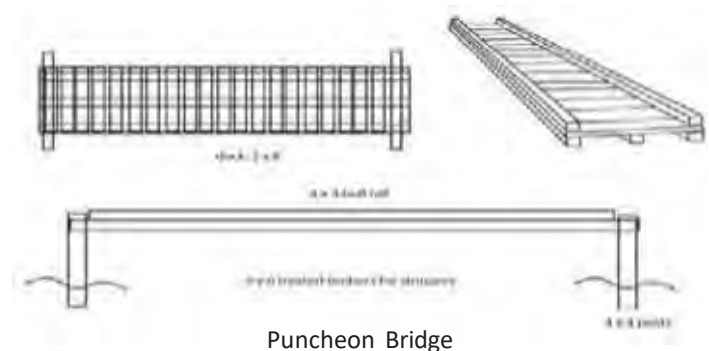
Bridges are used to span otherwise impassable landscape features or to maintain trail grade within prescribed values. Use of bridges should be kept to a minimum, but bridges may be placed in areas where significant soil erosion can occur if the bridge is not installed.

Puncheon Bridge

Puncheon bridges are used to span crossings where the height above the channel is three feet or less. They are simple to build. Stringers support planks, and a bull rail is placed to provide security. No handrails are used.

Material and Construction Guidelines

- Puncheon bridges should be constructed with treated lumber
- Lumber should be secured with timber locks or lag bolts
- Stringers should be 4 x 6 inches minimum
- Planks should be either 2 x 8 or 3 x 12 lumber
- Puncheon bridges should be no more than 24 feet in length



STAIRS

General Description

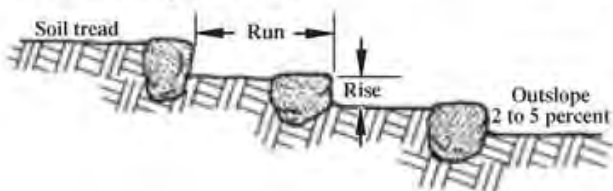
Stairs are a last resort to situations where trail grades are greater than 15 percent. Use of stairs should be kept to a minimum, but they should be placed in areas where significant soil erosion can occur if they are not installed. Stairs should not be used on trails that receive moderate equestrian or bicycle traffic.

Material and Construction Guidelines

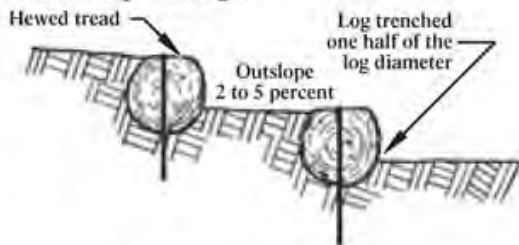
- Stairs can be constructed of rock or logs.
- Stair treads should be at least 18 inches.
- The rise of each stair should be 9 inches or less.



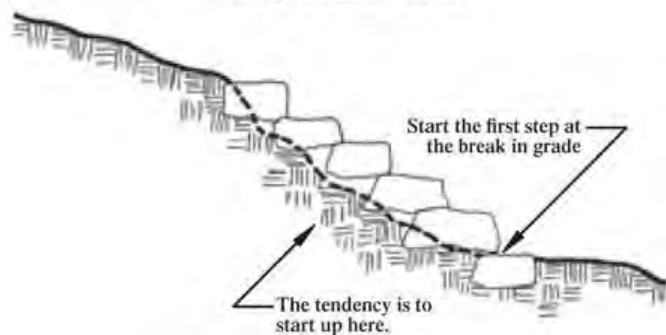
Individual Steps—Rock



Individual Steps—Logs



Step Construction

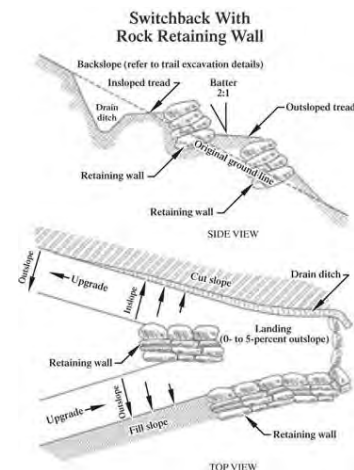


SWITCHBACKS

Trails that utilize switchbacks offer the opportunity to maintain moderate trail grades while gaining considerable elevation. Installation of switchbacks involves significant excavation and can damage resources; also, they are difficult to construct and require regular maintenance. Although the use of switchbacks should be minimized, their advantages in helping maintain sustainable trails should not be ignored. The key to successful switchback construction is making an adequate excavation, and using appropriate structures to hold the fill in place.

Material and Construction Guidelines

- Utilize natural platforms for switchback locations
- The tread in the upper portion of the switchback should be insloped to a drain along the toe of the backslope
- The drain should extend along the entire backslope and have its outfall where the excavation ends. A short spillway and a one-rock dam should be constructed to protect the adjacent fill from erosion.
- For multi-use trails, the turn radius of the switchback should be wide enough for equestrians and bicyclists. The landing should be about 10 feet in radius. However, the greater the turn radius, the wider the platform, and more excavation is required. A crib wall may be needed to keep the backslope in place.
- The upper approach and the upper half of the turn platform should be excavated from the slope. Part of the lower approach and the lower half of the turn should be constructed on fill.
- The lower approach of the switchback should be built on packed fill material. A crib wall should extend for most of this length. The tread on the lower portion of the turn should be outsloped. The approach changes grade to match the general tread grade.

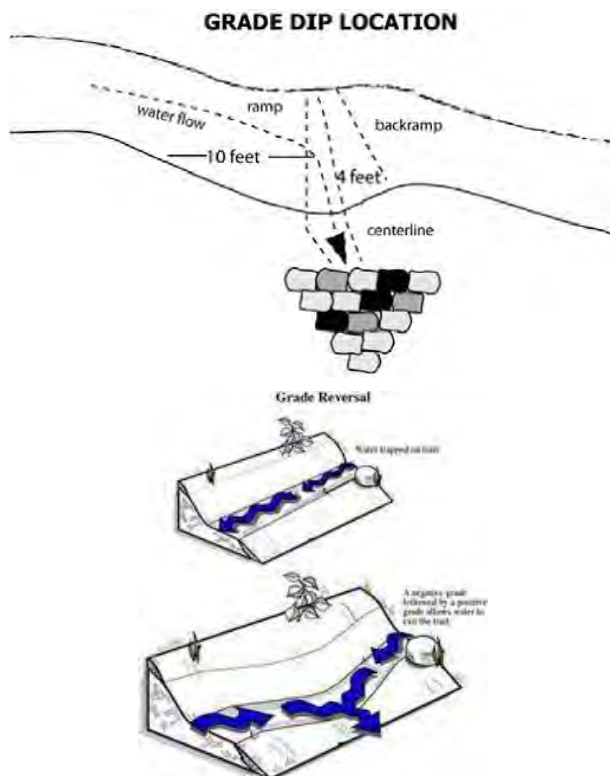
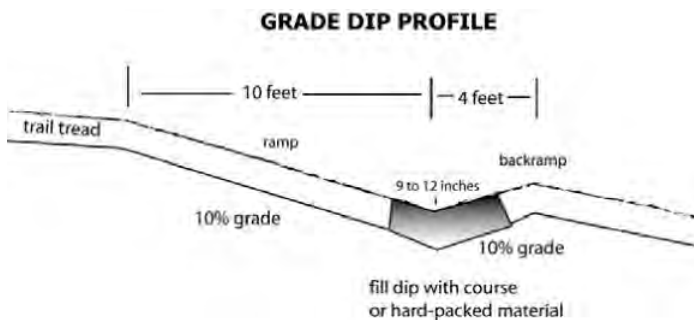


GRADE DIP

Grade dips are low points on the trail, either natural or constructed, that funnel water off the trail. They are less obtrusive, more horse and bicycle friendly, and in most cases more effective than waterbars. Also, grade dips require less maintenance than waterbars. Grade dips are the first choice for water diversion on trails. However, on grades greater than 8%, waterbars may be required to effectively divert water.

Material and Construction Guidelines

- Grade dips should be 12 to 15 feet along the trail tread
- Grade dips should be at least 9 inches deep as measured from the backramp
- Maintain a 10% grade through the grade dip
- Armor the downslope side of the dip with at least one one-rock dam



WATERBAR

General Description

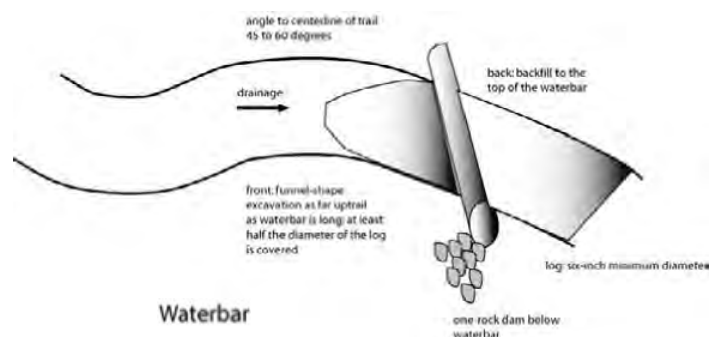
A waterbar consists of a log or rock berm coupled with a shallow, funnel-shaped trench that is installed diagonally across a sloping trail. The purpose of a waterbar is to control erosion by reducing runoff velocity and by limiting the volume of water accumulated on the trail by diverting it off the trail. Waterbars are difficult to install, require regular maintenance, but are effective at diverting water. Hikers accept them. Mountain bike riders, however, often object to frequent waterbars.

Material and Construction Guidelines

- Waterbars should be made of native materials, either logs or stout rocks. Log bars do not need to be striped of bark. Minimum size is 6 inches in diameter.
- Waterbars should be installed at an angle of 45 to 60 degrees from the centerline of the trail
- Waterbars should extend at least two feet beyond the width of the trail on the downslope end and at least one foot on the upslope side
- To install a waterbar, dig a trench to a depth of about 2/3s of the height of the waterbar. Place the log or rocks in the trench and backfill. The downslope side of the waterbar should be flush with the trail surface.
- On the up trail side of the waterbar, trench a shallow apron about four feet in width and shape it to direct water off the trail
- Dig out a shallow outlet ditch on the downslope end of the waterbar. Add rocks to the outlet channel to slow the flow of water.

Inspection and Maintenance

- Waterbars should be inspected every fall to evaluate their continued effectiveness in controlling stormwater runoff and erosion
- The accumulation of sediment on the up-trail side of a waterbar should be cleaned out as necessary



CHECK DAM

General Description

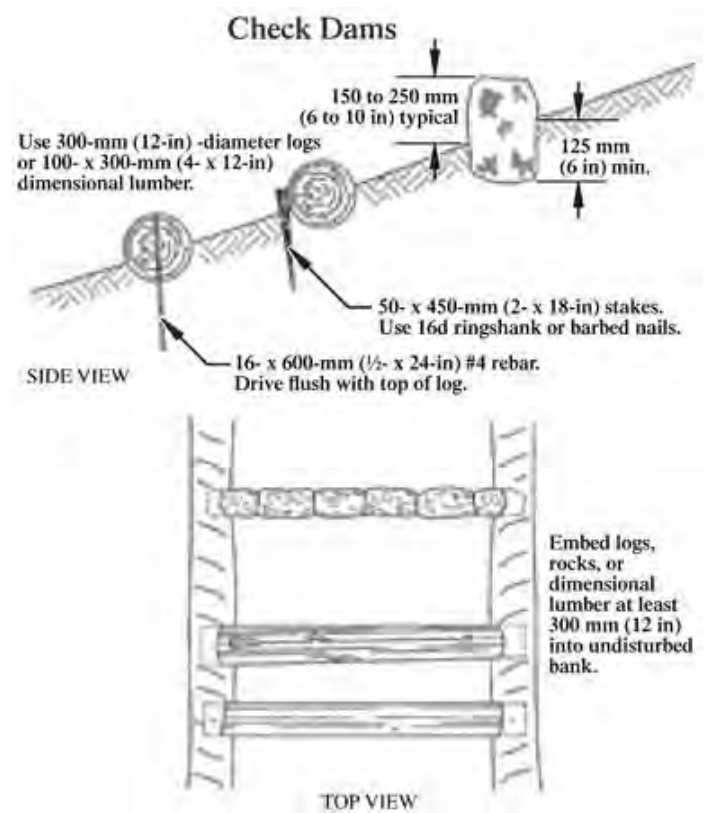
Check dams are designed to slow the flow of water along a trail in locations where it is not possible to channel water off the trail. This often occurs in areas where the trail is entrenched from years of use, or where the trail is built on highly erodable soils. A check dam spans the entire width of the trail and is set at right angles to the trail. The purpose is to slow the flow of running water and cause it to drop its sediment. Check dams are usually set in a series. After check dams are in place and fill with sediment, additional check dams are constructed. The process is repeated until the trail tread is built to the desired level.

Material and Construction Guidelines

- Check dams can be constructed of either logs or rock.
- Check dams should be no higher than six inches.
- Logs and rocks should be buried at least one-third of their height.
- Logs should be embedded into the hillslopes on either side of the trail at least one foot.
- Dig a trench long enough and deep enough to accommodate the check dam. Place the dam material into the trench. Back fill the front of the dam to one-third the height.
- If the check dam is intended only to slow down erosion, then relatively wide spacing is sufficient (50 feet on a 20-percent grade). If the intent is for half of the old trench to be filled back in, the bottom of each dam should be level with the top of the next lower dam. On steeper grades the dams need to be closer together.

Inspection and Maintenance

- Check dams should be inspected every fall to evaluate their effectiveness. If the dams are filled with sediment, new check dams should be constructed.



ONE-ROCK DAM

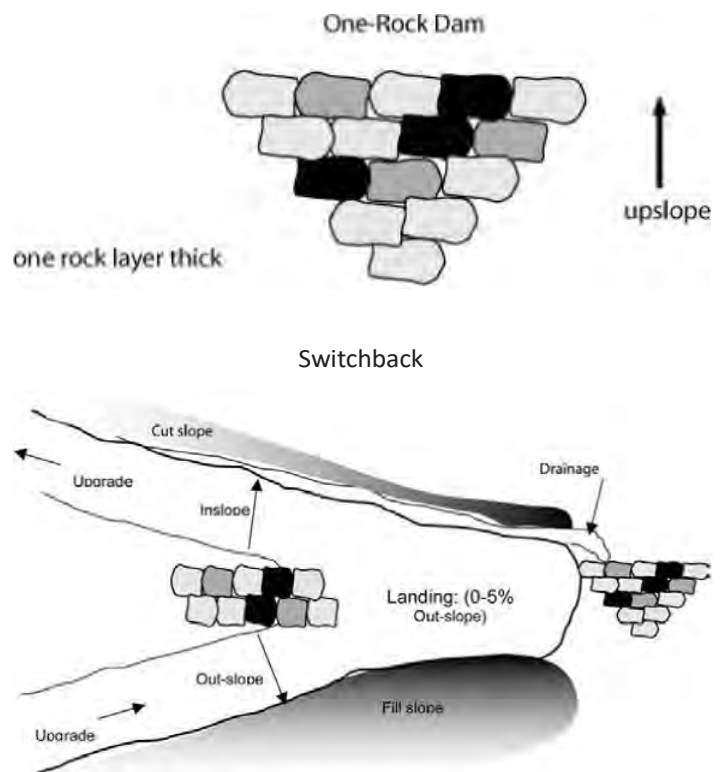
Slowing the flow of water over the surface and dissipating its energy is important in reducing erosion, soil loss, and sediment transport. Simple energy dissipation devices can be effective. A one-rock dam is so named because it is only one-rock tall. A single layer of rocks placed in the correct position is all that is necessary. One-rock dams are used to armor locations where water is channeled off or onto the trail tread.

Material and Construction Guidelines

- Use native rock taken from the site
- All rocks used in the dam should be at least six inches in diameter and less than 12 inches in diameter. Using oversized rocks in the structure will generate turbulence that could undermine it.
- One-rock dams should be made with only one layer (course) of rock. Do not stack rocks on top of one another.
- Rocks will be placed in a triangle with one apex of the triangle located in the center of the rill or gully
- Rocks should be selected, sized, and placed so that the completed structure ends up relatively level from bank to bank and flat from the upstream edge to the downstream edge. Place larger rocks in the deepest part of the channel, smaller ones to either side.
- The width of the dam will be about two times the width of the channel or gully
- Along the length of the channel, one-rock dams should be placed at intervals equal to 10 times the width of the channel

Maintenance

- One-rock dams should be inspected every fall. Maintenance and repair should focus on replacing any rocks scoured away by flood flows or widening the structure along the banks if flows are beginning to go around it.



LOS ALAMOS COUNTY TRAIL STANDARDS



Introduction

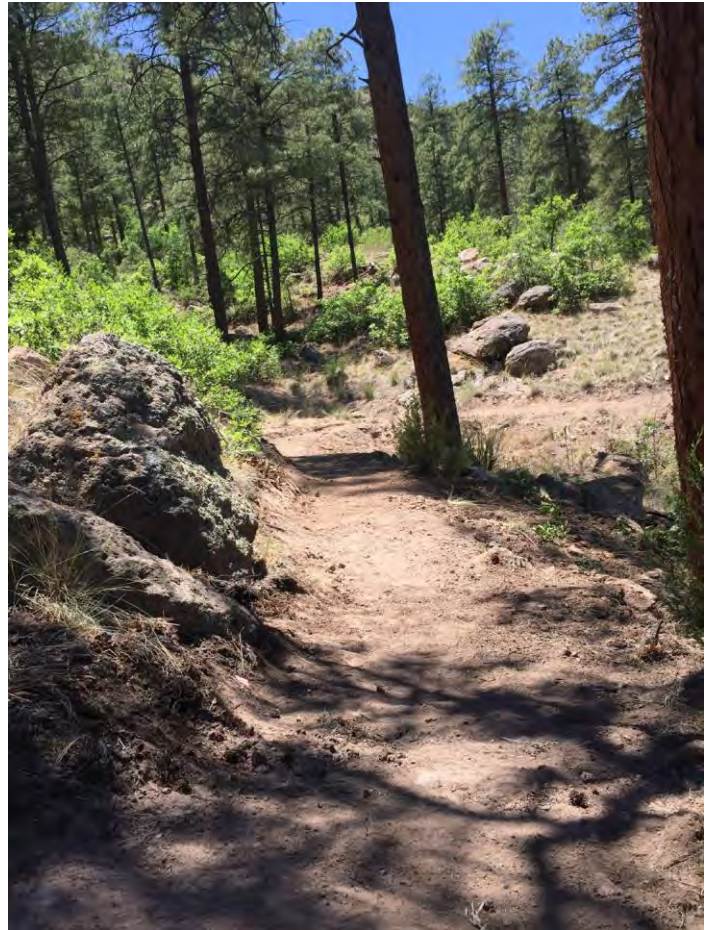
- Purpose and Scope
- Annual Trail Maintenance Program
- General Trail Standards

Trail Tread and Corridor Standards

- Typical Trail Cross-section
- Trail Corridor Clearing
- Crib Wall
- Bridge
- Stairs
- Switchbacks
- Grade Dip
- Water Bar
- Check Dam
- One-Rock
- Dam

Trail Signage Standards

- Trail Signage
- Trailhead Kiosks
- Trail Signs



PURPOSE AND SCOPE

The purpose of the Los Alamos County Trail Standards are to provide trail construction standards and maintenance guidelines for the Los Alamos County Trail Network. The standards are designed to:

- Provide all types of trail users access to safe trails
- Protect and preserve the natural and cultural resources on Los Alamos County open space while inviting non-motorized recreational use of public lands
- Maintain trails to appropriate standards designed to create sustainable trails
- Provide guidelines that minimize the impacts of trails to the landscape, viewsheds, and the sense of solitude in Los Alamos County



ANNUAL TRAIL MAINTENANCE PROGRAM

Spring Trail Maintenance Assessment

Beginning in March of each year, trails should be inspected to assess changes that occurred over the winter. The assessment should include information on problem areas caused by erosion, rockslides, and downed trees. Unsafe conditions, erosion problems, and down trees should be documented in the Trail Maintenance database.

Annual Trail Maintenance Plan

The Parks and Open Space Division, with advice from the Parks and Recreation Board, will draft an Annual Trail Maintenance Plan that will include trail maintenance and improvement plans for existing trails, proposals for unconstructed trail segments within the plan, and remediation recommendations for trail corridors. Following the spring trail maintenance assessment, the Parks and Open Space Division will prioritize trail work needs.

Trail maintenance priorities are:

1. Safety of trail users
2. Protections of natural and cultural resources
3. Prevention of erosion and protection of water quality
4. Enhancement of connectivity on the Trail Network
5. Identify projects that can utilize volunteers for construction work

Fall Trail Maintenance Assessment

To prepare the Trail Network for the winter season, a survey of the trail network should be completed in September. Uncompleted projects should be noted, as well as any erosion damage due to summer storms and downed trees obstructing the trail. Unsafe conditions, erosion problems, and down trees should be documented in the Trail Maintenance database.



Building water bars at Quemazon trailhead.

GENERAL STANDARDS FOR LOS ALAMOS COUNTY TRAILS BUILDING AND MAINTAINING SUSTAINABLE TRAILS

1. Trails will be aligned with natural terrain features and follow contours whenever possible.
2. Trails will be designed to frequently channel water off the trail and to ensure that channeled water does not create erosion problems off the trail.
3. Grade dips will be used in preference to water bars and check dams.
4. Prevention of sediment transport and protection of water quality will be the primary driver of the location and construction of trail structures.
5. The average grade of a trail will not exceed 8%, but short stretches of steeper grades will be permitted as required.
6. Trails will be adequately signed at trailheads, access points, and at major junctions on the trail network.
7. Trails will avoid all cultural resources found on open space
8. When possible, trails will not traverse north-facing slopes



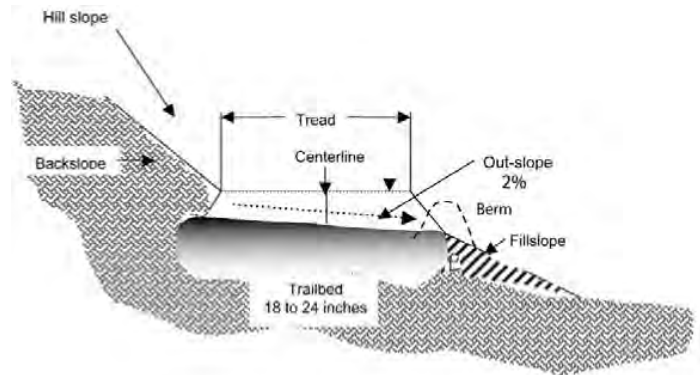
TRAIL TREAD CROSS SECTION GUIDELINES

Material and Construction Guidelines

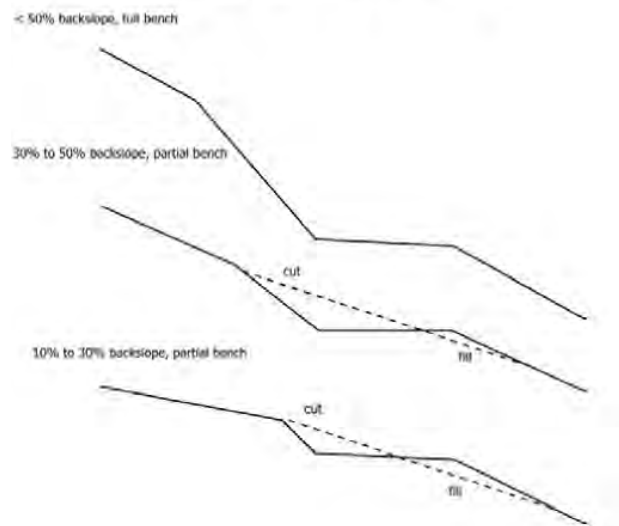
- Trail tread will be made of natural surface material
- Trail tread will be between 18 and 24 inches wide, depending on the terrain and type of trail use
- Trail tread will be outsloped from 2% to 5%. The outslope should be checked with a clinometer or by standing on the trail: If the trailbuilders ankles feel like they are bent down hill, the outslope is at too great an angle.
- Depending on the slope of the terrain where a trail is located, the trail bed may be more of a cut or bench into the hill slope. On steep slopes, the trail may be full-bench, or the full width of the trail. Soil excavated from the hill is cast aside as far as possible from the trail and not used at all in the fillslope. Especially on steep slopes, relying on fill for part of the trailbed is a bad idea. This soft material is likely to erode away quickly, creating dangerous soft spots on the downhill edge of the trail. If fill is used, it often needs to be reinforced with expensive crib or retaining walls. As the slope of the hillside decreases, it becomes more feasible to use fill material as part of the trailbed.
- All berm material should be removed from the downslope side of the trail.

Trail Grade Construction Guidelines

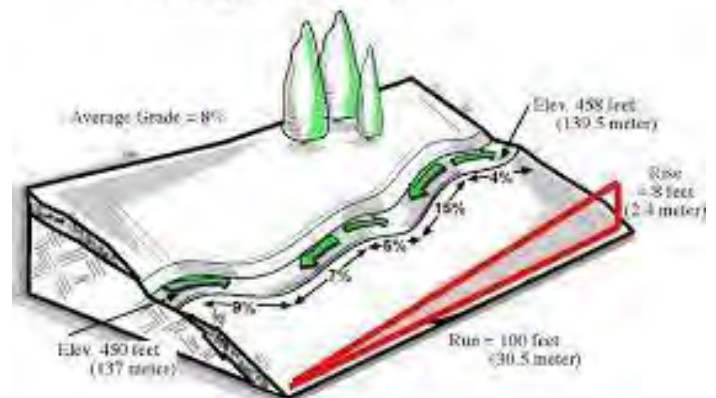
- Trail grades should follow the natural topography whenever possible
- Trail grade should average less than 8% of the length
- Trail grade should not exceed 12% at any point on the trail



Typical Trail Cross Sections



Average or Overall Grade



TRAIL CORRIDOR CLEARING

Trail Corridor Dimensions

The trail corridor should be wide enough to permit safe passage along the route by all types of trail users, including bicyclists and equestrians. The corridor should be free of downed trees, tree branches, protruding live vegetation, and brush. Obstructions should be removed from multi-use trail corridors four to six feet wide and 8 to 10 feet high. The corridors of trails used exclusively by pedestrians should be three feet wide and seven feet high.

Trail Corridor Clearing

Brush and other materials should be removed from a trail corridor in a manner that minimizes the visual impact on trail users.

1. When cutting small woody-stemmed plants or shrubs, cut as close to the ground as possible. Never top small trees along-side the trail, pull them out by the roots instead.
2. Place debris out of view. To help hide the debris, place the cut end away from the trail.
3. Make use of cut material for erosion control by placing all cut branches in contact with the ground surface. Lop-and-scatter material that should be reduced to a height of no more than 18 inches.
4. To protect the health of a tree or shrub, prune branches at the collar. The collar is a wide section at the base of a branch and contains natural healing agents. Pruning further out on the limb or too close to the trunk creates a greater risk of infection. A cut at the collar will naturally heal. Prevent splitting the limb or tearing the bark by starting a small cut from the bottom side, and then cut down from the top until you meet the small cut.

Removal of Downed Trees

To prevent the creation of side trails, trees that are blown down across trails should be removed as soon as possible. Small logs can be removed with a bow saw. Locations of large trees that require the use of a chainsaw should be mapped and removed as crews are available.

- Logs should be cut at an angle to permit the cut section to be rolled off of the trail
- The width of the logged-out section should be as wide as the brush clearing limits for the trail
- Log pieces must be rolled off the trail, outside of ditches or water bar outflows. If a log is adjacent to the trail, and can be safely left in place, cut back the limbs remaining on the log that might be hazards to the trail user and leave the rest.

Hazard Trees

Hazard trees are trees that pose a hazard to cultural or natural resources, property, or people. Only trained and qualified sawyers should remove these trees. Hazard trees along trails should be identified in spring and fall. The location of trees should be mapped and the trees removed as qualified crews are available.

Hazard trees should be identified by the following criteria:

- Tree stands within the tree height of a trail, a cultural resource, or structures or property improvements
- Tree is dead, burned, obviously infested with insects and its health declining, or leaning at more than a 20 degree angle in the direction of the resource
- Tree has a DBH of > 6 inches
- Tree has an obviously weakened root

CRIB WALL

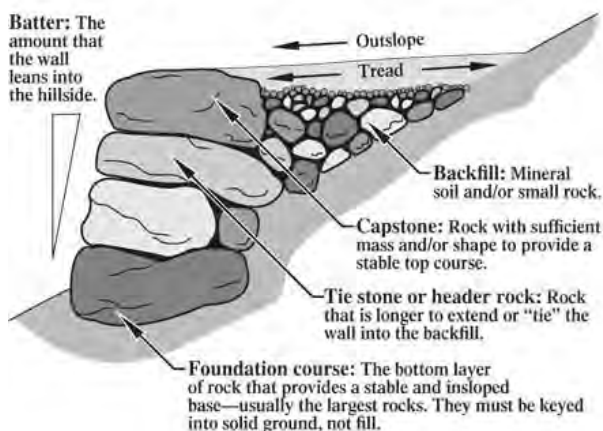
General Description

Crib walls are designed to retain soil, rock, or the trail tread in place. They are commonly used to keep compacted fill making up a trail tread in place. Use of crib walls is found in areas where the solid surface available for placement of a trail tread is not wide enough. The wall permits filling with soil in a manner to create a trail of sufficient width.

Material and Construction Guidelines

- Crib walls will be constructed with rock in preference over timber
- Native rock will be used for all crib walls, and the rocks will be dry stacked in a stable manner
- All native rock will be collected in such a manner as to protect the trail corridor and to ensure that the erosion potential is not increased
- A footing will be dug into the soil that is at least 24 inches wide and deep enough to cover at least one-half of the bottom course of rock. It should be insloped to permit construction of an insloped wall.
- The largest available rocks should be used for the bottom course. The rocks should be at least 60 pounds and 24 inches long. Upper courses of rocks should use as large a rock as possible and be as flat as possible.
- The wall will slope inward toward the trail at least 20 degrees
- The use of shims or chinking will be avoided
- Cobbles and gravel will be used to backfill the bottom layer of trail tread. Compacted soil will be used to raise the tread to the level of the top course of rocks.

Rock Retaining Wall Terminology



BRIDGES

General Description

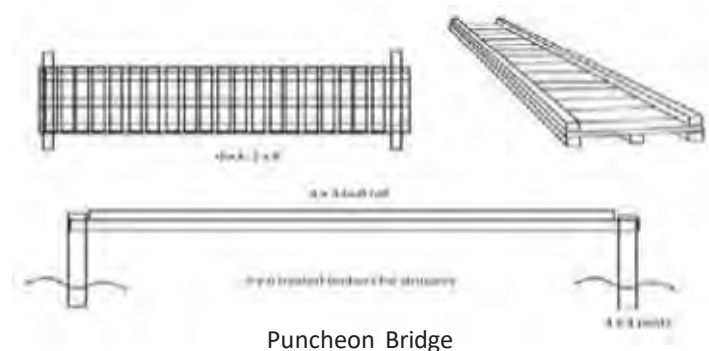
Bridges are used to span otherwise impassable landscape features or to maintain trail grade within prescribed values. Use of bridges should be kept to a minimum, but bridges may be placed in areas where significant soil erosion can occur if the bridge is not installed.

Puncheon Bridge

Puncheon bridges are used to span crossings where the height above the channel is three feet or less. They are simple to build. Stringers support planks, and a bull rail is placed to provide security. No handrails are used.

Material and Construction Guidelines

- Puncheon bridges should be constructed with treated lumber
- Lumber should be secured with timber locks or lag bolts
- Stringers should be 4 x 6 inches minimum
- Planks should be either 2 x 8 or 3 x 12 lumber
- Puncheon bridges should be no more than 24 feet in length



STAIRS

General Description

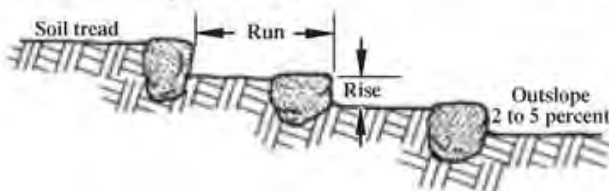
Stairs are a last resort to situations where trail grades are greater than 15 percent. Use of stairs should be kept to a minimum, but they should be placed in areas where significant soil erosion can occur if they are not installed. Stairs should not be used on trails that receive moderate equestrian or bicycle traffic.

Material and Construction Guidelines

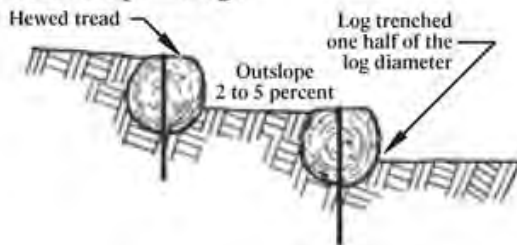
- Stairs can be constructed of rock or logs.
- Stair treads should be at least 18 inches.
- The rise of each stair should be 9 inches or less.



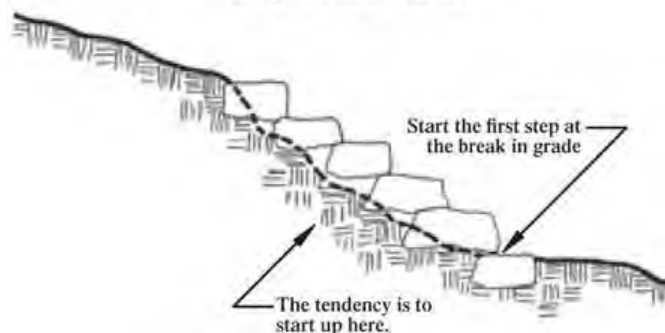
Individual Steps—Rock



Individual Steps—Logs



Step Construction

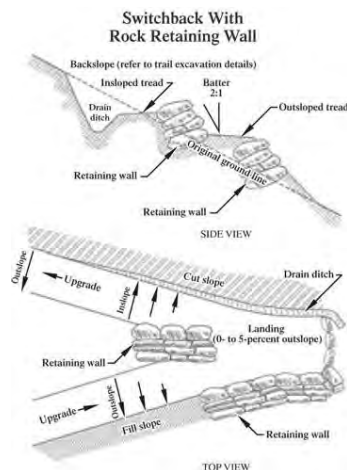


SWITCHBACKS

Trails that utilize switchbacks offer the opportunity to maintain moderate trail grades while gaining considerable elevation. Installation of switchbacks involves significant excavation and can damage resources; also, they are difficult to construct and require regular maintenance. Although the use of switchbacks should be minimized, their advantages in helping maintain sustainable trails should not be ignored. The key to successful switchback construction is making an adequate excavation, and using appropriate structures to hold the fill in place.

Material and Construction Guidelines

- Utilize natural platforms for switchback locations
- The tread in the upper portion of the switchback should be insloped to a drain along the toe of the backslope
- The drain should extend along the entire backslope and have its outfall where the excavation ends. A short spillway and a one-rock dam should be constructed to protect the adjacent fill from erosion.
- For multi-use trails, the turn radius of the switchback should be wide enough for equestrians and bicyclists. The landing should be about 10 feet in radius. However, the greater the turn radius, the wider the platform, and more excavation is required. A crib wall may be needed to keep the backslope in place.
- The upper approach and the upper half of the turn platform should be excavated from the slope. Part of the lower approach and the lower half of the turn should be constructed on fill.
- The lower approach of the switchback should be built on packed fill material. A crib wall should extend for most of this length. The tread on the lower portion of the turn should be outsloped. The approach changes grade to match the general tread grade.

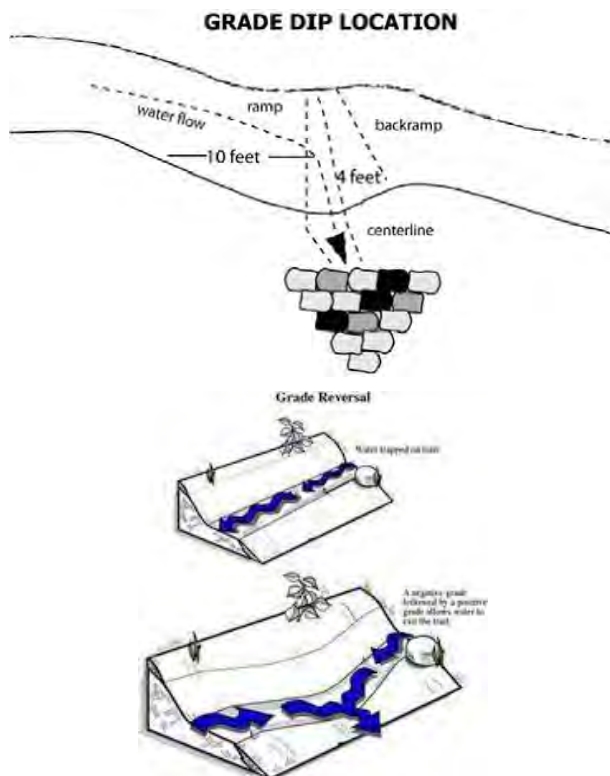
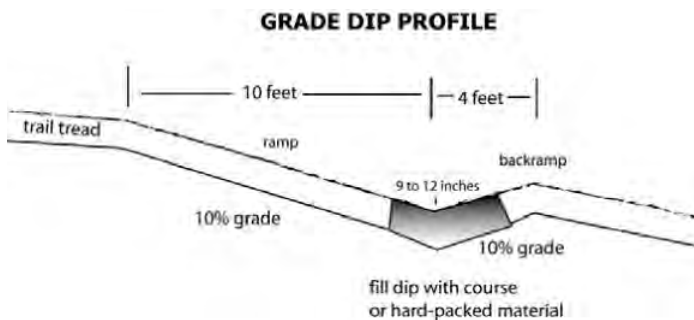


GRADE DIP

Grade dips are low points on the trail, either natural or constructed, that funnel water off the trail. They are less obtrusive, more horse and bicycle friendly, and in most cases more effective than waterbars. Also, grade dips require less maintenance than waterbars. Grade dips are the first choice for water diversion on trails. However, on grades greater than 8%, waterbars may be required to effectively divert water.

Material and Construction Guidelines

- Grade dips should be 12 to 15 feet along the trail tread
- Grade dips should be at least 9 inches deep as measured from the backramp
- Maintain a 10% grade through the grade dip
- Armor the downslope side of the dip with at least one one-rock dam



WATERBAR

General Description

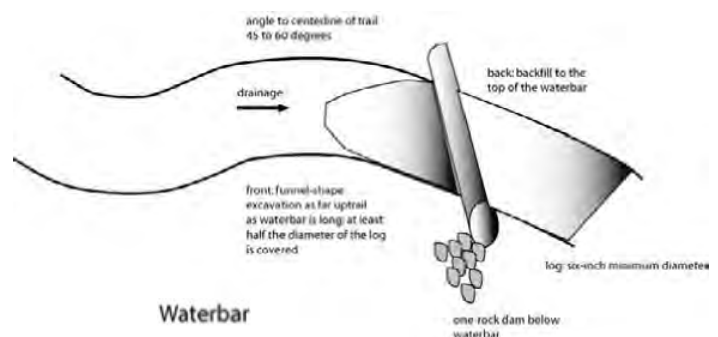
A waterbar consists of a log or rock berm coupled with a shallow, funnel-shaped trench that is installed diagonally across a sloping trail. The purpose of a waterbar is to control erosion by reducing runoff velocity and by limiting the volume of water of accumulated on the trail by diverting it off the trail. Waterbars are difficult to install, require regular maintenance, but are effective at diverting water. Hikers accept them. Mountain bike riders, however, often object to frequent waterbars.

Material and Construction Guidelines

- Waterbars should be made of native materials, either logs or stout rocks. Log bars do not need to be striped of bark. Minimum size is 6 inches in diameter.
- Waterbars should be installed at an angle of 45 to 60 degrees from the centerline of the trail
- Waterbars should extend at least two feet beyond the width of the trail on the downslope end and at least one foot on the upslope side
- To install a waterbar, dig a trench to a depth of about 2/3s of the height of the waterbar. Place the log or rocks in the trench and backfill. The downslope side of the waterbar should be flush with the trail surface.
- On the up trail side of the waterbar, trench a shallow apron about four feet in width and shape it to direct water off the trail
- Dig out a shallow outlet ditch on the downslope end of the waterbar. Add rocks to the outlet channel to slow the flow of water.

Inspection and Maintenance

- Waterbars should be inspected every fall to evaluate their continued effectiveness in controlling stormwater runoff and erosion
- The accumulation of sediment on the up-trail side of a waterbar should be cleaned out as necessary



CHECK DAM

General Description

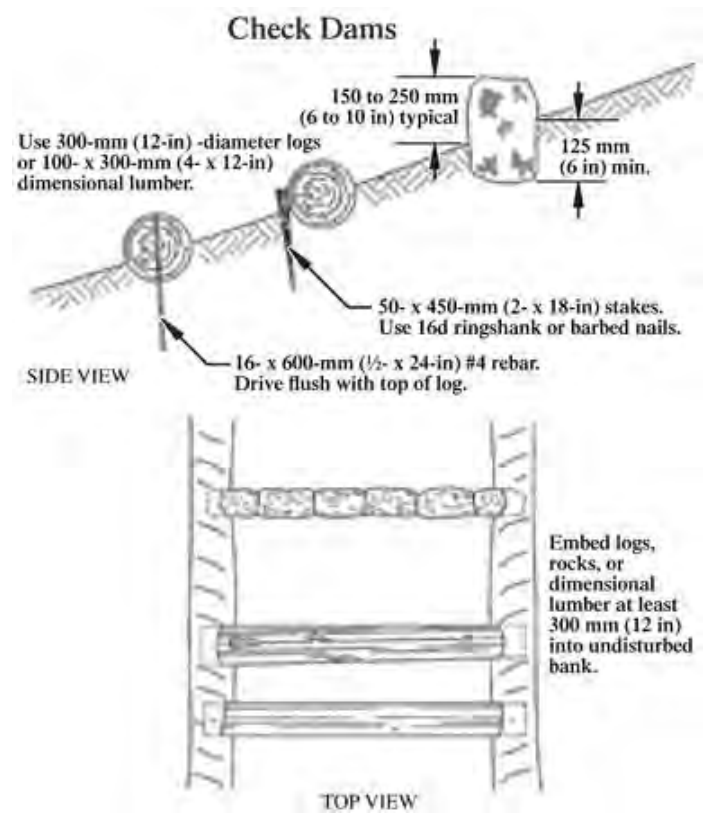
Check dams are designed to slow the flow of water along a trail in locations where it is not possible to channel water off the trail. This often occurs in areas where the trail is entrenched from years of use, or where the trail is built on highly erodable soils. A check dam spans the entire width of the trail and is set at right angles to the trail. The purpose is to slow the flow of running water and cause it to drop its sediment. Check dams are usually set in a series. After check dams are in place and fill with sediment, additional check dams are constructed. The process is repeated until the trail tread is built to the desired level.

Material and Construction Guidelines

- Check dams can be constructed of either logs or rock.
- Check dams should be no higher than six inches.
- Logs and rocks should be buried at least one-third of their height.
- Logs should be embedded into the hillslopes on either side of the trail at least one foot.
- Dig a trench long enough and deep enough to accommodate the check dam. Place the dam material into the trench. Back fill the front of the dam to one-third the height.
- If the check dam is intended only to slow down erosion, then relatively wide spacing is sufficient (50 feet on a 20-percent grade). If the intent is for half of the old trench to be filled back in, the bottom of each dam should be level with the top of the next lower dam. On steeper grades the dams need to be closer together.

Inspection and Maintenance

- Check dams should be inspected every fall to evaluate their effectiveness. If the dams are filled with sediment, new check dams should be constructed.



ONE-ROCK DAM

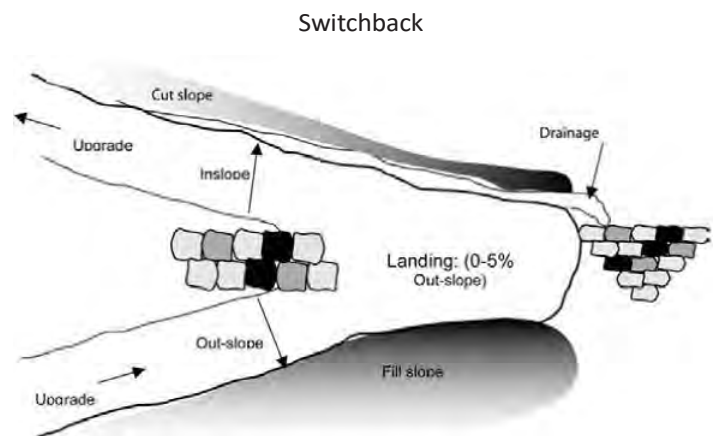
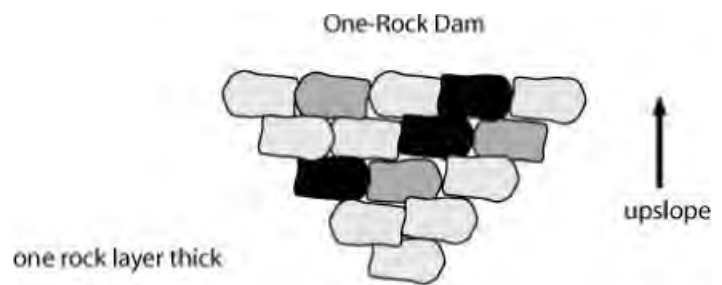
Slowing the flow of water over the surface and dissipating its energy is important in reducing erosion, soil loss, and sediment transport. Simple energy dissipation devices can be effective. A one-rock dam is so named because it is only one-rock tall. A single layer of rocks placed in the correct position is all that is necessary. One-rock dams are used to armor locations where water is channeled off or onto the trail tread.

Material and Construction Guidelines

- Use native rock taken from the site
- All rocks used in the dam should be at least six inches in diameter and less than 12 inches in diameter. Using oversized rocks in the structure will generate turbulence that could undermine it.
- One-rock dams should be made with only one layer (course) of rock. Do not stack rocks on top of one another.
- Rocks will be placed in a triangle with one apex of the triangle located in the center of the rill or gully
- Rocks should be selected, sized, and placed so that the completed structure ends up relatively level from bank to bank and flat from the upstream edge to the downstream edge. Place larger rocks in the deepest part of the channel, smaller ones to either side.
- The width of the dam will be about two times the width of the channel or gully
- Along the length of the channel, one-rock dams should be placed at intervals equal to 10 times the width of the channel

Maintenance

- One-rock dams should be inspected every fall. Maintenance and repair should focus on replacing any rocks scoured away by flood flows or widening the structure along the banks if flows are beginning to go around it.



TRAIL SIGNAGE

Standards For Signage of the Los Alamos County Trail Network

Trail signage standards provide for unified marking of the Los Alamos County Trail Network. Trail signage shall be the minimum necessary to identify trails included on the Trail Network and provide for the welfare of trail users. All trail signs will include a logo that identifies the trail as a portion of the official Trail Network. Signs will be unobtrusive, but distinctive enough to be readily identifiable. Signs shall be constructed of material durable enough to resist vandalism and deterioration due to natural causes.

Trailhead signs will be located at important, highly used trailheads. Trailhead signs will be appropriate to each location, although a unifying theme is desirable. At a minimum, trailhead signs will identify the trail. Other desirable information for signs at major trailheads includes a map of the trail, an indication of the difficulty of the trail, a map of the Trail Network, information on trail etiquette and care, information on any historical or natural features of the trail.

The following guidelines will be observed:

- Signage will be kept to the minimum necessary for trail identification and public welfare.
- All junctions of trails on the network will normally be signed. If a junction is not signed, a written justification for the omission will be filed by the Parks Division.
- Junctions with non-system trails will normally not be signed. If such a trail junction is signed, a written justification for the inclusion will be filed by the Parks Division.
- Signage designs will be filed with the Parks Division. Designs may differ with the character of the trail, but should be recognizable as part of the Trail Network. Although composition may change as technology develops better materials, the basic appearance of standard signs will remain the same.
- All trailheads for universally accessible trails will include a symbol designating the trail as such.



TRAILHEAD KIOSK

General Description

Trailhead information kiosks should be placed at major trailheads on the Los Alamos County Trail Network. They are designed to provide directional, interpretive, and current information to trail users at locations where a large number of visitors enter the trail network. Kiosks are designed to be permanent structures that will withstand variable weather conditions and protect informational signs from the elements.

Permanent trailhead kiosks should be located at:

- Kinnikinnik Park/Aquatic Center parking area
- Bayo Canyon Trailhead at the intersection of San Ildefonso Road and Diamond Drive
- Quemazon Trailhead
- Mitchell Trailhead
- Blue Dot Trailhead
- Red Dot Trailhead
- Canyon Rim Trailhead (East and West)

Additional locations of kiosks can be added as required.

Information on the trailhead kiosks should include:

- Trail Network map
- Localized trail map of segments accessible from the trailhead
- Descriptions of trails, including length and difficulty
- Information on trail etiquette
- Interpretive information appropriate for the trails
- Current information on trail conditions, closures, or open space projects in the area



TRAIL SIGNS

General Description

Trail network entrance signs should be placed at locations where access to the trail network is available from roads or sidewalks. The signs are made of aluminum and installed on a wooden 4x4 post.

Trail markers are placed at major intersections of trails on the trail network. The trail markers are made of aluminum and installed on a wooden 4x4 post.

