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Environmental Assessment

Daggett Summit Trail System Project

Lake Tahoe Basin Management Unit
Douglas County, Nevada

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SUMMARY

The Lake Tahoe Basin Management Unit (LTBMU) and the Nevada Division of State Parks (NSP) are proposing to re-route portions of the Tahoe Rim Trail (TRT) system (including a new connector trail into Van Sickle State Park {VSSP}) onto National Forest System (NFS) and State Park lands and to subsequently manage the resulting trails as NFS and NSP trails.

From the beginning of the TRT project in 1983, the Forest Service and the Tahoe Rim Trail Association (TRTA) have sought routings that would separate the TRT from active roadways. Lack of public property corridors, however, dictated that the TRT in the Daggett Summit area initially follow 3.4 miles of paved public streets. Additionally, requests by NSP for a link from the new VSSP to the TRT, and from South Lake Tahoe residents and visitors for additional local hiking opportunities (both in the upper Kingsbury/Tramway TRT areas and in VSSP near the Casino core) were integrated into recreational trail system planning for the Daggett/Kingsbury area. By 2002, public land acquisitions had opened feasible forested routes to satisfy both opportunities.

This re-route of the TRT in the vicinity of Daggett Summit on Kingsbury Grade (Nevada State Highway 207) is proposed in order to improve recreational opportunities, reduce impacts to sensitive resources, provide more systematic trail maintenance and reduce erosion through closure, decommissioning and mitigation of user-created roads and trails. The proposed re-route would provide a forested alignment for the TRT system that is removed from paved urban streets. The resulting trail system would include scenic connectors, vista spurs, and loop opportunities.

The total length of the proposed trail system is approximately 13 miles. This mileage includes the Northwest, Northeast, and Southwest TRT segments; the Van Sickle Connector Trail; the North Kingsbury Crossover Trail; five short vista spurs; the Kingsbury South Connector Trail; and the Daggett Summit Connector Trail. Approximately 7 linear miles of existing system and non-system trails and non-system roads would be decommissioned (but because many of these are much wider than the proposed trail system, over 1.75 times as much coverage would be decommissioned as would be added). The proposed trail would be open to all of the same non-motorized uses (hikers, bikers, horses) as the non-paved sections of the existing TRT.

The goal of completing this project is to improve the trail system by creating TRT connections via native surface (dirt) paths rather than paved roads, as well as connecting the TRT system directly to the South Lake Tahoe/Stateline area. The proposed action would provide a well-planned, interconnecting trail system, assuring high quality recreation while minimizing impacts to natural resources near the TRT. The proliferation of unauthorized and unmaintained user-created trails in the area would also be addressed.

In addition to the proposed alternative, this Forest Service led review and Environmental Assessment also evaluated a "no action" alternative.

1.0 INTRODUCTION

Document Structure

The Forest Service has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant federal, state, and local laws and regulations. This EA discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives. The information provided is also intended to meet the environmental review requirements of Nevada state agencies. The document is organized into four parts plus appendices:

- *Introduction:* The section includes information on the history of the project proposal, the purpose of and need for the project, and the agencies' proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.

- *Alternatives:* This section provides a more detailed description of the alternatives, including ones that have been considered but eliminated from detailed study. It contains maps which define the project area (Figure 1), identify the existing roads and trails in this area (Figure 2), and describe the proposed system trails to be added under this project (Figure 3). This discussion also includes project design features. Finally, this section provides a summary table of the environmental consequences associated with each alternative.

- *Environmental Consequences:* This section describes the environmental effects of implementing the proposed action and the "no action" alternative. This analysis is organized by resource area and, within each section, the direct, indirect, and cumulative effects of the proposed action are discussed, followed by the effects of the "no action" alternative.

- *Agencies and Persons Consulted:* This section provides a list of preparers and agencies consulted during the development of the environmental assessment.

- *Appendices:* The appendices provide more detailed information to support the analyses presented in the environmental assessment.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Lake Tahoe Basin Management Unit (LTBMU) Supervisor's Office in South Lake Tahoe, California.

Background

The 166-mile Tahoe Rim Trail (TRT) traverses six counties (El Dorado, Alpine, Placer, Washoe, Carson City, and Douglas), two states (California and Nevada), and encompasses the ridge tops of the Lake Tahoe Basin. When the TRT was opened in 2001, sections were known to be in need of improvement. One primary goal for the Forest Service and the Tahoe Rim Trail Association (TRTA) became the re-route of trail sections that were on roadways.

The TRT between the Kingsbury North and Kingsbury South trailheads was the only section of trail that was actually on pavement, and this section became the highest priority for re-route. This section was a concern for trail users due to conflicts with vehicular traffic, lack of sidewalks, and a perceived diminishing of the trail experience. The TRTA did extensive map review and area exploration to determine feasible trail re-route alternatives meeting both property ownership constraints and Forest Service management goals. The Forest Service and TRTA then worked with Nevada State Parks (NSP) to develop a connector trail to the TRT from the Van Sickle State Park (VSSP).

Purpose and Need for Action

From the beginning of the TRT project in 1983, the Forest Service and TRTA have sought routings that would separate the TRT from active roadways. Lack of public property corridors, however, dictated that the TRT in the Daggett Summit area follow 3.4 miles of paved public streets. Additionally, requests by NSP for a TRT link to the new VSSP, and from South Lake Tahoe residents and visitors for additional local hiking opportunities (both in the Kingsbury/Tramway TRT areas and near the Casino core) naturally integrate into any recreational trail system planning for the Daggett/Kingsbury area.

The current TRT routing is paved, on a winding road with short sight lines, and has pitches often exceeding 15%, affecting the recreational experience and creating conflicts between hikers, bikers, equestrians, and local vehicle traffic (especially in areas where there are no sidewalks and steep roadways). Since 2002, public land acquisitions have opened feasible forested routes for the TRT, and these routes create logical connections to possible connector trails into VSSP.

The goal of completing this project is to improve the trail system by creating TRT connections via native surface (dirt) paths rather than paved roads, as well as connecting the TRT system directly to the South Lake Tahoe/Stateline area. The proliferation of unauthorized and unmaintained user-created trails in the area would also be addressed within this project

The following are objectives of this Proposed Action:

- Develop trail systems that minimize trail use conflicts. This includes eliminating portions of the current TRT alignment on paved roadways to reduce conflicts with vehicle traffic.

- Provide an interconnected trail system that includes loops and connector trails. This includes adding a connector from the VSSP to the TRT and providing significant new loop trail opportunities in the Upper Kingsbury and Daggett-Van Sickle areas. This would also provide for day hiking opportunities close to the urban core with vista opportunities of Lake Tahoe and the Carson Valley, as well as providing users the option of using public transit to access trailheads.

- Finish relocating the last section of the TRT currently remaining on paved public roadways.

- Provide a natural environment trail experience that is not available while on the paved road section.
- Provide environmentally sound trails that are multi-use and non-motorized.
- Decommission segments of trails that are causing resource damage and would be unnecessary after completion of the re-route.

Proposed Action

The Forest Service and NSP are proposing the construction of a trail system that would connect the Kingsbury Grade North and Kingsbury Grade South trailheads of the TRT by replacing the existing trail segment that follows public paved roadways; provide sustainable scenic trail and loop opportunities accessible to existing and potential non-motorized trail use groups (foot, bike and horse); and connect the TRT with the VSSP.

The proposed new trail alignments are shown in Figure 3. Projected implementation (2009-2012) would connect the Kingsbury North and Kingsbury South trailheads of the TRT by replacing the existing trail segment that follows public paved roadways with 4 segments of a combination of newly constructed and reconstructed trail; providing scenic trails (to 5 vista points) and loop opportunities; and connecting the TRT with the Van Sickle State Park (VSSP) by 1 segment of a combination of newly constructed and reconstructed trail. The proposal would relocate the existing connection through private property to the Kingsbury South Trailhead upon completion of new easement/right-of-way agreements. The proposed action in the Daggett Summit project area includes:

- New Construction and Reroutes – 9.46 miles (99,898 sq. ft).
- Decommissioning – 7.05 miles (176,887 sq. ft).
- Reconstruction and Upgrade – 3.50 miles (37,054 sq. ft).
- Installing and upgrading trail signage.

New and updated signage on the trail and updated trail information kiosks (replacement of information panels in existing kiosk structures) at the existing Kingsbury North and South trailheads would be installed.

Decision Framework

This Environmental Assessment serves as a joint document that meets the environmental review requirements of NEPA for the Forest Service; the Tahoe Regional Planning Compact as it relates to Nevada state and county agencies; and Douglas County review and approval for private lands. Each of these agencies and landowners would use this document to make decisions based on the respective agency's or landowner's planning policies and statutory requirements. This section explains each entity's roles, policies and decision responsibilities.

Forest Service
The Forest Service is the lead agency under NEPA. This EA is prepared in accordance with NEPA and Council on Environmental Quality (CEQ) Regulations 40 CFR § 1500. The Responsible Official under NEPA is the LTBMU Forest Supervisor, who will issue a Decision Notice / Finding of No Significant Impact (DN/FONSI) based on this completed

EA. The decisions to be issued by the Forest Supervisor are: 1) Select either the proposed action, the no-action or a combination of alternatives; 2) finalize new easements/right-of-way agreements through Heavenly and TVHOA properties; 3)implement authorization only on NFS lands and FS easements/rights-of-way.

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Nevada State Agencies and Douglas County

State and county agencies will issue separate project implementation decisions for the lands under their jurisdiction. All agencies have agreed that this EA is sufficient analysis to support project level permitting for the state and county portions of this project under TRPA regulations.

Private Lands

Private lands owned by Heavenly Mountain Resort and the Tahoe Village Homeowner's Association (TVHOA) would continue to be used for connections to the South Kingsbury trailhead and trailhead parking. Current agreements and trail locations would continue in effect (and continue to meet project connection requirements) until new Forest Service easements and rights-of-way are completed and approved for the proposed trail relocations on private property. Review and approval by Douglas County for this project on these private lands would likely be required. (Douglas County concurred with the proposed action in their scoping response.)

Public Involvement

NEPA requires public notification and scoping to determine the scope of the environmental analysis. The scoping period began on November 16, 2007, and ended on January 11, 2008. Public scoping included a letter mailed or hand delivered on November 29, 2007, to 28 interested parties requesting, by January 11, 2008, comments and issues for consideration in the EA. The Forest Service held a public meeting to gather information and comments that helped to shape this proposed action on December 11, 2007, at the LTBMU Forest Supervisor's Office in South Lake Tahoe (21 attendees). A separate meeting was held for TVHOA (8 TVHOA members) on December 12, 2007. Other parties contacted in the scoping process included outdoor retailers on the southeast shore of Lake Tahoe, owners of 53 homes in the vicinity of the proposed trails (22 of whom were given personal briefings and 2 taken on trail corridor tours), and trail users, as well as an extensive distribution list of government, public, and community organizations. Additionally, public notices were placed in the *Tahoe Daily Tribune* and the *Mountain News* on December 6, 2007.

A scoping summary report was prepared for the initial scoping process (Appendix A). This report summarized the comments received during the public scoping process and presented the LTBMU's responses to those comments. The report identified issues associated with the proposed action and was used by the LTBMU to determine areas in the EA where additional assessment, information, or clarification was necessary.

Issues

The Forest Service separated the issues into two groups: significant and non-significant issues. Significant issues meet the Purpose and Need for the project and are "significant" in the extent of the geographic distribution, the duration of effects, or the intensity of interest or resource conflict. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council on Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)…" A list of non-significant issues and reasons regarding their categorization as non-significant may be found in the scoping summary report (Appendix A). One publicly raised issue resulted in the Castle Rock trail being adopted into the proposed action as a spur to the Northwest Trail Segment.

Forest Plan Consistency (National Forest Management Act)

National Forest Management Act – This Act requires the development of long-range land and resource management plans. The LTBMU Land and Resource Management Plan (LRMP) was approved in 1988 as required by this Act. It has been amended several times, including the Sierra Nevada Forest Plan Amendment, (2004). The LRMP provides guidance for all natural resource management activities. The Act requires all projects and activities to be consistent with the LRMP. The LRMP has been reviewed in consideration of this project. The Daggett Summit Trail System Project is within the Genoa and Heavenly Valley management areas defined in the LRMP. Since the Van Sickle Connector Trail is near the Tahoe Valley Management Area, guidance for that area was reviewed as well.

A Forest Plan consistency matrix and review for this project was completed in September 2007 (Project Record Document A1). The Daggett Summit Trail System Project is consistent with the standards and guidelines contained in the Forest Plan.

Endangered Species Act – In accordance with Section 7(c) of the Endangered Species Act, the USFWS list of "endangered and threatened species that may be affected by projects in the Lake Tahoe Basin Management Area" (updated on January 31, 2008) was reviewed and documented in a Biological Assessment (Project Record Document K1).

National Historic Preservation Act - Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effect of a project on any district, site, building, structure, or object that is included in, or eligible for inclusion in the National Register. Section 106 of the National Historic Preservation Act (P.L. 89.665, as amended) also requires federal agencies to afford the State Historic Preservation Officer (SHPO) a reasonable opportunity to comment. Surveys were conducted for Native American religious or cultural sites, archaeological sites, and historic properties or areas that may be affected by this decision, with Nevada SHPO written approval of no significant impact findings on 30 July 2008 (Project Record Document I1).

2.0 ALTERNATIVES

This chapter describes the four alternatives considered for the Daggett Summit Trail System project. It includes maps and a description of the two action alternatives considered. This section also presents the two action alternatives in comparative form, sharply defining the differences between these alternatives and providing a clear basis for choice among options. Some of the information used to compare the action alternatives is based upon the design of the alternative and some of the information is based upon the environmental and social effects of implementing each alternative.

Alternatives

Alternatives Considered but Eliminated from Detailed Study

Southeast Trail Alternative

This trail alignment traveled east of the Carson Range crest from Daggett Summit to the existing Kingsbury South trailhead. Issues relating to private property rights and poor soils eliminated this alternative from further analysis. The feasible corridor south of Highway 207 crossed six separate large parcels of private land. In 2003, the TRTA contacted all six owners inviting them to discuss trail considerations. There was no response to this invitation. Also along this alignment are two large areas (the longest about two hundred yards across) that are composed of 40+% slideslope decomposed granite sand.

Edgewood Creek Crossing Alternative

This alignment traverses Edgewood Creek east of the currently proposed crossing and near the Boulder Lodge parking lot. The trail then travels south, skirting the Boulder area, and continues below the ridge demarcating the Heavenly Ski Resort boundary. Issues with private property rights as well as greater potential impacts to the stream environment zone (SEZ) of Edgewood Creek eliminated this alternative from further analysis. This considered crossing of Edgewood Creek went through a 75 foot flat SEZ and would require bridge/causeway construction on Heavenly property, plus a new easement on a part of the property, that is not currently crossed and on which Heavenly has not granted easements.

Alternative 1

Proposed Action

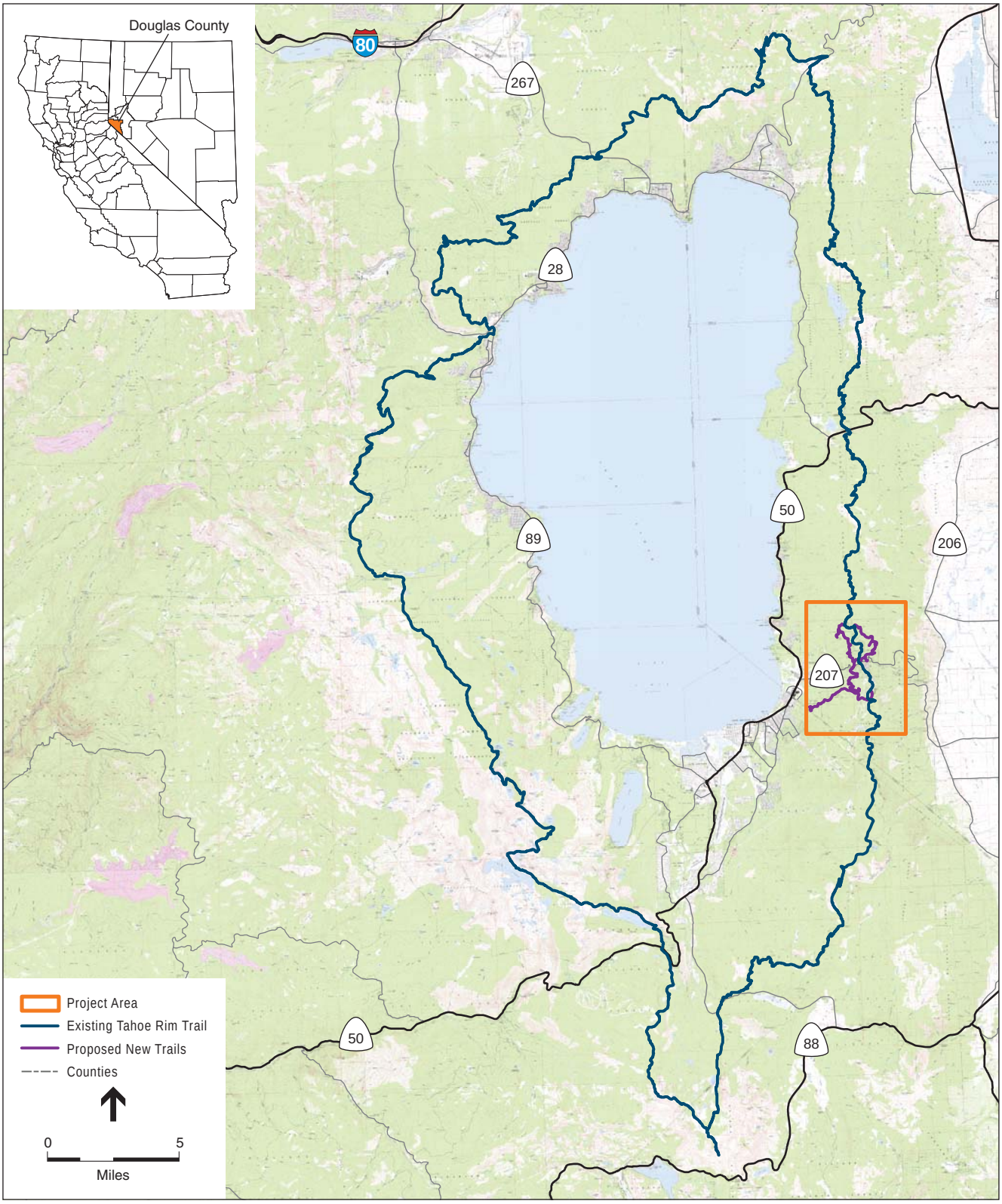
The proposed new trail alignments are shown in Figure 3. Projected implementation (2009-2012) would connect the Kingsbury North and Kingsbury South trailheads of the TRT by replacing the existing trail segment that follows public paved roadways; provide scenic trail and loop opportunities; and connect the TRT with the Van Sickle State Park (VSSP). The proposed action in the Daggett Summit project area includes:

- New Construction and Re-routes – 9.46 miles (99,898 sq. ft).
- Decommissioning – 7.05 miles (176,887 sq. ft).
- Reconstruction and Upgrade – 3.50 miles (37,054 sq. ft).
- Installing and upgrading trail signage.

New and updated signage on the trail and updated trail information kiosks (replacement of information panels in existing kiosk structures) at the existing Kingsbury North and South trailheads would be installed.

New Construction and Re-routes

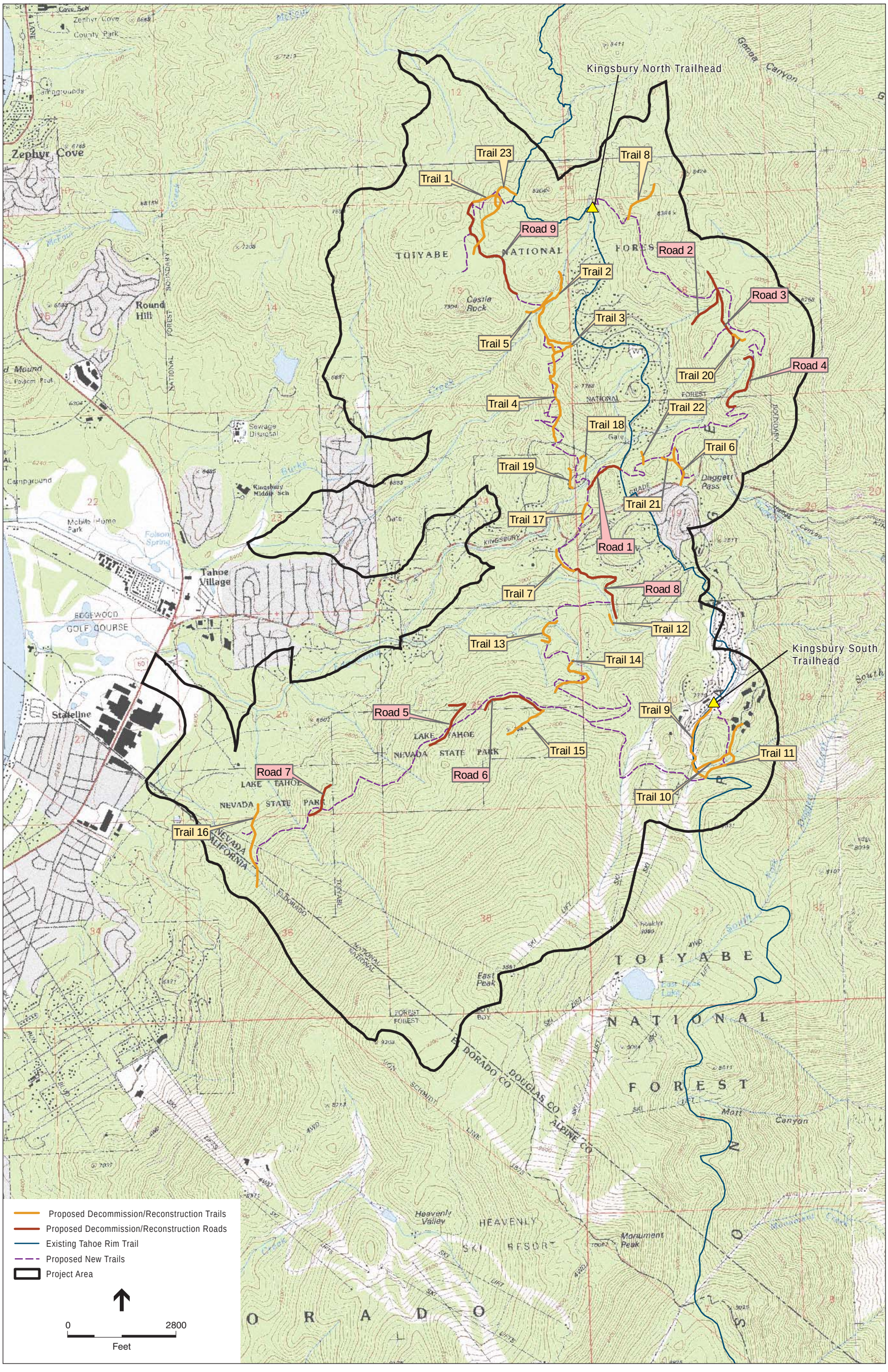
New trail construction would include removing vegetation from the route and creating a tread base with appropriate water dispersal and drainage structures (Best Management Practices {BMPs}). Disturbance alongside the new tread base would be minimized and would be



SOURCE: USGS, 1970-1993; USFS, 2008; and ESA, 2008

Daggett Summit Trail System Project Environmental Assessment

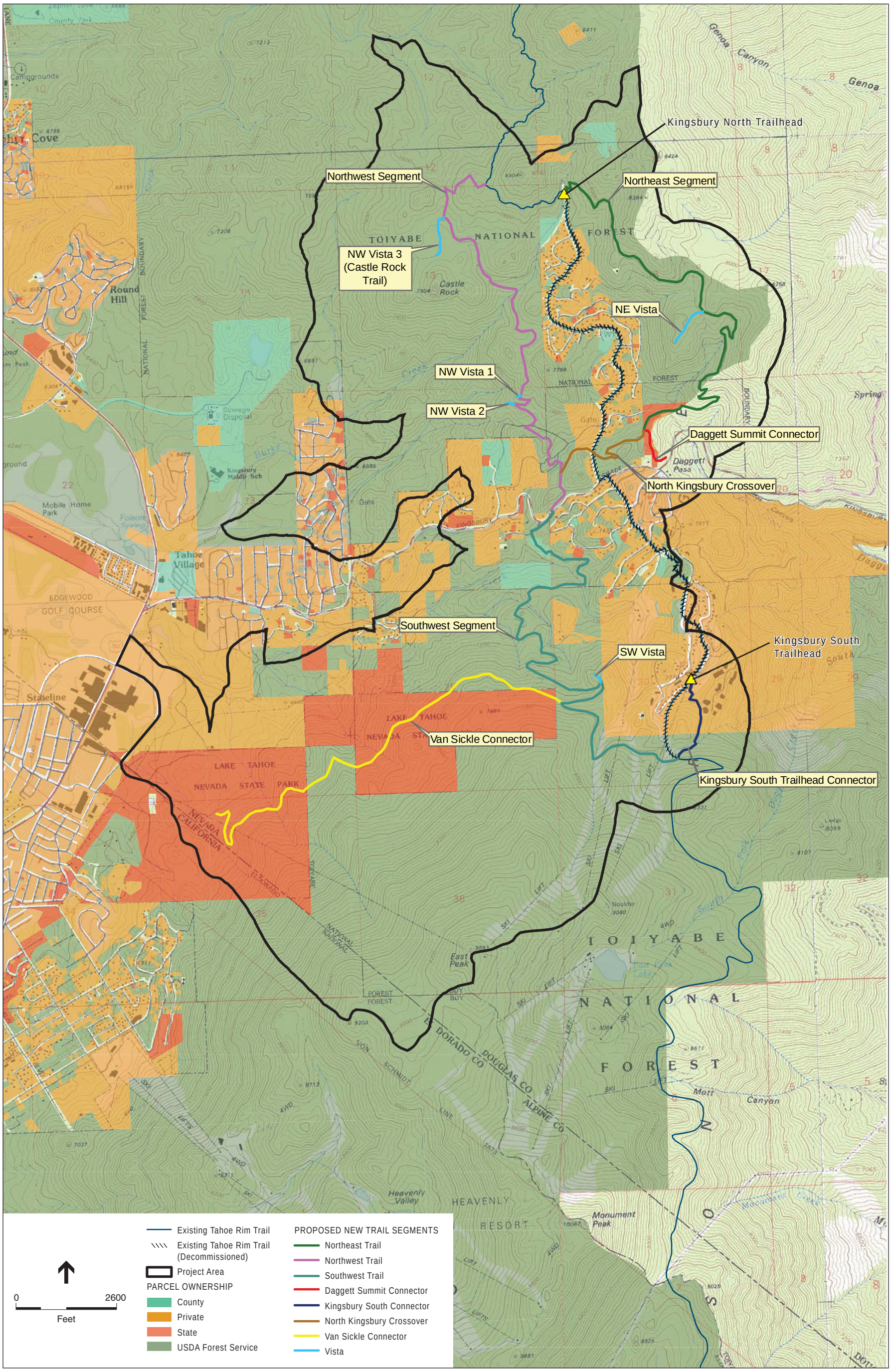
Figure 1
Project Locator



SOURCE: USGS, 1970-1983; USFS, 2008; and ESA, 2008

Daggett Summit Trail System Project Environmental Assessment

Figure 2
Existing Trails and Roads



SOURCE: USGS, 1970-1983; USFS, 2008; and ESA, 2008

Daggett Summit Trail System Project Environmental Assessment

Figure 3
Proposed Trails

mulched with a two-inch layer of native materials such as pine needles. Hand crews and/or mechanized trail construction equipment (punjars and mini-excavators may be used for portions of this project) would perform the construction. Re-routed portions of old trail would be closed and decommissioned after opening of the new trail section.

Decommissioning

Trail decommissioning is achieved through decompacting, blocking, recontouring (where feasible), and camouflaging. Often, small diameter trees are felled across trails to discourage continued access. Additionally, appropriate signage may be posted on closed trails. Trail tread would be broken and loosened prior to recontouring to promote infiltration. Disturbed areas would be covered with pine needle mulch and other forest litter to camouflage closed trails and prevent erosion. Decommissioning would be conducted with hand tools such as chainsaws, grip hoists, rock bars, and shovels, and may occasionally involve motorized equipment such as mini-excavators.

Reconstruction and Upgrade

Converting nonsystem trails to system trails and nonsystem roads to system trails involves bringing these sections of trail up to Forest Service multi-use trail (hike, bike, horse) design standards which includes installing BMPs and providing periodic maintenance.

Signage

Implementation of system trail upgrades would include updated trail signage and trail information kiosks at selected trailheads (Kingsbury North {update}, Kingsbury South {update}, VSSP {new}). Trail signs would be posted at junctions of system trails to direct users to stay on designated trails. Trail kiosks posted at main trailheads would provide information such as locations of designated trails, allowable uses, and trail etiquette.

The various trail segments have been named in accordance with their geographical location within the project area. A detailed description of each trail segment follows. See Figure 3 for a map of these trail segments.

Northeast Trail

The Northeast Trail (2.70 miles) would travel from the Kingsbury North trailhead east of the North Benjamin/Andria neighborhood, at first climbing steeply before following the crest of the Carson Range towards the southeast, then angling southwest to its terminus, where it would converge with the Daggett Summit Connector trail (accessing the Daggett Summit parking area) and the North Kingsbury Crossover Trail (providing linkage with the Northwest Trail). Purposes for this segment: 1) A high route alternative for TRT short distance and through users with expansive views of both Lake Tahoe and the Carson Valley, and more direct access to the Daggett Summit connection (and Tramway Market); 2) The eastern leg of the proposed TRT loop trail north of Kingsbury Grade; 3) One of the main trails in a stacked loop system created by crossings of existing NFS roads and trails; and 4) A non-motorized alternative section for users following the Carson-Kingsbury, Genoa Peak, and Spooner route.

Vista Points

One extra vista opportunity would be provided by constructing a short section of spur trail (0.21 miles) off the Northeast Trail.

Northwest Trail

The Northwest Trail (2.69 miles) would connect from the current TRT routing approximately ½ mile west of the Kingsbury North trailhead and track west of the North Benjamin/Andria neighborhood, passing near Castle Rock, before turning south towards its terminus at Kingsbury Grade. The Northwest and North Kingsbury Crossover trails would intersect just north of Kingsbury Grade. Purposes for this segment: 1) The primary TRT and most direct route for through users, with expansive views of Lake Tahoe; 2) The lower (western) side of the TRT loop north of Kingsbury Grade; 3) One of the main trails for a stacked loop system created by crossings of existing NFS roads and trails; and 4) Creation and marking of the year round Kingsbury North – Castle Rock loop trail.

Vista Points

Three vista opportunities would be provided by spurs from this section of trail (0.02 miles, 0.03 miles and 0.21 miles).

North Kingsbury Crossover Trail

The North Kingsbury Crossover Trail (0.66 mile) connects the Northeast Trail, the Northwest Trail, and the Daggett Summit Connector. This trail travels east/west just north of Kingsbury Grade and provides a linkage to allow a loop trail experience along the Carson Range. Purposes for this segment: 1) To be the south side of the TRT loop north of Kingsbury Grade; and 2) To connect both NE and NW trail options to the Daggett Summit (and Tramway Market) connection.

The trails north of Kingsbury Grade (the Northeast and Northwest Trails along with the North Kingsbury Crossover and a small segment of the existing TRT) would provide a 6.4-mile loop trail for day users.

Daggett Summit Connector

The Daggett Summit Connector Trail (0.2 mile) would continue from the intersection of the Northeast trail and the North Kingsbury Crossover to an existing parking area (owned by Nevada Department of Transportation) located just east of Daggett Summit on State Highway 207.

Southwest Trail

The Southwest Trail (3.30 miles) continues south from Kingsbury Grade just above Buchanan Road. The trail then crosses Edgewood Creek and circles west of the Granite Crest subdivision. It continues below the ridge demarcating the Heavenly Ski Resort boundary, finally turning east and remaining on National Forest System lands through the Heavenly Ski Resort permit area (crossing the North Bowl, Nevada Trail, and Olympic

Downhill ski runs and under the North Bowl and Stagecoach Express ski lifts) until it meets with the existing TRT south of the Kingsbury South Trailhead. One short vista spur (SW Vista) would lead to and exceptional overlook of Lake Tahoe. Purposes for this segment: 1) The only natural surface TRT route from Kingsbury Grade to the current TRT south of the private Heavenly/Tramway Drive area; 2) The TRT link to the Van Sickle Connector; and 3) Loop recreational opportunities and access through connection with the existing utility easement trail along Edgewood Creek ("Pony Express" trail).

Vista Points

One vista spur would be provided on this section of trail (0.05 miles).

Kingsbury South Trailhead Connector

The Kingsbury South Trailhead Connector (0.48 miles) would continue from the intersection of the Southwest Trail and the existing TRT to a parking area at Heavenly's Stagecoach Lodge. Existing crossings of two private parcels (Heavenly and TVHOA) would be relocated within those parcels. The existing connector trail, which travels through an SEZ within the Lower Stagecoach ski run, would be decommissioned. Relocation of this segment requires new easement/right-of-way agreements from Heavenly and TVHOA, however, the current alignments will serve until said easements are completed. Purpose for this segment: Replace the eroding fall line trail through the wet meadow with a more sustainable trail design on higher capability ground.

Van Sickle Connector Trail

The Van Sickle Connector Trail (2.38 miles) connects the TRT to the VSSP just southeast of the Stateline casino corridor. The Van Sickle Connector Trail departs from the proposed TRT just west of the Heavenly Ski Resort boundary and gradually descends through an area with scenic vistas of Lake Tahoe (while staying above several riparian zones and below the area burned by the 2002 Gondola Fire). Remaining primarily on NSP land (approximately 0.6 miles is on National Forest System lands), the trail connects with current VSSP trails and would integrate with planned developments in the park. This trail ultimately connects with the South Lake Tahoe (SLT)/Stateline area along existing roads and trails. Short hikes to view points and existing public transportation routes (which may include the Heavenly Gondola) would provide additional recreation opportunities for "one-way" users from the urban core. Via the VSSP system, the trail would link directly to the SLT/Stateline area and the "Explore Tahoe" Visitor Center and adjacent public transportation center. Purposes for this segment: 1) Non-motorized connection from the urban core of SLT and VSSP to the TRT; 2) Loop opportunities with the existing "Pony Express" trail and trails north of Kingsbury Grade; and 3) Integration with the "Explore Tahoe: The Urban Trailhead", VSSP Plan, and public transportation in SLT/Stateline.

Summary

The total mileage of the proposed trail system is approximately 12.96 miles (10.8 miles on National Forest System lands). This mileage includes the Northwest Trail, the Northeast Trail, the Southwest Trail, the Van Sickle Connector Trail, the North Kingsbury Crossover Trail, five short vista trails, the Kingsbury South Connector Trail, and the Daggett Summit Connector Trail. 7.05 linear miles of existing system and non-system trails and non-system roads would be decommissioned (but because many of these are much wider than the proposed trail system, over 1.75 times as much coverage would be decommissioned as would be added). The proposed trail would be open to all of the same non-motorized uses as the non-paved sections of the existing TRT.

Tables 1 through 3 summarize the proposed actions for specific trails in the project area. Figure 3 shows the proposed action.

TABLE 1
DAGGETT SUMMIT TRAIL SYSTEM PROPOSED TRAIL SEGMENTS

Segment Name	Length (miles)	Length (ft)	Ownership (ft)	Total Area (sq. ft)[1]	New Construction (sq. ft)	Reconstruction (sq. ft)
Northwest	2.69	14,207	NFS = 14,207	28,414	14,369	14,045
Northeast	2.70	14,261	NFS = 14,261	28,522	25,332	3,190
North Kingsbury Crossover	0.66	3,460	NFS = 3,460	6,920	6,738	182
Daggett Summit Connector	0.23	1,210	NFS = 1,210	2,420	1,784	636
NE Vista	0.21	1,128	NFS = 1,128	2,256	2,256	0
NW Vista 1	0.02	129	NFS = 129	258	258	0
NW Vista 2	0.03	181	NFS = 181	362	362	0
NW Vista 3	0.21	1,130	NFS = 1,130	2,260	0	2,260
Southwest	3.30	17,429	NFS = 16,789 Doug. Co. = 640	34,858	23,373	11,485
SW Vista	0.05	264	NFS = 264	528	528	0
Van Sickle Connector	2.38	12,543	NFS = 3,290 NSP = 9,253	25,086	20,642	4,444
Kingsbury South Connector	0.48	2,534	NFS = 1,006 Private = 1,528	5,068	4,256	812
Total	**12.96**	**68,476**	**NFS = 57,055 Doug. Co. = 640 NSP = 9,253 Private = 1,528**	**136,952**	**99,898**	**37,054**

Notes: [1] Trails are 2 feet wide. Total area equals Trail Length x 2 feet
Source: USFS, 2008

TABLE 2
PROPOSED ROAD DECOMISSIONING AND CONVERSION TO TRAILS

Road Number	Length (miles)	Length (ft)	Ownership (ft)	Width (ft)	Total Area (sq. ft)	Decommission Area (sq. ft)	Conversion Area (sq. ft)
1	0.21	1,113	NFS = 1,113	12	13,362	12,694	668
2	0.22	1,176	NFS = 1,176	8	9,406	9,406	0
3	0.40	2,133	NFS = 2,133	10	21,329	21,329	0
4	0.38	1,996	NFS = 1,996	16	31,939	28,745	3,194
5	0.36	1,888	NSP = 1,510 NFS = 378	8	15,107	15,107	0
6	0.33	1,755	NFS = 1,755	8	14,038	11,230	2,808
7	0.20	1,055	NSP = 1,055	8	8,438	8,438	0
8	0.47	2,493	NFS = 2,493	6	14,958	9,972	4,986
9	0.74	3,902	NFS = 3,902	6	23,412	15,608	7,804
Total	**3.31**	**17,511**	**NFS=14,946 NSP=2,565**		**151,989**	**132,529**	**19,460**

Source: USFS, 2008

Note: All 3.31 linear miles of road listed would be totally or partially decommissioned, and 1.84 of these linear miles would also be converted into system trail. (A "partial decommission" occurs when an 8-foot wide section of road is converted into a 2-foot wide trail, with the other 6 feet of width being decommissioned.)

TABLE 3
PROPOSED TRAIL DECOMMISSIONING AND RECONSTRUCTION

Trail Number	Length (miles)	Length (ft)	Ownership (ft)	Width (ft)	Total Area (sq. ft)	Decommission Area (sq. ft)	Reconstruction Area (sq. ft)
1	0.48	2,638	NFS = 2,638	2	5,276	3,276	2,000
2	0.25	1,319	NFS = 1,319	2	2,638	0	2,638
3	0.22	1,155	NFS = 1,155	2	2,310	2,310	0
4	0.72	3,812	NFS = 3,812	2	7,625	6,100	1,525
5	0.17	877	NFS = 877	2	1,754	1,754	0
6	0.20	1,067	NFS = 1,067	2	2,135	2,135	0
7	0.15	775	DougCo = 387 NFS = 389	2	1,549	0	1,549
8	0.23	1,238	NFS = 1,238	4	4,951	4,951	0
9	0.43	2,294	TVHOA = 1,835 NFS = 459	2	4,589	4,589	0
10	0.19	1,003	NFS = 1,003	2	2,007	2,007	0
11	0.38	2,001	TVHOA = 1,001 NFS = 1,000	2	4,002	2,801	1,201
12	0.05	270	NFS = 270	2	540	540	0
13	0.21	1,095	NFS = 1,095	2	2,190	0	2,190
14	0.36	1,903	NFS = 1,903	2	3,806	0	3,806
15	0.21	1,126	NSP = 1,126	2	2,252	2,252	0
16	0.44	2,322	NSP = 2,322	2	4,644	3,251	1,393
17	0.10	503	NFS = 503	2	1,005	503	503
18	0.10	544	NFS = 544	6	3,262	3,262	0
19	0.11	569	NFS = 569	2	1,138	1,138	0
20	0.07	383	NFS = 383	2	766	613	153
21	0.07	353	NFS = 353	2	707	71	636
22	0.06	330	NFS = 330	2	661	661	0
23	0.20	1,072	NFS = 1,072	2	2,144	2,144	0
Total	**5.40**	**28,650**	**NFS=21,979 NSP=3,448 DougCo=387 TVHOA=2,836**		**61,951**	**44,358**	**17,594**

Source: USFS, 2008

Note: As many trail segments contain both decommissioned and reconstructed sub-segments, the 5.40 linear miles listed include 3.74 linear miles of decommissioning and 1.66 miles of reconstruction.

Monitoring Program

Scheduled programmatic trails evaluation and monitoring is not planned to be conducted for this native surface, non-motorized, dispersed recreation trail project. However, the NFS lands portion of this project would be added to the pool of LTBMU projects which may be selected randomly as one of the annual Region 5 Best Management Practices Evaluation Program (BMPEP) targets.

An existing Forest Service directed, TRTA conducted, TRT monitoring program will include this project. These monitoring objectives are to:

- evaluate sustainability of project work,
- evaluate effectiveness in meeting trail decommissioning and upgrade objectives, and
- provide feedback about where additional work may be needed.

This monitoring program meets these objectives through:

- preconstruction guidance and inspection to ensure work design meets current Forest Service guidelines,
- interim checks during construction to ensure BMPs are being followed,
- post-construction inspection of completed work,
- semi-annual inspections and maintenance reporting by TRTA volunteers, and
- annual assessment and reporting by assigned TRTA Segment Coordinators.

Alternative 2

No Action

While the current TRT covers 166 miles around Lake Tahoe, this project is concerned with the improvement of those portions from the vicinity of the North Kingsbury trailhead to where the trail departs the Lower Stagecoach ski run in the Heavenly Ski Resort. Currently that portion of the TRT follows paved public roadways for approximately 3.4 miles on the trail segment between the Kingsbury North and the Kingsbury South trailheads (Figure 3). From the Kingsbury North trailhead, the current trail follows Andria Drive south from its terminus for 1.4 miles, continues south on North Benjamin Drive for 0.4 miles, turns east onto Kingsbury Grade (Nevada State Highway 207) toward Daggett Summit for 0.3 miles, turns south onto Tramway Drive for 1.3 miles, and departs public roadways at the Kingsbury South trailhead at the base of the Stagecoach chairlift at Heavenly Ski Resort. From there the trail climbs for 0.4 miles up the meadow that compromises the bottom portion of Lower Stagecoach ski run until it enters the forest just south of Daggett Creek (Figure 3). Except for the paved road portions, sections of the existing TRT in the project area are 24-30" dirt tread for non-motorized use only.

Under the no action alternative, current management plans would continue to guide management of the project area. The TRT would continue to follow paved public roadways on the trail segment between the Kingsbury North and the Kingsbury South trailheads. It would then continue through the wet meadow of the ski run. The Forest Service and supporting organizations would continue to provide maintenance on the existing non-road segments of the TRT in the Daggett Summit area. No system connection to VSSP would be created.

Design Features

Design features for soils, SEZ, Heritage, Air Quality, Recreation and traffic apply to the project area as a whole. Design features developed for Fire Risk and biological resources will generally apply to the project area as a whole, but in some instances may differ between NFS lands, Nevada State agencies, Douglas county and private lands.

Soil Design Features

The Design Features listed below, most of which are integral components of the proposed action, would be implemented to avoid or minimize effects on ground and vegetation, control erosion and sedimentation, and minimize effects on soil and water quality during and after implementation of the proposed action. Most of the Design Features listed were developed by the LTBMU or derived from the Tahoe Regional Planning Agency (TRPA), the USDA Forest Service (2000), and the Regional Water Quality Control Board (RWQCB) (Tahoe Interagency Roadway Runoff Subcommittee 2001). Additional Design Features were developed locally by LTBMU through years of trail construction, decommissioning, and maintenance experience. The Design Feature descriptions provided are intended to convey the general approach and methodology, not specific design and implementation criteria, which would vary depending on the specific environmental conditions encountered at each trail location.

SOIL-1: Limit timing of activities. Trail construction, reconstruction and decommissioning activities that involve grading or movement of more than 5 cubic yards of dirt would occur between May 1 and October 15 each year to avoid the period of highest rainfall, streamflows, and erosion potential. If grading or movement outside of this window becomes necessary (i.e. to finish BMPs, etc.) a standard grading exception permit request will be submitted to TRPA for approval. During periods of inclement weather, operations would be shut down until streamflows are seasonably low and soil/channel conditions are sufficiently dry and stable to allow construction to continue without the threat of substantial erosion, sedimentation, or offsite sediment transport.

SOIL-2: Stabilize construction spoils. Earthen spoils temporarily generated during construction would be stockpiled in stable areas located outside of SEZs (see figure 5). Straw wattles, silt fences, or hay bales would be installed around the base of temporary stockpiles to intercept runoff and sediment draining from the stockpiles. To minimize airborne transport of dust, stockpiles would be either watered or covered during periods of non-use

SOIL-3: Implement erosion and sediment control BMPs on temporarily delayed project elements. Appropriate erosion and sediment control BMPs would be applied to all disturbed ground during temporary construction delays. Design Features would vary with conditions, but are likely to include (1) placement of readily available mulch materials (e.g., pine needles, branches, coarse woody debris) and/or imported mulch materials (e.g., certified weed-free rice straw) to protect disturbed surfaces from raindrop impact, reduce runoff velocity, and reduce erosion; and (2) installation

of straw wattles and/or silt fences to reduce runoff velocity and intercept sediment when excavation exceeds five cubic yards at one time.

SOIL-4: Minimize ground and vegetation disturbance. Ground and vegetation disturbance would be minimized during implementation of the proposed action. Activities are in many instances confined to existing trail or road prisms, defined as the top of the cutslope to the base of the fillslope. Few, if any, snags or green trees would be felled, because the surveyed trail alignment corridors are wide enough to allow trail construction crews and engineers the latitude to relocate the trail to avoid trees and snags. No live trees greater than 24 inches in diameter at breast height (dbh) would be felled, and snags larger than 24 inches would be avoided unless deemed a hazard (within striking distance of and oriented toward the trail or leaning over the trail). Disturbances would also be minimized at channel crossings by locating proposed channel-crossing upgrades in approximately the same locations as any existing channel crossings and by designating construction boundaries and equipment access corridors before initiating construction.

SOIL-5: Recontour, decompact, incorporate organic matter, and mulch disturbed areas on either side of the new trail. Soils lacking adequate ground cover would be mulched with available forest materials, such as pine needles, tree bark, and branches (while ensuring that source areas retain sufficient cover), or with imported mulch, such as certified weed-free straw. Slash and logs from the site may also be distributed over the disturbed area to provide additional soil cover, retain sediment, provide a microclimate to speed up the soil development and revegetation process, and discourage use.

SOIL-6: Control concentrated runoff from modified trail surfaces to reduce erosion. Methods to reduce erosion and disperse drainage include properly spaced (i.e. less than 164ft {50m}, with reduced intervals for SEZ approaches and steeper terrain turns and switchbacks) reverse grades, drainage dips, water bars, cross drains, and outsloping, along with tilling of decommissioned sections of the trail prism to break up the impervious surface and enable water infiltration and revegetation. (See Cumulative Watershed Effects/Water Erosion Prediction Project (WEPP) model, Pg 36)

SOIL-7: Improve drainage on approach trails. Drainage control methods such as grade reversals, water bars, rolling dips, and outsloping would be used to improve drainage on the approaches to channel crossings and thereby reduce the delivery of sediment to stream channels.

SOIL-8: Stabilize approach trails. Where native surface approach trails exist at proposed SEZ upgrades, they would be surfaced with rock or paver stones or hardened (i.e., compacted) to increase their resistance to erosion and reduce the delivery of sediment to subject stream channels.

SOIL-9: Decommission abandoned approach trails and staging areas. Equipment staging areas and existing approach trails used during construction and abandoned

as a result of the proposed upgrades would be restored to natural conditions by loosening or scarifying the soil, seeding or planting with native species, and/or mulching with native and/or weed-free material.

SOIL-10: Dispose of wastes and petroleum products properly. Wastes and petroleum products used during construction would be collected and removed from the project site in accordance with Resource Conservation and Recovery Act regulations and federal Occupational Safety and Health Administration standards.

SOIL-11: Remediate contaminated soil. If contaminated soil and/or groundwater are encountered, or if suspected contamination is encountered during project construction, work would be halted in the area, and the type and extent of the contamination would be identified. A qualified professional, in consultation with the appropriate federal, state, and/or local regulatory agencies, would then develop an appropriate method to remediate the contamination.

Stream Environment Zone Design Features

In addition to defined perennial and intermittent streams, SEZs include seasonally wet areas such as wetlands and are defined by the presence of hydrologic, soil, or vegetation indicator features. In addition to the soil protection design features described above, the following design features would be implemented for project activities in SEZs (see figure 5 for a map of SEZs). The proposed action would result in a net reduction of 3056 sqft of coverage in SEZs (Table 7).

SEZ-1: Prevent discharges of hazardous substances from refueling and maintenance. In areas where mechanized equipment might be used, all equipment refueling and maintenance activities would occur outside SEZs to minimize the potential to adversely affect water quality.

SEZ-2: Control sediment and revegetate within SEZs. Ground disturbance would be minimized and confined to any existing trail prism. All disturbed areas would be mulched with native material or weed free straw (e.g., rice straw).

SEZ-3: Stabilize subject stream banks. Stream banks adjacent to and/or affected by proposed channel crossings would be stabilized and protected from erosion using a combination of structural and biotechnical methods. The specific methods used would vary depending on site conditions, but would likely include one or more of the following: adjustment of stream bank slopes; installation of rock slope protection (riprap); temporary installation of biodegradable erosion control blankets during construction; installation of willow wattles (live fascines); and/or the use of pole cuttings, container stock, and seed collected from local sources to reestablish native stream zone vegetation.

SEZ-4: Achieve zero discharge during in-channel excavation work. Several of the proposed channel-crossings would require work in stream channels that would likely contain flowing water during construction. The goal during in channel excavation is zero discharge. The following practices have proven effective in

achieving zero discharge: (1) wherever possible, delay activities until flow has ceased or is at lowest flow (base flow); (2) when flow is present, convey flow around the construction site and discharge in a stable location; (3) install a coffer dam below the site to trap sediment and detain any turbid water; (4) dispose of any sediment from behind the dam in a stable location; and (5) remove turbid water by pumping and sprinkling it in a location and manner to allow infiltration into the soil.

SEZ-5: Install barriers. Rock or wood barriers would be installed along the boundaries of approach trails at proposed channel crossing upgrades to contain traffic and discourage use in subject SEZs.

SEZ-6: Use appropriate water supply for construction. In general, streams in the project area are not available for use as a project water source and it is not expected that any will be used as such (Only Edgewood Creek and an unnamed stream in VSSP have perennial flow). If drafting from a stream is necessary (for instance to wet down a temporarily disturbed area or spoil to reduce potential for wind scattering), a hydrologist and/or fisheries biologist would review and approve the location, amount of water, and other site-specific constraints.

SEZ-7: Contain spills. Strict onsite handling rules would be implemented to minimize spills and keep potentially contaminated materials out of the drainage waterways.

SEZ-8: Limit staging of materials and equipment. Staging of materials and equipment would be limited to existing disturbed areas outside SEZs (where soils are already compacted and vegetation has been cleared). No new disturbance would be created for staging and stockpile areas, and no trees or other vegetation would be removed. The only projected staging areas (beyond sites for hand tools/water, crew rest, etc.) for this project would be the paved areas and system dirt roads at the existing trailheads, Boulder parking lot, Maryanne and Aspen Drives, Donna Way, Buchanan Road, and the utility access roads to the ski lifts, east of Daggett Summit, and parallel to Edgewood Creek (See Fig 3). Following project completion, any areas used for staging and not intended for continued vehicular use would be tilled, seeded, and mulched.

Fire Risk Reduction Design Features

To minimize the risk of fire to resources and human health and safety, the following design features would be implemented.

FIRE-1: Keep fire tools onsite. When mechanized equipment is used, fire extinguishers and tools shall be on site during construction.

FIRE-2: Monitor fire weather. Daily monitoring of fire weather and Project Activity Level (PAL) would occur during construction. If PAL thresholds restricting tool use are reached, those construction activities would be suspended in coordination with the USFS.

Biological Resource Design Features

Design feature SOIL-4 (minimize ground and vegetation disturbance), described above, would minimize disturbance to vegetation and terrestrial habitat resulting from project activities. For example, few, if any, snags or green trees would be felled; and no live trees greater than 24 inches in diameter would be felled. Design Features described above such as SOIL-5 (mulch and revegetate disturbed areas) and SOIL-4 would be implemented to minimize disturbance and avoid permanent loss of native vegetation and terrestrial habitat. The following design features would be implemented to further protect special-status species, vegetation communities, and wildlife habitat.

BIO-1: Control noxious weeds. Design Features to control the introduction and spread of noxious weeds in the project area would be implemented during construction activities. These design features include:

- All off-road equipment and vehicles used for project implementation are required to be weed-free. All equipment and vehicles will be cleaned of all attached mud, dirt, and plant parts. This will be done at a vehicle washing station or steam cleaning facility (power or high-pressure cleaning) before the equipment and vehicles enter the project, and before vehicles enter the Basin (if they originate from outside the Basin).
- All gravel, fill, or other materials are required to be weed-free. Use onsite sand, gravel, rock, or organic matter when possible. Otherwise, obtain weed-free materials from gravel pits and fill sources that have been surveyed and approved by the Nevada Department of Agriculture or by a botanist or ecologist at the LTBMU.
- Minimize the amount of ground and vegetation disturbance in the construction areas. Reestablish vegetation on all disturbed bare ground to minimize weed establishment and infestation.
- Salvage topsoil from project area for use in onsite revegetation, unless contaminated with noxious weeds. All activities that require seeding or planting must utilize locally collected native seed sources when possible. Plant and seed material should be collected from or near the project area, from within the same watershed, and at a similar elevation when possible. Persistent nonnatives such as *Phleum pratense* (cultivated timothy), *Dactylis glomerata* (orchard grass), or *Lolium* spp. (ryegrass) will not be used. Seed mixes must be approved by a Forest Service botanist for use on National Forest System Lands.
- The project area will be monitored for 3 years subsequent to project implementation to ensure weeds do not become established in the areas affected by the projects. Annual reporting on National Forest System Land will be submitted to the noxious weed coordinator to ensure compliance. If noxious weeds are found, the noxious weed coordinator on the LTBMU will be notified immediately.

BIO-2: Construct during dry season. Construction activities would occur between May 1 and October 15 and during seasonal low water conditions in the 100-year floodplain of any drainage in the project area to reduce the potential for siltation impacts on wetlands and drainages. If dry conditions continue after

October 15, construction activities could continue in accordance with Design Feature SOIL-1.

BIO-3: Minimize impacts on waters of the United States. Construction activities would be limited to the trail prism or existing disturbed areas; this constraint would minimize the loss or disturbance of waters of the United States.

BIO-4: Conduct preconstruction surveys for selected wildlife species. Some locations in the project area have been surveyed for willow flycatcher in previous years. Additional preconstruction surveys for willow flycatcher may be conducted in these and other areas of suitable riparian habitat where project activities would occur. Results of these surveys would be used to implement some of the Design Features described below.

BIO-5: Avoid or minimize impacts on threatened, endangered, Forest Service sensitive, or TRPA special-interest wildlife and plant species. Any detection of threatened, endangered, sensitive, or special-interest wildlife or plant species or of nests, dens, roost sites, and other areas of concentrated use of these species, before or during implementation of the proposed action, would be reported to the Forest Service wildlife biologist or botanist on NFS lands. Areas of concentrated use, particularly those that are important for reproductive activities (e.g., nest or den sites), would be protected in accordance with the LRMP as amended. Specific Design Features for all of these wildlife species are described in Design Feature BIO-6.

BIO-6: Implement limited operating periods. No sensitive species or sites have been identified to date. To avoid construction-related disturbances to breeding activities and habitat of species included in the Biological Evaluation/Biological Assessment (BE/BA), limited operating periods (LOPs) would be implemented around nests, dens, roost sites, and other areas of concentrated use of these species if found during project implementation. An LOP consists of a period during which project activities would not occur and is enforced in project implementation contracts. Implementation requirements such as the timing and location of LOPs for certain species are described below. (No sites have been identified to date).

- **American marten.** Carnivore surveys have not been conducted throughout the project area. Suitable habitat for American marten occurs within the project area and this species is highly likely to occur there. If a den site is detected in the project area before or during project activities, an LOP would be implemented from May 1 to July 31 within 100 acres surrounding the den site.
- **Willow flycatcher.** Pre-project surveys for willow flycatcher may be conducted in areas of suitable riparian habitat where project activities would occur. If willow flycatchers are detected, an LOP between June 1 and August 31 would be imposed. The location of the LOP would be determined by the Forest Service wildlife biologist based on site conditions and type of project activity.
- **Other wildlife species.** LOPs or protection zones for all other threatened, endangered, sensitive, or special interest wildlife species would be implemented if these species are detected in the project area prior to or during project

implementation. Appropriate LOPs or protection zones would be implemented around a nest site, roost site, den site, or other area of concentrated use. The Forest Service wildlife biologist would determine the location and duration of an LOP.

- **Waterfowl, fisheries, and aquatic resource Design Features**. The Design Features described above for protection of soil and SEZ resources would avoid or minimize potential short-term adverse effects of project activities on aquatic and riparian habitats that support waterfowl, fish, amphibians, and other aquatic species.

Heritage Resource Design Features

HER-1: Implement additional review, if necessary. If the design of the proposed action is altered or changed, additional review by the LTBMU's Historic Resources Program would be required. Furthermore, if any previously unrecorded heritage resources are discovered during this project, all project-related activities must cease immediately and the procedures as set forth in Section 800.13 of the Council on Environmental Quality's regulation 36 CFR Part 800 must be initiated.

Air Quality Design Features

AIR-1: Recontour, decompact, incorporate organic matter, and mulch disturbed areas. Treat disturbed areas immediately after the completion of construction to reduce wind erosion.

AIR-2: Limit vehicle speeds. In areas where mechanized equipment might be used, vehicle speeds would be limited to 15 miles per hour on unpaved surfaces.

Recreation Design Features

REC-1: Trails would be designed to minimize use conflicts.

- Avoid long, straight, down grades, to minimize the occurrence of use conflicts resulting from high speed mountain bike travel.
- Install trailhead signage with allowable uses and etiquette messages.
- Incorporate natural features such as rock outcrops during trail design and construction to slow mountain bikes while adding interest for all users.
- When possible, avoid short sight lines.
- Provide run-outs with reverse grades to reduce speed differences between mountain bikers and other use groups.

Traffic Design Features

TRA-1: An appropriate trail crossing shall be installed to ensure the safety of trail users crossing Kingsbury Grade (SR 207). The proposed action would still require trail users to cross Kingsbury Grade near Buchanan Road. The design of the appropriate trail crossing shall follow Nevada Department of Transportation guidance.

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in Table 4 is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

TABLE 4
COMPARISON OF ALTERNATIVES

	Alternative 1 – Proposed Action	Alternative 2 – No Action
Develop trail system that minimizes trail use conflicts	TRT would be re-routed off paved roads. 0 miles of trail on paved roads.	TRT would continue to follow public roadways. 3.4 miles of TRT would continue to be on paved roads.
	The TRT would cross paved roads in two locations.	The 3.4 miles of TRT on paved roads would continue to cross 20 paved intersections (see figure 3).
Decommission segments of trails that are causing resource damage	8.71 miles of Nonsystem roads and trails would be reconstructed or decommissioned.	No trails or roads would be decommissioned or reconstructed at this time.
	1.54 miles of Nonsystem roads and trails would be reconstructed or decommissioned within SEZs. Overall coverage within SEZs would be reduced by 3,056 sq ft (0.29 linear miles).	1.54 miles of Nonsystem roads and trails would continue to be located within SEZs. No reduction in coverage within SEZs or in coverage overall.
	Of numerous stream and drainage crossings in the proposed action, five have existing user created crossings at or near the proposed crossing site. These crossings would be upgraded to Forest Service standards.	All user created stream and drainage crossings would remain unmaintained at this time. Future planning could occur to maintain these crossings.
Provide an interconnected trail system that includes loops and connector trails	Trail system would include connections to VSSP and the SLT/Stateline area.	Trail system would not connect with VSSP and the SLT/Stateline area.
	Loops would be created both within the project (N of Highway 207), and through the project crossing system roads and trails.	Loop opportunities would be available, but on sections of trail that do not receive maintenance at this time.

3.0 ENVIRONMENTAL CONSEQUENCES

Introduction

This section summarizes the biological, physical, and social environments of the affected project area and the potential changes to those environments due to implementation of the alternatives. It also presents the scientific and analytical basis for comparison of alternatives presented in the chart above.

General Description of the Project Area

The project area is located in Douglas County in the southeast portion of the Lake Tahoe Basin, near the community of Stateline, Nevada (Figure 1). The project area is defined by

numerous sub-watersheds within the Edgewood Creek and Burke Creek watersheds of the Lake Tahoe Basin. The project area includes the existing TRT, proposed trail re-alignments, proposed road and trail reconstruction and proposed road and trail decommissioning.

Nonsystem user-created trails and roads, NFS roads and trails, and abandoned logging roads exist throughout the project area. These existing trails and roads receive a mix of motorized and non-motorized uses, including OHVs, mountain bikes, equestrians, and hikers. A NFS trail or road is managed and maintained by the Forest Service. A nonsystem trail or road, sometimes called a user-created trail or road, is any trail or road on public lands that is not managed and maintained by a government agency. Only system roads and trails (including the TRT) receive regular maintenance and management. The existing roads and trails in the project area are shown in Figure 2.

Cumulative Effects Project List

The Kingsbury Burn and Hand Thinning Projects are fuel reduction projects being undertaken by the Forest Service that include prescribed burning and vegetation and biomass removal. Only pile burning is left to be accomplished.

The Edgewood Creek restoration project is being implemented by Heavenly Mountain Resort along Edgewood Creek just east of the proposed TRT crossing. This project consists of SEZ and water quality improvements, including sediment source control, hydrologic control, and treatment of storm water, as well as restoration of riparian habitat and Edgewood Creek.

Nevada State Parks and the California Tahoe Conservancy are jointly working on the VSSP Phase 1a project. Proposed associated infrastructure on the California-side of the property includes a day-use/picnic area with restrooms, parking, multi-use trails, internal trail system, and entrance roadway. The planned South Tahoe Greenway trail also feeds VSSP from the south and terminates in the Park. The Nevada side of the property has planned an entrance roadway, equestrian friendly trailhead, restrooms, and vehicular and equestrian parking. The Nevada trailhead would provide a kiosk and link trail to the Van Sickle Connector Trail that is a part of this proposed action.

Environmental Consequences

Effects to Vegetation

Alternative 1 (Proposed Action)

Direct Effects

Decommissioning of user-created roads and trails would result in a net reduction of 76,989 sq. ft (see Table 5 below) of coverage (areas of compacted soil or other human created hard surface inducing surface water runoff rather than percolation or absorption) when compared with the coverage created by proposed new construction. Therefore, the direct effects of the proposed action are expected to benefit vegetation communities.

Some small-diameter trees or snags could be felled or have branches cut during project activities. However, no live trees greater than 24 inches dbh would be felled. Snags larger

than 24 inches would be avoided unless they are deemed a hazard (see design feature SOIL-4). The felling of some green trees or snags, or disturbances to or removal of herbaceous or shrub species, would not significantly contribute to changes in stand structure or vegetation composition in the project area.

Most disturbances to vegetation resulting from trail and road decommissions would occur within the existing trail prism with new trail construction and re-routes resulting in new disturbance for vegetation. Disturbances to ground vegetation associated with trail and road decommissioning would be mulched according to design feature SOIL-5.

Based on the analysis presented in the BE/BA, suitable habitat for 20 plant, lichen, and fungi species that are protected under the Federal Endangered Species Act or are designated as Forest Service Sensitive and/or TRPA special-interest species occurs within the project area. Surveys were conducted along all proposed trail alignments and included a 45 foot buffer on either side of the trail alignment to account for minor changes in the trail route. None of the special-status plant, lichen, or fungi species were observed during the surveys. Therefore, the proposed action would not impact special-status plant species.

No noxious weed species were observed during surveys for this project. Design Features to control the introduction and spread of noxious weeds in the project area would be implemented during construction activities (see Design Feature BIO-1).

The proposed action would have very limited impact on late seral/old growth forest. The Sierra Nevada Forest Plan Amendment criteria definitions (California Wildlife Habitat Relationships types 5D and 6) were used to define late seral/old growth areas. To be conservative, types 5M and 5P forest stands were included. All identified stands were avoided, except in section 25 (Southwest Segment and Van Sickle Connector), where less than 200 meters of a corner of one plotted stand would be crossed to avoid crossing an SEZ and an unsustainable erosive slope. Design Feature SOIL-4 minimizes vegetation disturbance. No standing trees larger than 6” dbh would be cut in the identified late seral stand. Because the proposed action limits tree removal in those stands to trees less than 6” dbh, there would be no effects to late seral/old growth forest from implementation of the proposed action.

The effects of the proposed action is expected to be beneficial to vegetation resources, and include a net increase in vegetation cover, including cover within sensitive habitat resources such as SEZs, and a reduction of off-route travel and disturbance by pedestrian and mechanized users. Off-trail travel is expected to decrease as a result of establishment of a trail system that better meets user needs.

Overall, the proposed action is expected to have beneficial effects on vegetation: specifically, the proposed action would entail a net increase in upland and riparian vegetation and reduced disturbance. With implementation of project Design Features there will be no significant effect to vegetation.

Indirect Effects

In the long term, disturbances to vegetation along decommissioned trails and roads as a result of mechanized, motorized, or pedestrian use would be eliminated. Vegetation

communities are expected to benefit from plant establishment and succession on decommissioned trails and roads in the project area.

The proposed action is expected to enhance habitat for riparian-associated species in the long term. Under the proposed action, a net reduction of 3,056 sq. ft of coverage within SEZs would occur, including a net reduction of trails within suitable habitat for several special-status plants. Less total coverage of trail within SEZs, in combination with the reconstruction of user-created trails and conversion of roads to trails meeting Forest Service design standards, is expected to benefit aquatic and riparian habitats and SEZs overall. Although some loss of riparian habitat would occur as a result of new trail construction/re-routes, a net increase in riparian vegetation cover is expected as a result of a net decrease in trail coverage.

Trail reconstructions are not expected to effect vegetation communities, because these would occur within the existing trail or road prism. Reconstructions could benefit vegetation communities as they would result in an improved trail system that would require less frequent maintenance and associated disturbance to adjacent vegetation. Also, reconstructions designed to reduce erosion and improve water quality are expected to reduce the occurrence of problem areas on trails; this should reduce the frequency of off-route travel and disturbance by pedestrians and bicyclists attempting to avoid problem areas.

Cumulative Effects

The proposed action is expected to have positive cumulative effects to vegetation because the vegetation in the area would continue to recover from past disturbances from roads and trails.

Alternative 2 (No Action)

Direct Effects

No effects.

Indirect Effects

Under the no action alternative, habitat for the project area's vegetation resources would continue to suffer degradation caused by user traffic on existing non-system and user-created trails and roads. Trampling due to use of these trails and roads would continue to accelerate disturbance conditions, disrupting and fragmenting intact native plant and riparian communities and increasing native plant mortality. Impacts to sensitive vegetation resources such as those in SEZs would continue over time. Specifically, existing Trails 2, 5, 9, 11, 12, 13, 14, 16, 18, 19 and Roads 5 and 7 all currently traverse through SEZs (Figures 2 and 5).

Cumulative Effects

The no-action alternative would not have any cumulative effects to vegetation because no project activities would occur.

Effects to Wildlife

Alternative 1 (Proposed Action)

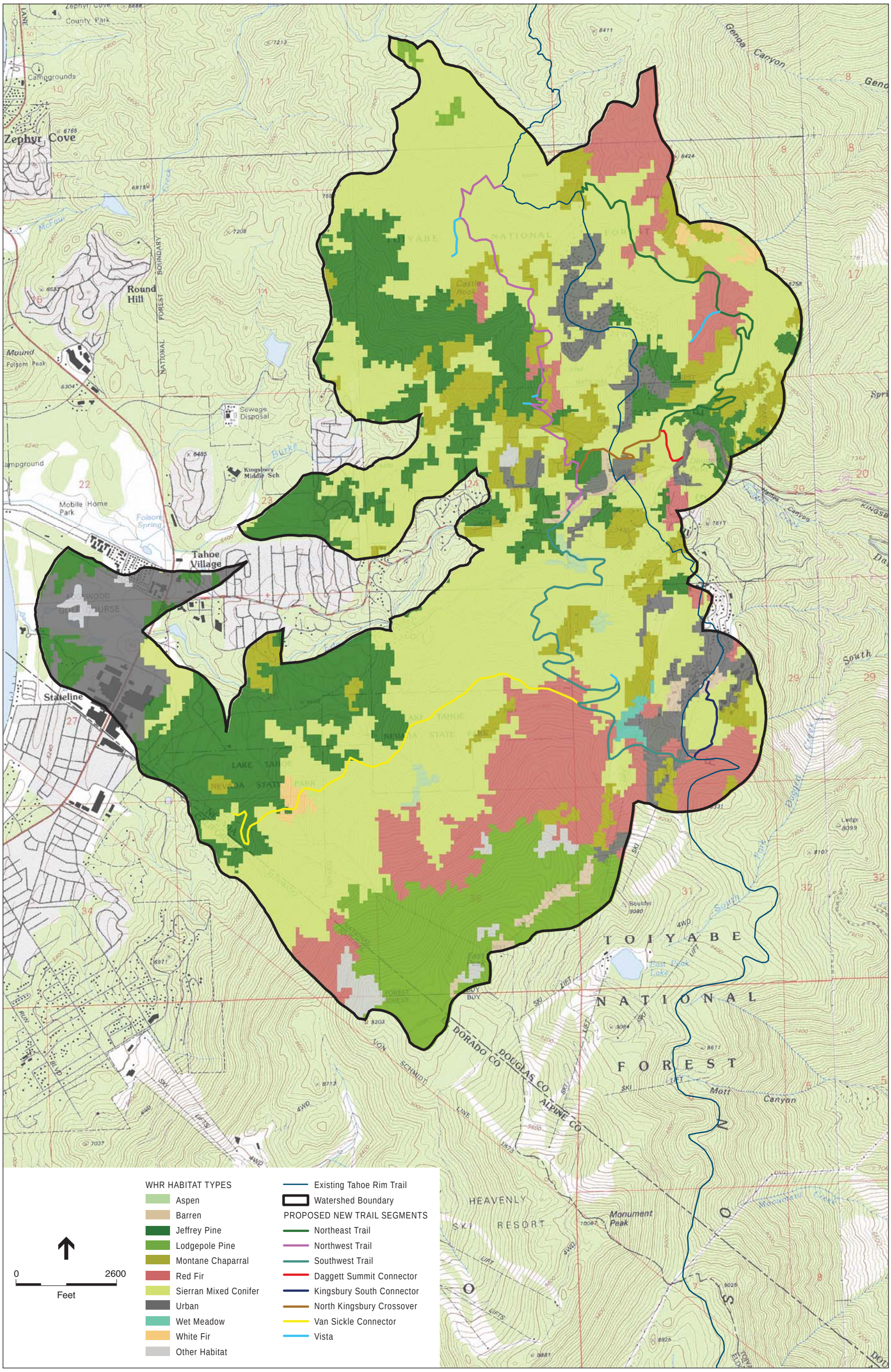
In the short term (i.e. during implementation of project activities), activities associated with trail construction, decommissioning, and reconstruction could temporarily disturb wildlife foraging and breeding habitat. Disturbances to wildlife habitat resulting from trail construction, decommissioning, and reconstruction would be limited to the existing road or trail prism, the proposed trail prism, and adjacent areas. The felling of some green trees or snags (less than 24 inches dbh in the whole project area – less than 6 inches dbh in the identified late seral stand), or removal of some herbaceous or shrub species along the newly constructed trails, is not expected to significantly contribute to changes in habitat structure or composition in the project area. Habitat disturbances would be minimal and short-term, and disturbed areas would be restored in accordance with Design Feature SOIL-5. These short-term effects on species habitat would be limited to removal of a small number of individual trees, and would likely be offset by the long-term benefits to wildlife habitat.

Removal of green and standing-dead trees could result in habitat loss for those individuals dependent on these habitat elements. However, only small-diameter trees or snags would be felled during the proposed action. When tree-felling is used in trail decommissions, it would be sporadic and only implemented as necessary to block trails and cover the trail surface in a non-continuous manner. In effect, the proposed action would decommission several trails that are in sensitive habitat while reducing the overall coverage of trails and roads within the project area. Based on these considerations, the proposed action is not expected to contribute to changes in overall habitat structure, distribution, or composition in the project area. Table 5 and Figure 4, below, provide an overview of impacts to habitat types, both existing and proposed.

TABLE 5
EXISTING AND PROPOSED IMPACTS TO WHR HABITAT TYPES (SQ. FT)

WHR Type	Existing Impacts (Trails and Roads)	Proposed			
		Reconstruction (Trails and Roads)	Decommission (Trails and Roads)	New Construction (Trails)	Change in Impacts[1]
Sierran mixed conifer	137,970	26,133	111,837	59,910	-51,927
Red fir	27,238	1,354	25,884	16,197	-9,687
Jeffrey pine	14,887	3,544	11,343	11,430	+87
White fir	1,587	0	1,587	1,446	-141
Aspen	7,092	3,807	3,285	0	-3,285
Montane chaparral	25,166	2,216	22,951	10,915	-12,036
Total	**213,940**	**37,054**	**176,887**	**99,898**	**-76,989**

Notes: 1. Change in Sq. Ft. Impacted = New – Decommission
Source: USFS, 2008



SOURCE: USGS, 1970-1983; USFS, 2008; and ESA, 2008

Daggett Summit Trail System Project Environmental Assessment

Figure 4

WHR Habitats in the Action Area

Although trail and road decommissioning and trail reconstruction activities could temporarily disturb some wildlife species while they are being conducted, existing disturbances to habitat along these trails and roads as a result of mechanized, motorized, or pedestrian use would be immediately eliminated or reduced. Further, conducting surveys for some species (e.g., willow flycatcher - see Design Feature BIO-4), avoiding impacts to species, and implementing LOPs (see Design Feature BIO-6) would further reduce the potential for adverse effects.

Temporary (i.e. during implementation of project activities) disturbances to foraging, movement, and reproductive activities of special-status and common wildlife species (i.e. black bears and coyotes) resulting from noise or other project-related factors could occur. However, project activities within the project area would be dispersed and localized, and project activities at each location would be completed over a short period of time. The proposed action is not expected to disturb the foraging, reproductive, or movement behavior of special status and common wildlife species above existing disturbance levels.

Indirect Effects

Within the project area, 176,887 sq. ft of existing trails and roads would be decommissioned and 99,898 sq. ft of new trails would be constructed under the proposed action. This would result in a net reduction of 76,989 sq. ft of coverage, including 3,056 sq. ft of coverage within SEZs/riparian habitats. In addition, the proposed action includes reconstruction of 37,054 sq. ft of existing trails and conversion of roads to trails.

The proposed action would provide a net reduction in the number of acres of coverage in the Sierran mixed conifer, red fir, white fir, aspen, and montane chaparral habitat types. This would benefit wildlife species that utilize these habitat types by shifting recreational use from high capability land to low capability land. The project would result in a net increase of 87 sq. ft of coverage within the Jeffrey pine habitat type.

Trail and road decommissioning and trail reconstruction is expected to improve terrestrial wildlife habitat; these improvements are expected to offset short-term adverse effects (e.g., temporary construction-related disturbances) associated with the proposed action described above. Disturbances to habitat along these trails and roads as a result of mechanized, motorized, or pedestrian use would be reduced; and vegetation communities are expected to benefit from plant establishment and succession on decommissioned trails in the project area.

For common wildlife species such as black bear (*Ursus americanus*) and coyote (*Canis latrans*) which show signs of habituation to humans in the area, implementation of the proposed action would not have an effect on these species. There may be a small net benefit to these species through a reduction in overall coverage in the project area and an increase in suitable habitat.

Where new trails would be constructed or re-routed, new recreation use in these areas would occur. The effects of recreation on wildlife depend on several factors, including the type, magnitude, frequency, and predictability of recreation activity; location and timing of

activity; and the sensitivity of a species based on its life history characteristics (see Knight and Cole 1995). It is assumed that individuals of all terrestrial wildlife species analyzed for this EA are sensitive, to some degree, to increases in recreation use.

There would be a net decrease in coverage within the project area; however, the new trail system should attract more users if it is perceived publicly as more logical, safer, and more enjoyable than the existing system. Use is limited by the number of trailheads and amount of parking available. No increase in trailheads or amount of parking is proposed. At a more local scale, certain types and concentrations of recreation use would increase or decrease. Depending on the sensitivity of wildlife species to these changes, the local suitability and use of habitat for each species would increase or decrease accordingly.

Overall, a reduction of total coverage within the project area is expected to increase the amount of suitable habitat available to wildlife. This reduction of coverage is expected to offset potential adverse impacts associated with new access in other locations.

Cumulative Effects

The proposed action would not have any cumulative effect on wildlife because the other projects in the area would not be implemented at the same time as trail work, or would incorporate mitigation measures. Limited Operation Periods would be applied if sensitive species are discovered.

Threatened, Endangered and Forest Sensitive Species

The BE/BA (Project Record Document K1) should be consulted for information on the known occurrences and status of each threatened, endangered, forest sensitive or special-status species in the project area and a detailed analysis of potential beneficial and adverse effects on each species.

Based on the analysis of direct and indirect effects of each species presented in the BE/BA, American marten and willow flycatcher would be most affected by the proposed action in the long-term. Effects of the proposed action on these species are described below.

American Marten. Of all forest carnivore species addressed in the BE/BA, American marten is the only one likely to occur in the project area. The determination, found in the BE/BA is that this project may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for American marten. Potential habitat types for marten found in the project area include red fir, lodgepole pine, Sierran mixed conifer, and Jeffrey pine (see Figure 4). Preferred habitat for denning and resting is characterized by dense (60% to 100% canopy), multi-storied, multi-species late seral coniferous forests with a high number of large snags. These areas are generally in close proximity to both dense riparian corridors (used as movement corridors), and include an interspersion of small (<1 acre) openings. Most of the project area is considered marginal habitat for marten. The best potential habitat occurs just west of Heavenly Ski Resort, near where the Van Sickle Connector Trail merges with the Southwest Trail, and there is a known occurrence of American marten at Heavenly Ski Resort; accordingly, this species

probably occurs in the project area. The most likely long-term effect of the proposed action on American marten is a shift in local habitat use and distribution of individuals in response to trail construction, decommissioning, and reconstruction. American martens are expected to abandon or avoid areas where trails are constructed. If new trails are constructed within or near an individual's home range, its survival or reproductive productivity could be reduced. In areas where trails are decommissioned, habitat suitability for and probability of occupancy by American martens would increase.

Overall, a reduction of total coverage within the project area is expected to increase the amount of suitable habitat available to American marten. This reduction of coverage is expected to offset potential impacts associated with new access to suitable habitat in other locations.

Willow Flycatcher. The determination, found in the BE/BA is that this project may affect individuals, but is not likely to result in a trend toward federal listing or loss of viability for Willow Flycatcher. Potential habitat types for willow flycatcher found in the project area include aspen and wet meadow (see Figure 4) as well as SEZs within Jeffrey pine and Sierran mixed conifer (see Figure 5). The proposed action is not likely to substantially disturb or cause a loss of suitable habitat. Suitable foraging habitat for willow flycatcher occurs in a very limited distribution within the project area and is of marginal quality due to inadequate connectivity with high quality habitat. Although project activities within SEZs could temporarily disturb some suitable habitat, the proposed action is designed to avoid or minimize potential adverse effects on riparian habitats in the project area and prevent a net loss of riparian habitat. Moreover, the proposed action would benefit willow flycatcher in the long-term through a net reduction of 3,056 sq. ft of coverage within SEZs. Less total coverage of trail within SEZs is expected to benefit aquatic and riparian habitats and SEZs overall, which would enhance willow flycatcher habitat in the area over the long term.

MIS

Habitat for Sooty Grouse and Mountain quail is expected to benefit from the proposed action in the long term, as described in the project MIS Report (Project Record Document K3).

Alternative 2 (No Action)

Direct Effects

No effects.

Indirect Effects

Under the no action alternative, expanding user encroachment would continue and would become increasingly likely to invade sensitive habitat and adversely affect wildlife activities. Use of these trails and roads would continue to accelerate disturbance conditions, disrupting wildlife and fragmenting their habitat.

Cumulative Effects

The no action alternative would not have any cumulative effects on wildlife because no ground disturbing activities would occur.

Effects to Fisheries and Aquatic Habitat

Alternative 1 (Proposed Action)

Direct Effects

The proposed action alternative will have no effect on Threatened, Endangered, Forest Sensitive or special status species of fish as none are present in the project area (Project Record Document K1).

Indirect Effects

The proposed action would result in long-term beneficial effects on aquatic habitat that supports fish by correcting erosion problems from existing user created stream crossings.

Cumulative Effects

The proposed action will further enhance work on Edgewood Creek to correct sedimentation problems and lead to beneficial cumulative effect to fisheries and aquatic habitat.

Alternative 2 (No Action)

Direct Effects

The no action alternative will have no effect on Threatened, Endangered, Forest Sensitive or special status species of fish as none are present in the project area (Project Record Document K1).

Indirect Effects

Under the no action alternative, fisheries and aquatic habitats resources would continue to be adversely affected by erosion and water quality degradation caused by user-created trails and roads. Many of the user-created roads and trails are in close proximity to aquatic habitats such as streams and SEZs; erosional problems on these segments are particularly problematic as eroded sediment and nutrients are delivered directly to the SEZs and streams, causing water quality impacts and impacting habitat for fish. Impacts to SEZs would continue and could worsen over time. Specifically, existing Trails 2, 5, 9, 11, 12, 13, 14, 16, 18, 19 and Roads 5 and 7 all currently traverse through SEZs. Many of the user created road and trail segments have caused chronic erosion features (e.g. Roads 4, 5, 6, 7, and 8 and Trails 1, 4, 9, and 18 – see Figure 2) that would not be addressed. Approximately 23 high or medium risk chronic erosion features would continue to deteriorate over time.

Cumulative Effects

With no correction to the erosion of SEZ crossings, the no action alternative would lessen the beneficial effects from the Edgewood Creek restoration project, described above.

Effects to Soil, Water and SEZ

Alternative 1 (Proposed Action)

Cumulative Watershed Effects

The long-term effect of the proposed action is expected to improve water quality within the project area by reducing the potential for sediment delivery to surface waters, according to WEPP model calculations (see below). The proposed action may cause a minor, short-term increase in sediment production within the project area as a result of construction activities associated with the project. However, because project design features and BMPs are incorporated to avoid or minimize construction-related impacts, there will be no cumulative effects to water resources. This considerable reduction in sediment delivery would significantly benefit water quality in area streams and in Lake Tahoe.

The Water Erosion Prediction Project (WEPP) model (USFS, 2008), was used to assess the cumulative impact of the proposed action with respect to erosion and potential sediment delivery to streams with the project area (see Appendix C).

For a given length of trail or road, the WEPP Road Batch model ultimately predicts 1) the average annual amount of sediment eroded from the trail/road and 2) the average annual amount of sediment leaving the buffer zone that surrounds the trail/road. The WEPP Road Batch model was used to evaluate erosion and potential sediment delivery from existing trails and roads as well as from the proposed network of new and reconstructed trails. Two types of trail/road segments were modeled:

- CATEGORY 1 – Trails located within a SEZ; trails located within 300 feet of a stream (shown as a blue line on the U.S. Geological Survey [USGS] maps); or trails where the 300 foot buffer completely intersects an SEZ. Collectively, this category of trails can cause excessive erosion and is considered to have the potential to deliver sediment directly to streams and/or SEZs and reduce water quality.
- CATEGORY 2 – Trails located beyond 300 feet from a stream; and trails where the 300 foot buffer does not completely intersect an SEZ. Trails/roads within this category can cause excessive erosion, but the potential for delivery of sediment directly to streams is small.

The results of the WEPP Road Batch model analysis are summarized in Table 6. According to the model estimates, the proposed action would result in an 88.6 percent decrease in the overall annual average amount of erosion from existing trails and roads. Further, the proposed action would result in a 94 percent reduction in the amount of sediment potentially delivered directly to streams and/or SEZs within the project area. The reduction in total erosion and sediment delivery potential is due primarily to the decreased connected trail length (e.g., smaller distance between trail drainage features), decreased gradient for new and reconstructed trails, and the reduction in trail/road width. Compared to the existing trails, there is a predicted increase in the amount of sediment leaving the buffer zone for the Category 2 trails. However, this category of trails is typically not capable of delivering sediment directly to streams and, more importantly, this slight increase is more than off-

set by the large overall reduction in total erosion and potential sediment delivery from the Category 1 trails.

Implementation of the proposed trails and trail upgrades, as well as the decommissioning of existing roads and trails, would provide beneficial long-term water quality impacts by reducing erosion and sediment delivery to stream channels within the project area. The reduction of erosion and sediment delivery within the Edgewood Creek and Burke Creek watersheds would further contribute to achieving the regional goal of reducing fine sediment delivery to the Lake. The proposed action would therefore contribute to an improvement in the water quality within the project area and within the Lake.

TABLE 6
WEPP ANALYSIS SUMMARY

		Unit Erosion		TOTAL	
	Total Trail/Road Length (ft)	Average Annual[a] Erosion from Trail/Road (lb/ft)	Average Annual[a] Sediment Leaving Buffer (lb/ft)	Average Annual[a] Erosion from Trail/Road (metric tons)	Average Annual[a] Sediment Leaving Buffer (metric tons)
Existing Roads					
within SEZ or 300 ft. buffer	6,535	4.85	1.80	14.37	5.33
outside SEZ or 300 ft. buffer	10,283	4.72	0.56	22.02	2.59
Existing Trails					
within SEZ or 300 ft. buffer	11,059	1.11	0.35	5.56	1.75
outside SEZ or 300 ft. buffer	17,545	1.13	0.07	8.96	0.56
New/Proposed Trails					
within SEZ or 300 ft. buffer	19,248	0.18	0.05	1.60	0.43
outside SEZ or 300 ft. buffer	49,237	0.19	0.05	4.22	1.09

a Average Annual value based on 45 years of simulation.

The proposed action is designed to establish a sustainable trail system. Correspondingly, implementation of the proposed action would result in a reduction in erosion through trail reconstruction and trail and road decommissioning. Trails would be reconstructed to meet design standards and use needs which would reduce the occurrence of user created trails and maintenance frequency. Trail and road decommissionings would result in the reestablishment of native vegetation and the elimination of sources of erosion.

Decommissioning of user-created trails and roads would reduce access to sensitive areas that are vulnerable to erosion. Decommissioning trails would result in increased infiltration capacity for the project area. The surfaces would be restored and natural revegetation would occur. Decompaction of soils, exposure of buried rock, incorporation of organic matter into soils, and the addition of woody debris and mulch increase ground cover, slow surface runoff, and increase infiltration. Natural drainage features are reestablished, providing for more naturally functioning hillslope hydrology. Improvements in physical soil properties that directly affect plant growth would increase soil productivity. The effective blocking of access points facilitates the eventual establishment of vegetation.

Reconstruction of trails and conversion of roads to trails meeting Forest Service design standards entails many of the same activities and effects as decommissioning; however, the beneficial effects of reconstruction are less than those of decommissioning because reconstruction retains a bench, or prism, to accommodate the trail. At the same time, reconstruction would ensure that trails are designed and maintained in accordance with Forest Service design standards.

Although ground disturbance (in the form of new trail coverage) would occur under the action alternative (99,898 sq. ft), decommissioning would restore 176,887 sq. ft of currently disturbed ground, and the net result of the proposed action would be a net decrease of 76,989 sq. ft of coverage, a 35% reduction. In addition, the proposed action includes reconstruction of 37,054 sq. ft of existing trails and conversion of roads to trails, which would reduce erosion by ensuring that trails are designed and maintained in accordance with Forest Service design standards. Although the reconstruction of trails and conversion of roads to trails meeting FS design standards does not contribute to the total change in coverage, these reconstruction efforts would reduce impacts on soil resources through implementation of trail design standards and periodic maintenance. New system trails would be designed to minimize erosion and water quality degradation. This improved trail system would also require less frequent maintenance and associated disturbance. The occurrence of problem areas on trails is also expected to decrease; this should reduce the frequency of off-route travel and disturbance by pedestrian and mechanized users attempting to avoid problem areas. The resulting NFS trails would be actively monitored and maintained, minimizing erosion problems. Therefore, the long-term effects of the proposed action on soil resources would be beneficial. Table 7, below, provides an overview of coverage for the proposed action, both existing and proposed.

TABLE 7
EXISTING AND PROPOSED COVERAGE

		Proposed			
	Existing Coverage (Trails and Road)	Reconstruction (Trails and Roads to Trails)	Decommission (Trails and Roads)	New Construction (Trails)	Change in Coverage[1]
Area impacts (square feet)	213,941	37,054	176,887	99,898	-76,989
Area impacts (acres)	5.01	0.95	4.06	2.29	-1.77

Notes: 1. Change in Impacts = New - Decommission
Source: USFS, 2008

Trails have been designed to sustain the impacts from pedestrian, equestrian, and mechanized use. The BMPs to be installed (see Appendix B) are endorsed by the Forest Service (see *Trail Specifications Handbook*), TRPA, and California's - Lahontan Regional Water Quality Control Board (Lahontan). These BMPs have been shown to be effective under a variety of conditions.

Decommissioning of roads and trails would minimize concentrated runoff, reduce sediment transport, and improve the quality of surface water. Newly constructed or

reconstructed trails would be built to reduce erosion. New trails would use rolling dips and grade reversals as more sustainable and less invasive features to maintain hillside sheet flow and distribute runoff through the bed material of the trail and would be out-sloped to prevent gullying. Trail slopes and gradients would comply with standard guidelines so that concentrated quantities of surface water would not run off at velocities capable of removing trail base material. Appropriate design would drain surface water from the trail to avoid ponding and development of soft, muddy surfaces that can lead to soil degradation and water quality impacts. The design of trail features that intersect surface water bodies would include Design Features to avoid sedimentation to the water body.

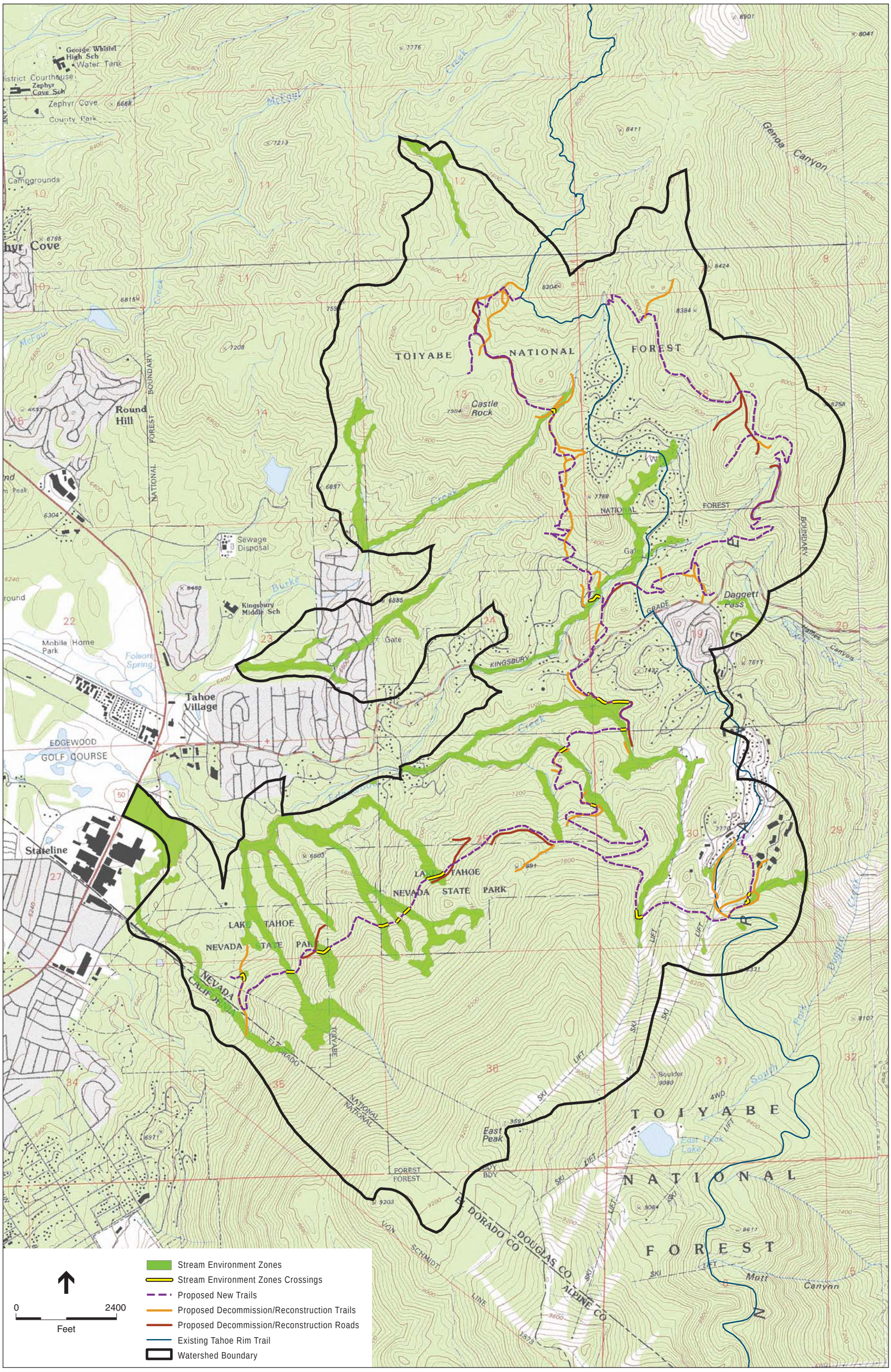
One of the primary objectives of the proposed action focuses on reducing trail coverage within and increasing the functionality of SEZs and reducing risks to water quality. Trail design would allow users to cross the various SEZs without causing adverse impacts to soils and water quality, and would avoid the damaging effects of current use of user-created trails, including surface water erosion and sedimentation.

Newly constructed and reconstructed trail segments would be located to avoid SEZs to the maximum extent possible. Best management practices and Design Features would be implemented during trail construction activities to minimize erosion, surface runoff, and siltation of any water body. Trails would be constructed to Forest Service trail design specifications. Trails would be designed with adequate drainage (maximum drainage spacing 164 feet {50m}) to retain slope sheet flow while preventing down-trail gully flow that could result from rain events or melt water. The drainage system would be designed to maintain the natural function of the hydrologic system. Diverted runoff would be dissipated to avoid rills, gullies, loss of soil, and water quality degradation.

Currently, 16,273 square feet of trail and road coverage is within SEZs including some user-created trails and roads. Under the proposed action alternative, 7,604 square feet of trail and road coverage would be decommissioned (through removal of the trail or road and restoration of the SEZ), and 4,548 square feet of trail coverage would be constructed, within SEZs. These changes would result in a net reduction of 3,056 square feet of coverage within SEZs and a 19 percent decrease in the coverage of trails in SEZs for the project. Currently, many of the existing trails and roads within SEZs are user-created and do not receive maintenance. Under the proposed action, trails within SEZs would be System Trails and would be constructed or reconstructed to Forest Service design standards and would receive regular maintenance. Less total coverage of trail within SEZs, in combination with the reconstruction of user-created trails and roads to Forest Service design standards, is expected to benefit aquatic and riparian habitats and SEZs overall. Although some loss of riparian habitat would occur as a result of new trail construction / re-routes, a net increase in riparian vegetation cover is expected as a result of a net decrease in trail coverage. Table 8 and Figure 5, provides an overview of impacts to stream environment zones, both existing and proposed.

Some project-related activities would involve work within ephemeral, intermittent, and perennial streams.

The proposed action would result in long-term beneficial effects to soils, water quality and SEZs. Although some new trail construction would occur within SEZs, riparian/SEZ habitat quantity and quality would increase overall; and, erosion and associated runoff of contaminants, sediment, and nutrient inputs to aquatic resources would be reduced.



SOURCE: USGS, 1970-1983; USFS, 2008; and ESA, 2008

Daggett Summit Trail System Project Environmental Assessment

Figure 5

Stream Environment Zones

TABLE 8
EXISTING AND PROPOSED IMPACTS TO STREAM ENVIRONMENT ZONES

		Proposed			
	Existing Impacts (Trails and Road)	Reconstruction (Trails and Roads)	Decommission (Trails and Roads)	New Construction (Trails)	Change in Impacts[1]
Area impacts (square feet)	16,273	8,669	7,604	4,548	-3,056
Area impacts (acres)	0.37	0.20	0.17	0.10	-0.07

Notes: 1. Change in Impacts = New - Decommission
Source: USFS, 2008

Indirect Effects

In general, trail and road decommissioning would result in long-term decreases of erosion and sedimentation because of reestablishment of soil productivity, increased soil cover, and infiltration capacity. Generally, trails and roads increase the amount of impervious coverage in a watershed, thereby increasing the likelihood of offsite adverse cumulative effects such as increased peak flows that can destabilize channels. Removal of trails and roads from the forest landscape would reduce the percentage of impervious coverage. Impervious coverage is reduced by tilling and recontouring, allowing for infiltration rather than the concentration of storm water. Tilling increases the infiltration capacity of the soil within the tilled area. Overall, the procedure results in a more "roughened" condition with greater infiltration capacity.

Trail and road decommissioning also reduces potential unmanaged use through sensitive areas (e.g., SEZs and riparian areas). Accordingly, short-term effects are minimal, and the long-term effect is the ecological restoration of a previously disturbed feature. It is anticipated that the proposed trail system may also curb off-trail impacts on soils by implementing logical connections and loop trail opportunities.

Development of a trail system that incorporates design principles for sustainability would reduce both maintenance needs and erosion. Trail maintenance loosens surfaces that have been compacted to reshape and recompact trail features such as drainages. Every effort is made to compact as much as possible, however some settling does occur and some soil is lost in the process. Trails that follow sustainable design principles are developed to minimize the need for constructed drainage features and for eventual maintenance. While every trail needs maintenance, implementation of the proposed action would result in a trail system with infrequent and minor maintenance requirements.

Trail and road decommissionings would result in the reestablishment of native vegetation and the elimination of sources of erosion.

Cumulative Effects

Implementation of the proposed action, when taken into account with implementation of The Edgewood Creek restoration project (described above) would increase the beneficial cumulative effects to soils, water and SEZ by further decreasing the amount of sediment entering Edgewood Creek through erosion.

Alternative 2 (No Action)

Direct Effects

Many of the user-created roads and trails are in close proximity to streams and SEZs. Specifically, existing Trails 2, 5, 9, 11, 12, 13, 14, 16, 18, 19 and Roads 5, 7 all currently traverse through SEZs. These trails and roads would continue to contribute sediment into the SEZs.

Indirect Effects

Under the no action alternative, the project areas soils would continue to be adversely affected by soil compaction and degradation caused by foot, equestrian, bike, and vehicle traffic on existing user-created trails and roads. Trails and roads not improved or decommissioned would continue to be subjected to compaction and degradation, which would increase soil loss through wind and water erosion, and impede natural material deposition and soil development. This wearing-away process would expose an ever-increasing area to accelerated rates of erosion. These trails and roads do not receive any maintenance. They are generally devoid of erosion control features. Furthermore, because these trails and roads were not properly designed, appropriate slopes, soils, and locations were not considered.

Both compaction and rutting can have deleterious effects on road and trail drainage, which can in turn lead to accelerated erosion, destabilization of road prisms and adjacent hillslopes, and increased sedimentation to surface waters that receive road drainage. Road and trail users often establish alternate off-road routes to circumvent severely rutted segments, causing ground and vegetation disturbance in areas not intended for use. The earthwork that is necessary to repair severely rutted road segments and reestablish favorable drainage patterns can be expensive, and the additional ground and vegetation disturbance caused by such activities can further increase the hazard of erosion.

Many of the user-created roads and trails are in close proximity to streams and SEZs; erosional problems on these segments are particularly problematic as eroded sediment and nutrients are delivered directly to the SEZs and streams, causing significant water quality impacts. Also, many of the user created road and trail segments have caused chronic erosion features (e.g. Roads 4, 5, 6, 7, and 8 and Trails 1, 4, 9, and 18 – see Figure 2) that would not be addressed. Approximately 23 high or medium risk chronic erosion features would not be repaired and would continue to deteriorate over time.

The replacement of certain existing user-created trails with system trails would discourage the formation of new user-created trails, thus contributing to restoring natural surface water flow regimes and allowing natural runoff process to prevail. Reconstruction of existing trails and new trails in areas adjacent to hydrologic features would reduce the likelihood of sedimentation and water quality impacts associated with use of poorly designed or degrading trail and road segments.

Under the no action alternative, the trail and road network in the project area would continue to adversely affect SEZs and water quality. Existing unmaintained trails and roads would continue to direct surface water flows, initiate soil erosion, and affect water quality due to sediment transport. Hydrologic features would continue to be affected by sedimentation and water quality impacts associated with user-created trails and roads, particularly where these

trails and roads traverses an area close to such features as a water body or SEZ. User-created trails and roads may proliferate in the area, potentially worsening the problem in the future. Nonsystem user-created trails and roads would continue to be used.

Under the no action alternative, the existing trail and road network in the project area would continue to adversely affect SEZs, water quality, and soil resources through accelerated erosion, sediment transport and delivery (see above for a detailed discussion of impacts to soil and water resources from the no action alternative).

Cumulative Effects
With no correction to the erosion of SEZ crossings, the no action alternative would lessen the beneficial effects from the Edgewood Creek restoration project, described above.

Effects to Air Quality

Alternative 1 – Proposed Action

Direct Effects

The proposed action involves short-term construction activities associated with trail and road decommissioning, trail reconstruction, and new trail construction. These activities would generate minor amounts of air emissions comprised of small construction vehicle and equipment exhaust and fugitive dust. Construction-related fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. However, the Design Features pertaining to Air Quality would be implemented to avoid or minimize effects on air quality and all state and federal regulations in regards to air quality would be followed.

Indirect Effects

No effects.

Cumulative Effects

Prescribed burning, one of the major sources of air emissions in the Lake Tahoe Air Basin, would not coincide with construction activities associated with the proposed action so no cumulative effects would occur.

Alternative 2 – No Action

The no action alternative would not have any direct, indirect or cumulative effects on air quality.

Effects to Visuals

Alternative 1 – Proposed Action

Direct Effects

At a landscape scale, the proposed action would meet the existing Visual Quality Objectives (VQO) of both retention and partial retention because the trails would not be

visually evident. At a closer scale, the new trail construction, re-routes and decommissioning associated with the proposed action would be consistent with the surrounding landscape, which includes trails. The proposed action would be consistent with the VQO's in this area.

Implementation of the proposed action would provide access to natural vistas offering panoramic views (NE Vista, NW Vista 1, NW Vista 2, NW Vista 3, and SW Vista).

Indirect Effects

No effects.

Cumulative Effects

The proposed action is not expected to have any direct or indirect effects to visual resources and would therefore not have any cumulative effects.

Alternative 2 – No Action

Direct Effects

No effects.

Indirect Effects

Under the no action alternative, the project area would continue to see the use patterns visible today. Continued use of non-system trails and roads would prevent the natural restoration of routes, so these would continue to be seen on the landscape.

Cumulative Effects

Under the no action alternative, the impacts to visual resources from numerous, user created trails, would continue to decrease the scenic quality of the area and could contribute to cumulative visual impacts if not managed.

Effects to Cultural Resources

The heritage resources inventory (Project Record Document K4) prepared for this proposed action analyzes the potential direct and indirect effects of the proposed action on heritage resources in the area. Pertinent conclusions of the heritage resources inventory are incorporated into the summary below.

Alternative 1 – Proposed Action

Direct Effects

This heritage resource inventory resulted in the formal recordation of one historic site (FS-05-19-1122) comprising an extensive and discontinuous logging landscape that may date from the mid 1950s.

Significance criteria established for the National Register of Historic Places (NRHP) have been applied to site FS-05-19-1122 and it is recommended that the site is ineligible to the NRHP. Accordingly, the proposed action should not affect heritage resources that fall within the project area. Although the project area has been subject to systematic

surface archaeological investigations, it is possible that buried or concealed heritage resources could be present and detected during project ground disturbing activities. With implementation of project Design Feature HER-3 no effect to any previously undetected heritage resources is expected.

Indirect Effects

No effects.

Cumulative Effects

The proposed action would not have any direct or indirect effects to cultural resources and would therefore not have any cumulative effects.

Alternative 2 – No Action

Direct Effects

No effects.

Indirect and Cumulative Effects

The no action alternative could have long-term effects on heritage resources. The number and length of user-created trails and roads would likely proliferate, which could affect neighboring heritage resources by increasing erosion, degrading vegetation, and increasing access to heritage resources. The intensity of impacts would depend upon the nature and location of the user-created trail or road, as well as the status of the heritage resource.

Effects to Recreation

Alternative 1 (Proposed Action)

Direct Effects

The general purpose of the proposed action is to improve recreational opportunities by 1) re-routing the existing TRT to eliminate segments of the trail on paved public roadways where possible conflicts between trail users and local vehicle traffic are a concern (especially in areas where sidewalks are not present and roadways are steep and winding); 2) providing quality, sustainable scenic trail and loop opportunities accessible to the primary basin visitor area as well as local users; and 3) adding interconnections to other trail systems including VSSP and urban trailheads.

The Forest Service and TRTA carried out extensive on-site evaluation of the existing trail and road system, identifying physical and structural problems, use patterns, safety concerns and trail destination and connection opportunities to correct existing problems or create new recreation experiences. This analysis also reviewed trail corridors relative to sensitive natural and heritage resources, as well as attempting to take advantage of the numerous scenic vistas provided in the area.

The Daggett Summit Trail System Project would provide trail users with an interconnected trail system, while protecting and managing the Tahoe Basin's natural resources. The total mileage of NFS trails open for public use would increase within the project area. The

trail system would consist of a network of trails that provide a variety of trail experiences to meet use needs ranging from short to long distance trail opportunities. Many of the proposed trails would form continuous loops. A cohesive, clear network of trails should provide a variety of route choices and challenges, as well as making desired connections for TRT through-hikers straightforward and rewarding. Logical, comprehensive, and user friendly connections would link the system with the existing TRT as well as with the trail system being developed as part of VSSP.

Reducing potential for user conflicts is an important component of the proposed action. Separating trail users from vehicular traffic would improve the user experience while increasing user safety. The trails proposed would be designated as multiple use (non-motorized). Allowable uses would include mechanized uses such as mountain bikes as well as non-mechanized uses such as pedestrians and equestrians. Trails would be designed to reduce use conflicts as described in recreational and other Design Features in part 2 of this EA.

Providing for challenging optional alignments can reduce the occurrence of user created trails, use conflicts and resource degradation. Use of natural features such as rocky outcrops and even downed logs can provide challenge for multiple use groups such as mountain bicyclists and trail runners.

Implementing the proposed action would substantially enhance the visitor experience by providing more varied experiences for the trail users, improving the continuity and connectivity of the trail system, improving trail conditions through regular maintenance, and providing enhanced recreation experiences through scenic vistas. Trail types would provide a mix of user experiences, and trails would be constructed with varying degrees of physical challenges. Public safety conditions would improve due to the planned decommissioning of hazardous user-created trails and roads, the addition of a marked crossing of Kingsbury Grade, and the rerouting of the TRT off of paved roadways.

In conclusion, the proposed action is designed to establish a sustainable and an adaptable trail system. Impacts to resources would be minimized through avoidance of sensitive areas, relocation of trails to higher capability lands and integrated planning. The proposed action would establish a sustainable and adaptable trail system through the following actions:

- Providing opportunities for a spectrum of non-motorized uses
- Providing a trail system that meets area needs
- Elimination of trails and roads with high impacts to resources
- Establishing an interconnected trail system with loop opportunities

Indirect Effects

No effects.

Cumulative Effects

The proposed action is expected to have beneficial cumulative effects on recreation. It would add a managed and maintained trail system consisting of interesting and scenic trails of varying lengths and levels of challenge close to the most visited area of the Basin. Nevada State Parks and the California Tahoe Conservancy are jointly working on the VSSP Phase 1a project. Proposed associated infrastructure on the California-side of the

property includes a day-use/picnic area with restrooms, parking, multi-use trails, internal trail system, and entrance roadway. The planned South Tahoe Greenway trail also feeds VSSP from the south and terminates in the Park. The Nevada side of the property has planned an entrance roadway, equestrian friendly trailhead, restrooms, and vehicular and equestrian parking. The Nevada trailhead would provide a kiosk and link trail to the Van Sickle Connector Trail that is a part of this proposed action. The proposed action is expected to have beneficial cumulative effects on recreation. It would add a managed and maintained trail system consisting of interesting and scenic trails of varying lengths and levels of challenge close to the most visited area of the Basin. It will interconnect with the existing TRT, the Pony Express trail, and internal trails in VSSP, as well as with public transportation.

Alternative 2 (No Action)

Direct Effects

No effects.

Indirect Effects

Under the no action alternative, the existing discontinuous unconnected network of user-created trails and roads and National Forest System roads would remain substantially unchanged. Standard maintenance activities would be undertaken on system roads and trails. TRT through-users would have to continue to cover the 3.4 miles between trailheads on paved roadways. This would lead to continued and possibly increasing conflicts between TRT users and automobiles. The discontinuity of trails and roads and the lack of logical trail connections and loop opportunities would not increase opportunities for recreational use. The inconsistency of trail conditions due to lack of maintenance or poor design would remain and would limit recreational use of the area.

Existing user-created roads and trails in the area would remain available for public use, although their condition would continue to deteriorate. Eventually, they would become increasingly unsuitable for public use. Wear and degradation of user-created trails and roads could pose a safety risk to certain user groups. User-created trails and roads in the area would likely proliferate, as the trails and roads are unsigned and many do not connect with other trails or roads, creating dead ends that may lead to additional trails or roads being created. Under existing conditions, user-created trails and roads in the area are often the cause of environmental degradation. In certain areas, the trails and roads are causing erosion, fragmenting native plant communities and wildlife habitat, degrading views, and damaging cultural resources.

The no action alternative would not establish a sustainable and adaptable trail system as a result of the following factors:

- Continued conflict between TRT users and automobile use
- The continued existence of nonsystem trails and roads
- Lack of logical trail connections and loop opportunities
- The continued proliferation of user created trails and roads

Cumulative Effects

The no action alternative is expected to have negative cumulative effects on recreation because most of the trails in the project area will be unmanaged, and will not provide the connection between the existing TRT (off of paved roadways), the Pony Express trail, and internal trails in VSSP, as well as with public transportation.

4.0 CONSULTATION AND COORDINATION

The Forest Service consulted the following individuals, Federal, State, and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

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FEDERAL, STATE, AND LOCAL AGENCIES:

Tahoe Regional Planning Agency, Douglas County, Nevada Division of State Parks, Nevada Department of State Lands, Nevada Department of Transportation, Nevada Division of Environmental Protection, Nevada Division of Wildlife, City of South Lake Tahoe Parks and Recreation Department, Kingsbury General Improvement District, California Tahoe Conservancy, USFS – Carson Ranger District,

TRIBES:

Washoe Tribe of California and Nevada

OTHERS:

Heavenly Ski Resort, Tahoe Village Homeowner's Association, Design Workshop, High Sierra Hikers Association, Sierra Club, League to Save Lake Tahoe, TAMBA and other interested individuals.

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Appendix A
Scoping Summary Report

DAGGETT SUMMIT TRAIL SYSTEM PROJECT EA

Scoping Summary Report

Introduction

The U.S. Department of Agriculture (USDA) Forest Service/Lake Tahoe Basin Management Unit (LTBMU) sought input regarding a proposal to implement a major trails project located in the Daggett Summit area on National Forest System, State, County and private lands primarily within the Lake Tahoe Basin. The plan includes new trails, reroutes, and trail closures in order to develop a trail system that is integrated with forest ecology, minimizes impacts, and provides sustainable recreation access for multiple uses on public lands. An environmental assessment (EA) will be prepared and circulated for comment before a decision is made.

The scoping (request for comments) period began on November 16, 2007, and ended on January 11, 2008. Public scoping included a public meeting held on December 11, 2007 at the Lake Tahoe Basin Management Unit Forest Supervisor's Office in South Lake Tahoe, a separate meeting held for the Tahoe Village Homeowners' Association on December 12, 2007, and 28 scoping letters mailed or hand delivered on November 29, 2007 to interested parties requesting, by January 11, 2008, comments and issues for consideration in the Daggett Summit Trail System Project EA. Parties contacted in the scoping process included outdoor retailers on the southeast shore of Lake Tahoe, homeowners in the vicinity of the proposed trails, and encountered trail users, as well as an extensive distribution list of government, public, and community organizations. Additionally, public notices were placed in the *Tahoe Daily Tribune* and the *Mountain News* on December 6, 2007. Copies of these notices are on file.

A large number of the interested parties had been consulted in the four year long planning process. Of the 52 flyers delivered to homeowners, the volunteer project coordinator from the Tahoe Rim Trail Association (also a Forest Service trails intern) discussed the project informally with 21 homeowners, and walked the proposed route with one. Nineteen of the homeowners expressed either general approval or strong support of the Project. Two were not supportive of the project (in whole or in part) – they were the only two to submit written comment. In response to the scoping request, formal input was received from the following organizations and individuals on the dates indicated. The majority of comments were collected at the public scoping meeting.

- Jeff Glass – December 5, 2007
- Bud Voisinet – December 11, 2007

- Dana Dapolito (California Tahoe Conservancy) – December 11, 2007
- Tim Rains (City of South Lake Tahoe) – December 11, 2007
- Steve Weaver – December 11, 2007
- Peter Malholland - December 11, 2007
- Chuck Kelley (Carson Valley Trails Association) – December 11, 2007
- Genevieve Villemaire – December 11, 2007
- Christine Dobrowolski – December 11, 2007
- Tahoe Village Homeowners' Association – December 12, 2007
- Nevada Division of State Parks – December 20, 2007
- Clay and Dorene Warnock – January 8, 2008
- Heavenly Mountain Resort – January 10, 2008
- Granite Crest Homeowners Association (3 owners) – January 10, 2008
- Nevada State Clearinghouse – January 11, 2008
- Nevada Division of State Lands – January 11, 2008
- Douglas County Parks and Recreation – January 15, 2008
- Jon Hoefer – January 11, 2008

Summary of Comments

Definitions

Comments related to National Forest System Lands were grouped into three groups: 1**. Non-Significant Issues**, 2. **Significant Issues considered but eliminated from detailed study**, and 3. **Significant Issues**. A Description of each group is outlined below. Responses reflect how comments were incorporated and addressed in the decision document. Comments related to Nevada State Parks were evaluated by the same criteria and responded to by the Administrator of the Nevada Division of State Parks.

- **Non-Significant Issues** do not meet the Purpose and Need for the project; are outside the scope of the proposed action; are already decided by law, regulation, or Forest Plan; are not supported by scientific evidence; are addressed by project design features; or are addressed by additional information or clarification of the proposed action. Non-Significant issues also represent opinions and statements which do not present problems or alternatives.

- **Significant Issues considered but eliminated from detailed study** meet the Purpose and Need for the project but were considered in alternatives already studied and eliminated, or additional project design features were developed which reduced or eliminated the effects.

- **Significant Issues** meet the Purpose and Need for the project and are "significant" in the extent of the geographic distribution, the duration of effects, or the intensity of interest or resource conflict and therefore merit consideration for the development of an alternative to the proposed action.

Comments

Comments received are categorized based on their relevance to the Project (see definitions above) and organized based on issue areas, including issues surrounding expansion of the proposal, bicycle use on trails, alternative trail alignments, proposed trail closures, wildlife concerns, traffic, and a complaint about notification. A number of fully supportive comments were received, many emphasizing the value of connecting the TRT system to the urban core. Negative comments on the overall project were received from two sources.

As the Daggett Summit Project continues through the environmental analysis process, the Forest Service will act as lead agency for the NEPA process, and will coordinate approval and implementation authority with Nevada State Parks, Douglas County and the privately owned lands of Heavenly Mountain Resort and the Tahoe Village Homeowners Association.

Non-Significant Issues

Planning and Implementation Considerations for Bicycles

Two comments (NSI-1 and NSI-2) emphasize the need to incorporate mountain bike features in design and construction.

NSI-1. "Great trail design – lots of vistas and mountain bikes considered in design. I see potential for erosion on connector trail with mountain bikes going down (and up), with the decomposed granite and near the burn area. Slowing down bikes with lots of incorporated features will be important. I like how other trails give bikes technical options while still giving hikers/bikers a smooth trail." (Christine Dobrowolski)

NSI-2. "Great views along the entire plan make this a worthy project. Incorporate design features to slow bikes on the downhills." (Peter Malholland)

Forest Service/Nevada State Parks Response: We now specifically design and construct multi-user trail for bicycle speed and erosion control in areas of environmental vulnerability and probable user conflict. We plan to take advantages of the same types of design and construction opportunities which are proving successful on the recently rebuilt Armstrong Connector Trail.

Concurrence with the Proposed Project

Nine comments (NSI-3 through NSI-11) gave general support to the project, many particularly including the connection to the urban core. Offers of help were also included.

NSI-3. "I like the loop idea – the more the better." (Christine Dobrowolski)

NSI-4. "The Tahoe Village Homeowners' Association (TVHOA) Board of Directors, having been briefed on the Daggett Summit Trail System Project, unanimously approved a motion to support the project as proposed, particularly the portion on TVHOA property which relocates the trail from lower Stagecoach ski run onto the more capable hillside between Stagecoach lift and The Ridge condos. Additionally, we volunteer our community action volunteers to assist with the project." (Dan Garrison – President, TVHOA)

NSI-5. "Van Sickle Connector is extremely important to developing recreation opportunities for the urban corridor!" (Dana Dapolito – California Tahoe Conservancy)

NSI-6. "The Van Sickle Connector Trail is a great idea – fills many needs!" (Steve Weaver)

NSI-7. "Reading the high level proposals for connecting the Rim Trail from the bench to Stagecoach and for a connector down to Van Sickle State Park, would I be correct in assuming these will be trails that allow mountain bikes? This is really exciting news if so!" (Jeff Glass)

NSI-8. "Douglas County continues to fully support the proposed Daggett Summit Trails System Project including the crossing of County property. Upon your selection of the final route, we will incorporate it into the Douglas County Trails Plan." (Scott Morgan, Douglas County Parks and Recreation)

NSI-9. "I support the concept of an alternative routing of the *(Tahoe)* Rim Trail off of streets in the Daggett Summit area." (Jon Hoefer)

Forest Service/Nevada State Parks Response: Thank you for your support and continuing cooperation. We look forward to continuing to work with citizens and agencies throughout this Project. The Daggett Summit trail system (as proposed) is non-motorized and open to bikes.

Complaint About Notification

One commenter (NSI-12) criticized the notification procedures as insufficient to allow evaluation of the proposal.

NSI-10. "We were not formally notified of the trail proposal and nearness to our property. One of our homeowners happened to run into a very helpful Forest Service intern on our driveway in December. Given the holidays and the blizzard, and presently, the obscured proposed path, we are helpless in understanding and visualizing the nature of the proposed trail. In short, we need more time to examine this route. (Granite Crest Homeowners' Association)

Forest Service Response: The requirements for public notification were addressed through notification via newspapers, web site, and distribution of informational flyers in public places and pertinent businesses. Government and community organizations, as well as those individuals and organizations normally responding to scoping comment requests were fully informed. A public meeting, of which you were informed, was held on December 11, 2007. The required scoping period was extended by two weeks to allow for the holiday period. We distributed flyers directly to homes (and one business) near the proposed route. The owner of 3 of the 5 Granite Crest Homeowners' Association properties was personally informed of the project 37 days before the end of the comment period, and agreed to pass the information to the other owners. You were offered comprehensive briefings and guided tours of the project in your area, which Mr. Thulin accepted and was guided over the route 31 days before the end of the comment period. Additionally, the project team was made available for any additional questions, briefings, or walks through. Lastly, the draft Environmental Assessment, including the updated trail plan alternatives, will be circulated for an additional 30-day public comment period once completed.

Objection to the Project

Two comments (NSI-13 and NSI-14) objected to the overall project, giving a number of reasons while stating a strong desire not to have others use the public lands near their property.

NSI-11**.** "Negative impact on property values along Buchanan. These properties were purchased for their proximity to the forest and peaceful natural beauty, the TRT would create an intrusion on that privacy." (Clay and Dorene Warnock)

Forest Service Response: National Forest System lands are open to the public for their use. In addition, the proposed trail system was routed to minimize direct exposure to nearby residences through both maintaining distance and making use of intervening terrain features wherever possible.

NSI-12. "We are concerned for the security of our property and the visibility from the path of our homes. Since this is our private property, we would post "no trespassing" signs and spell out in no uncertain terms that Granite Crest subdivision does not grant any easement for hikers to enter or exit the trail system through the Granite Crest subdivision. (Granite Crest Homeowners Association)

Forest Service Response: Security and visibility of private property was one of our trail corridor design concerns as well. As was clearly shown to Mr. Thulin on his guided walk through in December, the following apply: At no point does the trail approach within 250 feet of any of your property lines, and is even farther from your houses. Further, the trail corridor was laid out to minimize the visual effect of your development on the natural experience for the trail users, which corresponds nicely with minimizing the trail's effect on your views. Even at those locations from which your property is visible, terrain barriers, terrain masking and riparian vegetation zones were used to reinforce distance in separating you from the using public. As Mr. Thulin can attest, there are very few spots along the corridor from which your houses can be seen (even in winter, when vegetation is thinner; and after the recent fuels reduction, which temporarily results in additionally low vegetation thickness). No easement is required or requested. "No trespassing" signs may be posted on your private property.

Expansion of the Proposed Project Area

Three comments (NSI-15 through NSI-17) presented specific proposals for expansion of the project around its periphery. These were deemed to be non-significant because they are outside of both the purpose and the geographical scope of the proposed project.

NSI-13. "Need to integrate trails from the Heavenly gondola into the Van Sickle/TRT system. This would allow both bus and gondola loop options from the urban trailhead." (Tim Rains – City of SLT)

Forest Service Response: The proposed loop using the Heavenly Gondola is a desirable option, but falls outside the scope of this project. Trails in the top of the gondola area were considered and planned under the Heavenly Mountain Resort Environmental Impact Statement in 2007, but because of length and expense a connection to the TRT system was not included in the approved project.

NSI-14. "Consider developing a southern side loop that does not require travel on roadways. Suggest looking at a route from NSP with a Park Cattle Company easement to the old pony express route connecting to the new TRT SW segment. Such a route would provide a 4-5 mile opportunity with views from the urban core." (Dana Dapolito – California Tahoe Conservancy)

NSI-15. "Please ensure equestrian parking for the Van Sickle State Park trailhead." (Chuck Kelley – Carson Valley Trails Association)

Nevada State Parks Response: This purpose of this project is to enhance the Tahoe Rim Trail including a connection to the Van Sickle Bi-State Park. While this project does connect into the Van Sickle State Park trail system, the proposed route through Nevada State Park lands and the Park Cattle Company as well as the equestrian parking facilities fall under the auspices of the internal Van Sickle State Park master planning and approval process. While desirable recreation options, they are outside the scope of this project.

Winter Use

This comment falls under the category of a non-significant issue because adjusting signage to mark the trail for winter use does not affect the parameters of the project.

NSI-16. "Winter Use? Will you be installing winter trail markers?" (Genevieve Villemaire)

Forest Service Response: The Tahoe Rim Trail System is not signed or maintained for winter use. However, certain parts of the project area already receive significant snowshoe and some backcountry ski usage. In response to your suggestion, on certain portions we will place the standard Rim Trail markings in ways, generally higher and more frequently, to better guide winter as well as summer users (but will not groom winter tread). Specifically, these winter marked portions will be in the vicinity of the Kingsbury North and South Trailheads and perhaps the North Kingsbury Crossover.

Significant Issues Considered but Eliminated

Expansion of the Proposed Project

One comment (SIE-1) requested consideration of a large loop trail along the summit south of Kingsbury Grade. This issue had been considered and eliminated earlier in the project planning, and therefore was not considered further. The second (SIE-2) suggested connections to the Tramway Market. Connections were already included in the proposal.

SIE-1. "Is it possible to loop the SW segment in the Tramway area, similar to the NE/NW loop? (Dana Dapolito – CTC)

Forest Service Response: In the original planning and design, a "Southeast Segment" was surveyed – looking for a feasible route that would provide loop alternatives. Unfortunately, all possible corridors crossed six separate private parcels and a steep decomposed granite slope which would have made the trail either very expensive or maintenance intensive. At present we see no feasible loop alternative on the south side of highway 207.

SIE-2. "Just wanted to voice my support for this much needed project and hope that all trails will be non-motorized and open to bikes (as proposed).

The connection in to town will be a key segment, allowing users to loop almost completely on dirt the segment of the TRT between Stagecoach and Saxon Creek. Also will make a key loop between Stagecoach/Star Lake/Cold Creek/Powerline. These loops are most often done as a shuttle due to the dangers of riding up Kingsbury Grade. Not only will it be safer, but a reduction in shuttle traffic should occur.

The TRT connector trails will be huge in bypassing dangerous conditions connecting these segments today. It would be nice however to consider building a connector trail off the SW segment to Tramway Market. It is a key re-supply point, my guess is that if you do not design a trail, a "use" trail will develop fairly quickly." (Jeff Glass)

Forest Service Response: From the north, west and south (the directions of the proposed trail system) the Tramway Market can only be approached using the urban streets in its vicinity (Tramway Drive or South Benjamin and Jack). The proposal connects into those urban streets at the closest possible points from each direction. From the west, the existing Pony Express Trail connects the proposed Southwest segment via South Benjamin (0.4 miles) and then Jack to the Tramway Market (0.3 miles) for a total trip of 0.7 miles. Other points where the proposed trail connects to urban streets and could be used to access the Tramway Market include the Kingsbury South Trailhead Connector to the south (0.8 miles) and the Daggett Summit Connector to the north (0.5 miles). There are no undeveloped public or private lands leading directly from these locations to the Market, making it very unlikely that any "use" trail would develop. This project would considerably shorten the pavement travel currently required to reach the Market (up to 2.5 miles one way). "Tramway Market" will be indicated on pertinent trail signage.

Trails Decommissioning

One comment (SIE-3) addresses trail decommissioning issues. This comment reflects a citizen concern about a problem which has already been addressed in the planning process and for which a solution is included in the proposed project.

SIE-3. "User created trails are currently a big problem in the NW segment. How will this be dealt with?" (Bud Voisinet)

Forest Service Response: It is already included in the project proposal to either use some of these non-system trails for the project ("adopt and improve") and have crews eradicate those not adopted ("close and environmentally rehabilitate"), addressing over 50,000 square feet of non-system trails in the Northwest Segment. Since many of these user-created trails go to the same locations as the proposed system trails, their recurrence is improbable.

Wildlife Concerns

Two comments express concerns about wildlife and habitats. One (SIE-4) provided numerous anecdotal observations and opinions on wildlife activities in order to object to the project running anywhere near their property. The second (SIE-5) was a more detailed discussion of late seral/old growth habitats and the value of standing snags, emphasizing concern for the Van Sickle Connector corridor. These issues did not warrant further additional consideration, however, since biological surveys and assessments are already at the heart of the approval process, and focus on the Van Sickle corridor has already occurred.

SIE-4. "We are concerned about the creek near the trail as it is of major importance to the great number of bears near Granite Crest and Upper Kingsbury. Summer '07 (August and September) we counted 40 sightings of bears at 120 Granite Crest Drive alone. Many of these bears were in route to and from the creek. We would hate to see an increase in human/bear encounters. Because of the numerous sightings at Granite Crest, we feel the creek area below our home is home base for many female bears and cubs. Whereas we realize hikers are sensitive to the environment, we are concerned about increased human traffic in bear areas.

The creek is also home to one or more coyote dens.

The creek is a resource for numerous animals. Frequently seen at Granite Crest are owls, sage hens, and mountain quail. The owls have been seen in daylight. The sage hens have been seen near the creek in the same place for decades, according to previous owners. Coveys of mountain quail are seen each year numbering 3-4 adults and 21 young. All the wildlife listed above depend on the creek and the undisturbed nature of sections 25 and 30 of the System Project.

We wish to go on record as strongly opposing the southwest segment from Edgewood Creek to the proposed vista. Damage to wildlife would have an adverse impact on quality of life and property value." (Granite Crest Homeowners' Association)

Forest Service Response: Wildlife and other environmental protection issues are at the top of our lists of concerns whenever we plan and review a project. The area to your west was selected for trail routing because it contains the only corridor on contiguous public lands south of highway 207. Biological surveys were conducted prior to the recent fuels reduction work and assessed the areas of your concern. As part of this project those efforts were reviewed and an additional review by a different team was conducted in the fall of 2007, including botanical, biological, archeological and cultural, hydrological, engineering, and NEPA management experts, as well as a Master Trail Builder. The stream environment zone you highlighted was a major area of interest and corridor selection effort, with a crossing site selected both for the narrowness of the zone and because it had been previously disturbed by logging and powerline operations. Besides necessary stream zone crossing, other sensitive habitat has been avoided in designing the corridor alignment. While none of the species mentioned are shown to be particularly sensitive to dispersed non-motorized human activity, and seem to have done well in your area despite road and building construction, utility emplacement and easements, and extensive forest fuels treatments, appropriate measures will be incorporated into the project to eliminate or mitigate potential impacts to sensitive habitats.

Black bears (Ursus americanus) are not a Federally Threatened and Endangered Species, Management Indicator Species, Forest Service Sensitive Species or TRPA Special Status Species but effects to black bears will be considered as part of this project's analysis. However, the LTBMU is concerned about possible human/bear encounters. The average black bear home range size in the Lake Tahoe basin is 10.5 km^2 (6.5 $mile^2$) for adult females and 23.3 km^2 (14.5 $miles^2$) for adult males. The high number of bear sightings in the area stated by the author suggests the presence of bears that are attracted to the neighborhood and/or the nearby ski area for garbage scavenging purposes. Bears that frequent neighborhoods and other urban areas are well adapted to the presence of humans. This being the case, the presence of the proposed trail would have little effect on the presence or numbers of bears in the area. The number of possible human interactions on a hiking trail will be minimal compared to those at a busy ski resort or urban area.

Coyotes (Canis latrans) are also not on the indicator species lists for the Lake Tahoe basin. This is a species that is thriving in the wild land/urban interface and should readily adapt to the presence of the proposed hiking trail.

There is not a bird species in North America known as the sage hen. I assume the author is referring to the greater sage-grouse (Centrocercus urophasianus). The greater sage-grouse is not known to occur in the Lake Tahoe basin. A related species, the sooty (blue) grouse (Dendragapus obscurus) however, is known to occur in the basin and is on the management indicator species (MIS) list for this forest. The mountain quail (Oreortyx pictus) is also on the MIS list. As management indicator species these birds will be considered in the analysis for this project..

The only owls on the basin's focal species lists are great gray owls (Strix nubulosa) and California spotted owls (Strix occidentalis occidentalis). Great gray owls are believed to have been extirpated from the basin.. California spotted owls are common in the basin however, the wildlife contractor for this project did not find spotted owl habitat in the project area (surveys completed in the summer of 2006). Additionally, the LTBMU, Heavenly Mountain Resort and Nevada Department of Wildlife have all surveyed for California spotted owl in the vicinity of the project area. The closest spotted

owl detection and nest are in the Cold Creek drainage. The Cold Creek territory will not be affected by this project. Most owl species are typically skittish and secretive around humans. Based on the habitat in the area and the frequency of sightings mentioned by the author, I believe the owl species referred to in this comment are great horned owls (Bubu virginianus). This is another species that has adapted well to living in the wild land/urban interface and to the presence of humans. In addition, great horned owls are nocturnal, and therefore will be minimally affected by daytime trail use.

SIE-5. "I believe before the Van Sickle Connector trail is approved, careful evaluation must be made to weigh the value of the trail against the potential loss of habitats and impacts on wildlife. The proposed alignment very likely goes through late seral habitat and old growth forest. *(The comment continues with another two pages of description of late seral habitat and value of standing snags.)"* (Jon Hoefer)

Forest Service/Nevada State Park Response: Thank you for your detailed descriptions and concern for habitat. Forest Service wildlife experts have reviewed the plan with the same concerns. The trail corridor routing for the Southwest segment and the Van Sickle Connector was assessed using the April 2006 late seral/old growth mapping done for the Heavenly Master Plan Amendment Environmental Impact Statement. The Sierra Nevada Forest Plan Amendment criteria definitions (CWHR types 5D and 6) were used to define late seral areas/old growth areas. To be conservative, types 5M and 5P forest stands were also included, even though they do not technically qualify. All identified stands were avoided, except one in section 25, in which less than 200 meters of an acute corner of one stand will be transited to avoid crossing of a stream environmental zone and an unsustainable erosive slope. No standing snags or trees larger than 6" DBH will be cut in this area. The Environmental Assessment will continue to analyze impacts to wildlife habitat, including impacts to late seral/old growth habitat. To date, however, little sensitive habitat of any type has been included in the proposed corridor, and the trail system was designed to avoid sensitive habitat impacts. Appropriate measures will continue to be incorporated into the project to eliminate or mitigate potential impacts to sensitive habitats and species (As a matter of clarification, much of the Van Sickle Connector corridor runs through the burn area of the Gondola Fire of 2002, or through areas treated in the fuels reduction initiative of 2006, with the resulting greater habitat alteration already in place). Since felling of standing snags is more dangerous to sawyers than leaving them in place is to trail users, only overhead "leaners" will ordinarily be felled. Ground "deadfall" will be moved, but not removed, where it obstructs trail tread.

Traffic Conflicts

Two comments (SIE-6 and SIE-7) questioned the selection of the crossing point of highway 207, while a third worried about congestion on Buchanan Road. Geography dictates that highway 207 must continue to be crossed. This issue has been addressed in the planning and layout of the project, and the most feasible corridor selected. Cooperation with NDOT will continue in order to obtain the best and safest crossing within that corridor. The third (SIE-8) worries about congestion near an access point which will not be designated as a trailhead. This possible congestion may, however, become an enforcement issue which is outside the scope of this effort.

SIE-6. "Trail crossing locations on highway 207. Are there alternatives with less traffic, safer for the public?" (Bud Voisinet)

SIE-7. "The crossover on Kingsbury which you state will be "somewhere near Buchanan" is a dangerous, winding, limited visibility stretch of road. It is impossible to image that a safe crossover can be made without subjecting potential trail users to bodily harm." (Clay and Dorene Warnock)

Forest Service Response: Thank you for your concern for crossing safety. It must be remembered that one of the principal purposes of this project is to get the Tahoe Rim Trail off the long stretches of paved roads on which it is currently located in the Daggett area. Because of property ownership constraints, only five possible public corridors exist for the crossing of Highway 207. Two of these require extensive continued TRT use of paved streets (1.5 – 2 miles of N. Benjamin, S. Benjamin Jack, and/or Tramway), negating one of the major objectives of this project. A third was removed for further consideration with the elimination of the SE segment alternative (using that corridor would now require 2.5 miles of street travel, including 0.5 miles on the shoulder of 207). The fourth is in a much more difficult and dangerous location (at the hairpin curve on 207 NW of Buchanan in a blind spot for downhill traffic) than the route selected. All potential feasible alignments, including the currently active one, require a crossing of highway 207. The proposed alignment with a crossing "near Buchanan Road" offers the best overall safety option. While no crossing can be made perfectly safe, we are working with NDOT experts to design the exact crossing point and warning features(signing, marking, warning lights, etc) that will provide the safest crossing possible.

SIE-8. "Parking – if there is to be a trailhead or access on Buchanan, parking would create extreme congestion due to the narrow street. Also of concern is the potential use of BlueGo which would further increase the congestion.

Current access to the forest is through the historic Pony Express Trail which is also used as a fire access road. We believe that emergency vehicles would be deterred from reaching critical fire sources.

Buchanan is a cul de sac that has a KGID pump station near its terminus and several times a day employees must check gauges, etc., and additional traffic congestion will cause critical operational delays." (Clay and Dorene Warnock)

Forest Service Response: There will not be a trailhead created on Buchanan Road. There will be access to the proposed new Rim Trail via the fire/utility road leading into the Edgewood Creek corridor, and there will remain the existing two or three "parking spots" alongside the vehicular gate across that road. While the lack of traffic associated with the same access point to the Pony Express Trail leads us to believe that traffic congestion will not occur (BlueGo Transit is not an issue, this location will not be served), we agree that there is a possibility. Therefore, LTBMU personnel have raised the parking congestion issue with the Douglas County Sheriff's Department and the Kingsbury General Improvement District. If the trail is opened in your area, the LTBMU trails coordinator will check with you after initial peak usage periods to see if congestion has resulted. If so, the LTBMU will conduct a parking survey and relay the results to KGID, who will effect appropriate restrictions and signage – which will be enforced by the Douglas County Sheriff.

Heavenly Specific Issues (Forest Service Special Use Permit Holder)

Two pieces of private property are involved in this project, both on the Kingsbury South Trailhead Connector. A small strip of land to be used belongs to Heavenly Mountain Resort, while a larger segment carrying about ¼ mile of trail belongs to the Tahoe Village Homeowner's Association. Both are in use by the current trail, but easements will be renegotiated to accommodate the proposed rerouting. TVHOA comments are contained in comment NSI-4.

After the field meeting between the trail designer and Heavenly Mountain Resort personnel on January 2, 2008, Heavenly sent their scoping response letter itemizing issues discussed and largely resolved at that meeting. While all involve action, none alter the proposed project. All six comments below (SIE-9 through SIE-14) are from Heavenly.

SIE-9. "We support relocating the Kingsbury South Trailhead Connector to higher capability land. In addition to the restoration, we recommend that a focused monitoring effort be included in order to assure rehabilitation is successful."

Forest Service Response: We will direct the TRTA Segment Coordinator to monitor and report on the rehabilitated area as part of his semiannual trail maintenance inspection, beginning as soon as the subject trail segment is closed to continue indefinitely at the direction of the LTBMU (the area is visible from the road and/or the new trail alignment). Additionally we request that Heavenly personnel report to the LTBMU any failing mitigation measures observed in the execution of their duties in that area.

SIE-10. "As approved in the Heavenly Master Plan Amendment, there is a plan to reroute the existing spur road off the Main Nevada Summer Access Road that currently serves the base of the North Bowl Chair Lift and the top of the Boulder Chair Lift. This road realignment could potentially intersect with a portion of the planned Rim Trail Southwest Segment, thus presenting design and trail use challenges."

Forest Service Response: After our meeting on January 2nd, our planners checked the proposed trail alignment against the approved master plan amendment. The road and trail are geographically separated.

SIE-11. "The segment of the Rim Trail near Stagecoach Lodge parking lot is presently a lightly used trail, visited primarily by local residents. We have concerns about higher volumes of visitors having increased access to expensive, sensitive equipment, which could pose additional safety and security challenges."

Forest Service Response: We will work with you to ensure your overall security measures are consistent with trail operations.

SIE-12. "Due to the planned redevelopment of the Stagecoach Lodge site, parking and trail access for the Rim Trail in this area will need to be reassessed to accommodate changes to parking capacity and layout."

Forest Service Response: As covered in our January field walk through, the proposed trail plan dovetails nicely with your tentative plans and stages. Only changes in signage and initial access points should be required as your stages progress.

SIE-13. "In order to connect the Kingsbury South Trailhead Connector from the Tahoe Village Homeowners' Association Property to the rest of the trail near parking at Stagecoach Lodge the trail will cross Heavenly fee-owned land. An easement or other access agreement will be required. Heavenly is willing to work with you to develop this access agreement."

Forest Service Response: We will work with you to modify or replace the current agreement prior to new construction on Heavenly property.

SIE-14. "We understand there is a lateral sewer line connection that appears to originate at The Ridge Tahoe property and cross the Tahoe Village Homeowners' Association common area that would need to be avoided as part of the rerouted trail construction. In addition, all underground utilities will need to be properly marked before excavation begins."

Forest Service Response: Thank you for the input. We will contact the appropriate agencies and ensure that utilities are marked and avoided.

Significant Issues Considered for Alternative Development

Expansion of the Proposed Project

One comment proposed minor expansion to the project as proposed and involved only minor additional effort, so will be included in the project.

SI-1. "Incorporate the non-system Castle Rock connector trail into the system." (Bud Voisinet)

Forest Service Response: The short trail (approximately 400 meters) that connects from Castle Rock summit to the current Old Castle Rock Road Trail (which is being incorporated into the TRT as part of this project), is a well-used trail popular with visitors, locals and guided hikes. We will evaluate the environmental suitability, and if found suitable, will improve this spur trail and add it into the Tahoe Rim Trail System as part of our proposed primary project alternative.

Summary of Issues

Forest Service

I have reviewed the public scoping input and this summary report. I appreciate the questions and comments provided by the public.

Terri Marceron
Forest Supervisor
Lake Tahoe Basin Management Unit

3/4/08
Date

Nevada State Parks

Nevada State Parks is not required to follow the NEPA process, but I have reviewed the responses provided to comments regarding Nevada State Parks Land and concur with this analysis.

David K. Morrow
Administrator
Nevada Division of State Parks

3-05-08
Date

Appendix B
National Trail Management Classes

National Trail Management Classes

Updated 1/31/2005

Trail prescriptions describe the desired management of each trail, based on Forest Plan direction. These prescriptions take into account user preferences, setting, protection of sensitive resources, and other management activities. To meet prescription, each trail is assigned an appropriate Trail Class. These general categories are used to identify applicable Trail Design Parameters and to identify basic indicators used for determining the cost to meet national quality standards.[1]

The General Criteria below define each Trail Class and are applicable to all system trails. Subsequent sections provide Additional Criteria specific to Motorized Trails, Pack and Saddle Trails, Snow Trails, and Water Trails.

Trail Class descriptions define "typical" attributes, and exceptions may occur for any attribute. Apply the Trail Class that most closely matches the managed objective of the trail.

Trail Attributes	Trail Class 1 Minimal/Undeveloped Trail	Trail Class 2 Simple/Minor Development Trail	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail	Trail Class 5 Fully Developed Trail
General Criteria Physical Characteristics to be Applied to All National Forest Sytem Trails					
Tread & Traffic Flow	◆ Tread intermittent and often indistinct ◆ May require route finding ◆ Native materials only	◆ Tread discernible and continuous, but narrow and rough ◆ Few or no allowances constructed for passing ◆ Native materials	◆ Tread obvious and continuous ◆ Width accommodates unhindered one-lane travel (occasional allowances constructed for passing) ◆ Typically native materials	◆ Tread wide and reltively smooth with few irregularities ◆ Width may consistently accommodate two-lane travel ◆ Native or imported materials ◆ May be hardened	◆ Width generally accommodates two-lane and two-directional travel, or provides frequent passing turnouts ◆ Commonly hardened with asphalt or other imported material
Obstacles	◆ Obstacles common ◆ Narrow passages; brush, steep grades, rocks and logs present	◆ Obstacles occasionally present ◆ Blockages cleared to define route and protect resources ◆ Vegetation may encroach into trailway	◆ Obstacles infrequent ◆ Vegetation cleared outside of trailway	◆ Few or no obstacles exist ◆ Grades typically <12% ◆ Vegetation cleared outside of trailway	◆ No obstacles ◆ Grades typically <8%
Constructed Features & Trail Elements	◆ Minimal to non-existent ◆ Drainage is functional ◆ No constructed bridges or foot crossings	◆ Structures are of limited size, scale, and number ◆ Drainage functional ◆ Structures adequate to protect trail infrastructure and resources ◆ Primitive foot crossings and fords	◆ Trail structures (walls, steps, drainage, raised trail) may be common and substantial ◆ Trail bridges as needed for resource protection and appropriate access ◆ Generally native materials used in Wilderness	◆ Structures frequent and substantial ◆ Substantial trail bridges are appropriate at water crossings ◆ Trailside amenities may be present	◆ Structures frequent or continuous; may include curbs, handrails, trailside amenities, and boardwalks ◆ Drainage structures frequent; may include culverts and road-like designs

Trail Attributes	Trail Class 1 Minimal/Undeveloped Trail	Trail Class 2 Simple/Minor Development Trail	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail	Trail Class 5 Fully Developed Trail
General Criteria Physical Characteristics to be Applied to All National Forest Sytem Trails					
Signs	◆ Minimum required ◆ Generally limited to regulation and resource protection ◆ No destination signs present	◆ Minimum required for basic direction ◆ Generally limited to regulation and resource protection ◆ Typically very few or no destination signs present	◆ Regulation, resource protection, user reassurance ◆ Directional signs at junctions, or when confusion is likely ◆ Destination signs typically present ◆ Informational and interpretive signs may be present outside of Wilderness	◆ Wide variety of signs likely present ◆ Informational signs likely (outside of Wilderness) ◆ Interpretive signs possible (outside of Wilderness) ◆ Trail Universal Access information likely displayed at trailhead	◆ Wide variety of signage is present ◆ Information and interpretive signs likely ◆ Trail Universal Access information is typically displayed at trailhead ◆
Typical Recreation Environs & Experience[2]	◆ Natural, unmodified ◆ ROS: Often Primitive setting, but may occur in other ROS settings ◆ WROS: Primitive	◆ Natural, essentially unmodified ◆ ROS: Typically Primitive to Semi-Primitive setting ◆ WROS: Primitive to Semi–Primitive	◆ Natural, primarily unmodified ◆ ROS: Typically Semi-Primitive to Roaded Natural setting ◆ WROS: Semi-Primitive to Transition	◆ May be modified ◆ ROS: Typically Roaded Natural to Rural setting ◆ WROS: Transition	◆ Can be highly modified ◆ ROS: Typically Rural to Urban setting ◆ Commonly associated with Visitor Centers or high-use recreation sites ◆ Not present in Wilderness

[1] For user-specific design criteria and specifications, refer to Forest Service Handbook and other applicable agency references.

[2] Typical Recreation Environment & Experience descriptors are provided to assist with understanding Trail Classes. They represent typical or commonly occurring Trail Class and ROS or WROS setting combinations, but are not intended to indicate combinations that are "allowed" or "not allowed". The appropriate Trail Class should be determined by local managers at the trail-specific level, based on Forest Plan direction and other considerations. While less developed trails may occur in any ROS setting, they typically occur in less developed ROS settings. Similarly, more highly developed trails tend to occur in more highly developed ROS settings, but may occur in less developed ROS settings (with the exception of Trail Class 5 which in not consistent with Primitive settings).

Additional Criteria

The following sections provide Additional Criteria specific to Pack and Saddle Trails, Motorized Trails, Snow Trails and Water Trails. These criteria are to applied in addition to the General Criteria above, which are applicable to all system trails.

Trail Attributes	Trail Class 1 Minimal/Undeveloped Trail	Trail Class 2 Simple/Minor Development Trail	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail	Trail Class 5 Fully Developed Trail
Additional Criteria for Pack and Saddle Trails Apply in addition to Trail Class General Criteria					
Pack and Saddle Trails	◆ Typically, not managed for pack and saddle stock traffic ◆ Maintenance and availability likely intermittent	◆ Trailway narrow. Some brush encroachment may exist, though bump* trees are generally removed ◆ Tread surface rough, with frequent protrusions and obstacles that limit speed and maneuverability of pack and saddle stock ◆ Tread rarely or not graded. Obstacles cleared if they substantially restrict the managed use and difficulty level ◆ Tread surface commonly loose native material, such as sand, mud, rock etc. ◆ Switchbacks and turns accommodate pack stock though may require slower speeds ◆ Crossings may be wet fords if base material is stable; possibly with simple hardening or armoring for resource protection. Simple bridges present if required for resource protection. ◆ Trails have infrequent markers or route identifiers, located primarily at junctions. ◆ Signing size and type appropriate for managed speeds and use.	◆ Trail wide and suitable for pack and saddle stock to pass periodically. ◆ Occasional moderate tread protrusions and short awkward sections, which require speed adjustments ◆ Tread infrequently graded. Obstacles cleared if they substantially hinder the managed use and difficulty level. ◆ Tread surface generally native materials, with occasional on-site fill or imported materials, if more stable surface is desired. ◆ Crossings may be wet fords; likely with hardening and armoring or simple bridges for resource protection and to ensure appropriate access. ◆ Trails have frequent markers and are readily followed ◆ Signing size and type appropriate for managed uses.	◆ Trail wide and suitable for the managed use type, and may consistently accommodate two-way passage. ◆ Tread surface generally smooth with only small protrusions, which moderately affect speed and ease of travel. ◆ Tread graded as needed. ◆ Tread surface may include imported aggregate ◆ Crossings are typically either hardened or armored or a substantial bridge. ◆ Trails have frequent markers and are easily followed ◆ Signing size and type appropriate for managed uses	Not managed for Pack and Saddle Stock.

* “Bump trees” are any trees located closely enough to the trail that they may be hit or bumped by standard-sized pack boxes carried by packstock travelling the route.

Trail Attributes	Trail Class 1 Minimal/Undeveloped Trail	Trail Class 2 Simple/Minor Development Trail	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail	Trail Class 5 Fully Developed Trail
Additional Criteria for Motorized Trails Apply in addition to Trail Class General Criteria					
Motorized Trails Motorcycle/ATV (etc.)	◆ Typically, not managed for motorized public traffic ◆ Typically, open only to administrative motorized use or non-motorized public access. ◆ Maintenance and availability likely intermittent. ◆ Barriers, signs and gates are maintained to restrict use.	◆ Trailway narrow. Provides one-lane passage for managed use type. ◆ Tread surface rough, with frequent protrusions and obstacles that limit speed and maneuverability of vehicle. ◆ Tread rarely or not graded. Obstacles cleared if they substantially restrict the managed use and difficulty level. ◆ Tread surface commonly loose native material, such as sand, mud, rock etc. ◆ Frequent tight turns that may require speed adjustments or backing ◆ Crossings may be wet fords if base material is stable; possibly with simple hardening or armoring for resource protection. Simple bridges present if required for resource protection. ◆ Trails have infrequent markers or route identifiers, located primarily at junctions. ◆ Signing size and type appropriate for managed speeds and use.	◆ Trail wide and suitable for one lane and occasional two-lane passage for managed use types. ◆ Occasional moderate tread protrusions and short awkward sections, which require speed and maneuvering adjustments. ◆ Tread infrequently graded. Obstacles cleared if they substantially hinder the managed use and difficulty level. ◆ Tread surface generally native materials, with occasional on-site fill or imported materials, if more stable surface is desired. ◆ Crossings may be wet fords; likely with hardening and armoring or simple bridges for resource protection and to ensure appropriate access. ◆ Trails have frequent markers and are readily followed. ◆ Signing size and type appropriate for managed speeds and potential nighttime use (signs likely reflectorized).	◆ Trail wide and suitable for the managed use type, and may consistently accommodate two-way passage. ◆ Tread surface generally smooth with only small protrusions, which moderately affect speed and ease of travel. (Some roughness may be desired and incorporated to control/limit speed.) ◆ Tread graded as needed. ◆ Tread surface may include imported aggregate or intermittent paved sections if more stable surface is desired. ◆ Crossings are typically either hardened or armored or a substantial bridge. ◆ Recommended speeds or speed limits may be posted. ◆ Trails have frequent markers and are easily followed. ◆ Signing size and type appropriate for managed speeds and potential nighttime use (signs reflectorized).	Not managed for motorized trail vehicles.

Trail Attributes	Trail Class 1 Minimal/Undeveloped Trail	Trail Class 2 Simple/Minor Development Trail	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail	Trail Class 5 Fully Developed Trail
Additional Criteria for Snow Trails Apply in addition to Trail Class General Criteria					
Snow Trails **OSV/Ski**	Not managed for OSV or skiers as primary use type.	◆ Periodic reassurance markers. ◆ Infrequently compacted, if ever. ◆ Typically, small roadside or road-end trailheads with minimal facilities. Trailhead plowed when access is substantially limited, but not necessarily after every snowfall. ◆ Trailway is narrow; provides one-lane passage and infrequent two-lane passage for managed use types. ◆ Winter-specific signs may be present as described in General Criteria (above).	◆ Periodic reassurance markers, or readily followed corridor. ◆ Periodic compaction or grooming. ◆ Typically, basic roadside parking or road-end trailheads with simple facilities. Trailhead plowed to ensure reasonable access by trail users shortly after heavy snowfalls. Simple shelters may be present. ◆ Trailway provides unhindered one-lane passage and commonly two-lane passage, for managed use types. ◆ Winter-specific signs may be present as described in General Criteria (above). Additionally, simple maps or directional information may be present at trail junctions and prominent points along the trail.	◆ Intervisible reassurance markers or easily followed corridor. ◆ Frequent regular grooming. ◆ Typically, substantial trailheads with toilets and other facilities for winter users. Trailhead regularly plowed to ensure access for most vehicles during and immediately after snowfall. ◆ Shelters likely present. ◆ Trailway is wide and may consistently provide two-way passage for managed use types. ◆ Winter-specific signs may be present as described in General Criteria (above). Additionally, maps and directional information are likely posted at junctions and other points along trail.	Not managed for OSV or skiers as primary use type.

Trail Attributes	Trail Class 1 Minimal/Undeveloped Trail	Trail Class 2 Simple/Minor Development Trail	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail	Trail Class 5 Fully Developed Trail
Additional Criteria for Water Trails Apply in addition to Trail Class General Criteria					
Water Trails For Portage sections of Water Trails, see "General Criteria" above. Note: Many facilities and features described in this row are commonly associated with hiking/portage trails, Concentrated Use Areas or Developed Sites (as compared to the Water Trail itself), and are described here primarily for guidance in applying appropriate Trail Class.	◆ Designated water route, shown on maps and used to access other trails or portages, but with no trail structures, facilities, signs, or recurring maintenance needs along the route. ◆ Maintenance consists of occasional patrols and resource protection. ◆ Signs and/or parking facilities at initial access points only, and likely associated with other trails or sites. ◆ In densely vegetated areas, users will commonly need to lift vessel over logs, shoals, or matted vegetation.	◆ Very few markers or route designators, and likely none in wilderness. ◆ Low profile structures or facilities occasionally present; primarily to reduce beach and bank impacts. Structures typically consist of native material hardening of portage/water entry points. ◆ Signs or parking facilities at initial access point only, and may be associated with another trail or site. ◆ On water trails where dense vegetation and obstructions occur, path is typically narrow, shallow, and may occasionally require user to lift over obstacles or break path through some vegetation and duck under overhanging branches.	◆ Buoys or markers possible to identify route ◆ Typically, facilities on motorized or non-wilderness trails to provide improved access and to reduce beach and bank impacts. ◆ Well-developed parking and launch facilities at primary access points, but facilities and structures rare along trail. ◆ Interpretive and informational displays typically present at primary access points. ◆ On water trails where dense vegetation and obstructions occur (swamps), path is typically cleared wide enough for ready passage and maneuvering of at least one vessel, and usually two-way vessel passage, with only occasional low overhanging vegetation.	◆ Buoys or markers are high profile and may be inter-visible and/or route is readily followed. ◆ Highly developed launch facilities, docks, and amenities typically provided for user convenience. ◆ Well-marked approaches to facilities and portages ◆ Interpretive displays, maps, information kiosks and signs typically present at access points and along route. ◆ On water trails where dense vegetation and obstructions occur (swamps), path is consistently cleared wide enough for unhindered, easy passage of two or more vessels.	Not managed for watercraft as primary use type.

Trail Operation and Maintenance Considerations

Trail Operation and Maintenance Considerations are intended to complement the National Trail Class General Criteria. These considerations can be regarded as general guidelines to assist in developing trail prescriptions, and subsequent program management, operations and maintenance. Trail O&M Considerations offer a general starting point and will likely be adapted to reflect financial limitations and specific district, forest, or regional circumstances. The broad guidance outlined below reflects "typical" considerations for trails in different Trail Classes:

Trail Attributes	Trail Class 1 Minimal/Undeveloped Trail	Trail Class 2 Simple/Minor Development Trail	Trail Class 3 Developed/Improved Trail	Trail Class 4 Highly Developed Trail	Trail Class 5 Fully Developed Trail
Trail Management	Typically managed to accommodate: ◆ Low use levels. ◆ Highly skilled users, comfortable off-trail. ◆ Users with high degree of orienteering skill. ◆ Some travel modes and ability levels may be impractical or impossible, and may not be encouraged. ◆ Water Trails: Users require high level of navigation/orientation and paddling skills.	Typically managed to accommodate: ◆ Low-to-moderate use levels ◆ Mid-to-highly skilled users, capable of traveling over awkward condition/obstacles ◆ Users with moderate orienteering skill. ◆ Trail suitable for many user types, but challenging and involves advanced skills. ◆ Water Trails: Moderate to high level of navigation/orientation and paddling/piloting skills required.	Typically managed to accommodate: ◆ Moderate to heavy use. ◆ Users with intermediate skill level and experience. ◆ Users with minimal orienteering skills . ◆ Moderately easy travel by managed use types. ◆ Random potential for accessible use. ◆ Water Trails: Basic to moderate navigation and paddling/piloting skills required.	Typically managed to accommodate: ◆ Very heavy use. ◆ Users with minimal skills and experience. ◆ Users with minimal or no orienteering skills. ◆ Easy/comfortable travel by managed use types ◆ May be (or has potential to be made) accessible. ◆ Water Trails: Basic navigation and paddling/piloting skills required.	Typically managed to accommodate: ◆ Intensive use. ◆ Users with limited trail skills and experience. ◆ Trail typically meets agency requirements for accessibility ◆ Includes "Pedestrian Trails".
Maintenance Indicators	◆ Resource protection. ◆ Safety commensurate with targeted recreational experience.	◆ Resource protection. ◆ Safety commensurate with targeted recreational experience.	◆ Resource protection. ◆ User convenience. ◆ Safety commensurate with targeted recreational experience.	◆ User comfort and ease. ◆ Resource Protection. ◆ Safety commensurate with targeted recreational experience.	◆ User comfort and ease. ◆ Targeted high level of accessibility to key recreational opportunities. ◆ Safety commensurate with targeted recreational experience.
Maintenance Frequency & Intensity**	◆ Infrequent or no scheduled recurring maintenance. ◆ Maintenance interval is typically 5 or more years, or in response to reports of unusual resource problems requiring repair.	◆ Maintenance scheduled to preserve the trail facility and route location. ◆ Maintenance interval typically 3-5 years, or in response to reports of unusual problems.	◆ Trail cleared to make available for use early in use season, and to preserve trail integrity. ◆ Maintenance interval typically 1-3 years, or in response to reports of trail or resource damage or significant obstacles to managed use type and experience level.	◆ Trail cleared to make available for use at earliest opportunity in use season. ◆ Typically, maintenance performed at least annually.	◆ Maintenance performed at least annually, or as needed to meet posted conditions. ◆ Major damage or safety concerns (outside of UA conditions posted at trailhead) typically corrected or posted <24 hours of notice.

** See Trail Condition Assessment Survey Matrix (CASM) for survey interval and intensity.

Appendix C
WEPP Analysis

APPENDIX C
WEPP Analysis

Environmental Science Associates (ESA) used an online-version of the WEPP Road Batch model (USDA Forest Service [USFS], 2008) to evaluate the existing and proposed conditions with respect to soil erosion and sediment delivery potential, and to assess and quantify the cumulative impacts of the proposed action. For a given length of trail or road, the WEPP Road Batch model ultimately predicts 1) the average annual amount of sediment eroded from the trail/road and 2) the average annual amount of sediment leaving the buffer zone that surrounds the trail/road. The WEPP model, however, is considered to work best as a comparative tool for assessing design alternatives rather than as an absolute predictor of the amount of erosion or sediment delivery (Breibart, 2005). The WEPP Road Batch model is appropriate for assessing the relative direction and magnitude of change given multiple conditions or designs, and it therefore provides information relevant for a CWE evaluation of the proposed action.

The WEPP Road Batch model was used to evaluate erosion and potential sediment delivery from existing trails and roads as well as from the proposed network of new and reconstructed trails. For consistency, a number of assumptions and input variables were derived from the previous trail assessments completed by Breibart (2007) for the LTBMU. Other input variables were derived from climate information, Natural Resources Conservation Service (NRCS) soils data, Geographic Information System (GIS) data layers, and trail design information provided by the USFS. Two types of trail/road segments were modeled:

- CATEGORY 1 – Trails located within a Stream Environmental Zone (SEZ); trails located within 300 feet of a stream (shown as a blue line on the U.S. Geological Survey [USGS] maps); or trails where the 300 foot buffer completely intersects an SEZ. Collectively, this category of trails can cause excessive erosion and is considered to have the potential to deliver sediment directly to streams and/or SEZs and reduce water quality.

- CATEGORY 2 – Trails located beyond 300 feet from a stream; and trails where the 300 foot buffer does not completely intersect an SEZ. Trails/roads within this category can cause excessive erosion, but the potential for delivery of sediment directly to streams is small.

Important aspects and limitations of the WEPP Road Batch model are as follows (from Breibart, 2007):

- Designed to predict runoff and potential sediment erosion from forest roads, compacted landings, compacted skid trails, and compacted foot, cattle, or off-road vehicle trails;

- An inherent error of plus or minus 50 percent;

- Best used as a comparative tool between different road designs and not as an absolute predictor of the amount of erosion that will occur;
- Does not route sediment into streams and cannot predict the actual amount of sediment delivered to streams;
- Generates results as mean annual values for modeled climates;
- Trails are considered low traffic unless they have heavy use by all-terrain vehicles;
- There are 13 input variables: climate, soil texture, percent rock, road design, road surface, traffic level, road grade, road length, road width, fill gradient, fill length, buffer gradient, and buffer length;
- Assumes that the ground cover of fill slopes is 50 percent; consequently, fill slopes are erodible in the model;
- Assumes that buffers have 100 percent ground cover of a 20-year forest.

Attachment C-1 summarizes the input and output parameters of the WEPP model runs for the existing roads/trails and the proposed trails. Input variables for the WEPP Road Batch model were determined as follows:

- **Climate** – The WEPP Road Batch model has a number of climate stations from which to choose, or a custom climate station can be created through the *Rock: Clime* weather generator using the PRISM data set. Because there were no existing stations within the proposed action area, a custom climate station was created. The station is located at 38.98° N 119.90° W at an elevation of 6,973 feet (see **Figure C-1** and **Attachment C-2**). Forty-five years of climate record were used to run the model.
- **Soil Texture** – The model has four options for soil texture: clay loam, silt loam, sandy loam, and loam. Soil textures for the proposed action area were derived from the USDA texture descriptions presented in the *NRCS Soil Survey, Tahoe Basin Area, California and Nevada* (USDA Natural Resources Conservation Service [NRCS], 2008). Most of the existing and proposed trails/roads traverse loamy coarse sand soil types, with a small portion traversing coarse sand soil types (Figure C-1). Therefore, the sandy loam soil texture was selected for the model as being the closest representative soil type.
- **Percent Rock** – This refers to the percentage of rock fragments in the soil. Percent rock for the soils within proposed action area were derived from the *NRCS Soil Survey, Tahoe Basin Area, California and Nevada* (NRCS, 2008) using the reported fragments greater than 10 inches. Percent rock was calculated for existing roads, existing trails, and proposed new trails; in all cases the average percent rock content was about 41 percent.

- **Road Design** – The model has four options for road design: insloped, bare ditch (IB); insloped, vegetated or rocked ditch (IV); outsloped, unrutted (OU); and outsloped, rutted (OR). Based on input from the USFS[1] (and in keeping assumptions consistent with Breibart [2007]), all existing trails/roads and proposed trails were modeled as inslope, bare ditch (IB).

- **Road Surface** – The model has three options for road surface: native, gravel, or paved. All trails and roads were modeled with native surfaces.

- **Traffic Level** – The model has three options for traffic level: no traffic, low, and high. Assumptions in this case were kept consistent with Breibart (2007), and all roads and trails modeled were considered to be low traffic (roads with low recreational use during dry conditions are normally modeled as low traffic; trails in the proposed action area were also considered to be low traffic, as hikers and mountain bikers primarily use them during dry conditions).

- **Road Gradient** – This refers to the percent slope of the modeled trail/road segment. The average percent slope was calculated for the three trail/road types modeled: existing roads, existing trails, and proposed new trails. Using ArcGIS® (with the trail/road layers and topographic information), slopes were calculated for homogenous segments of roads/trails and then a weighted average slope was derived for each of the three trail/road types (see **Attachment C-3** for notes and calculations).

- **Road Length** – This refers to the connected length of trail/road, or the distance between trail/road drainage points. Based on input from the USFS[2] (and in keeping assumptions consistent with Breibart [2007]), the length of existing roads and trails was assumed to be 656 feet (or 200 meters); the length of new trails, incorporating an improved design feature, was assumed to be 164 feet (or 50 meters).

- **Road Width** – This refers to the width of the trail/road segments. The weighted average width for the three trail/road types modeled was derived from the information presented in Table 1-1, Table 1-2, and Table 1-3 (*Section 1* of Draft EA). The modeled width of exiting roads, existing trials, and new trails were 8.8 feet, 2.2 feet, and 2 feet, respectively.

- **Fill Slope Gradient** – The refers to the percent slope of the fill slope. Trails (existing and proposed) within the action area do not typically have fill slopes. However, the WEPP Road Batch model requires a minimum fill slope of 0.3 percent, and this value was used for trails. For roads, the fill slope was calculated as the hillslope gradient plus five percent (based on input from the USFS[3]); the hillslope gradient was assumed to be the same as the calculated buffer gradient (see below).

[1] Garrett Villanueva, USDA Forest Service, personal e-mail communication (May 19, 2008).
[2] Garrett Villanueva, USDA Forest Service, personal e-mail communication (May 19, 2008).
[3] Garrett Villanueva, USDA Forest Service, personal e-mail communication (May 19, 2008).

- **Fill Slope Length** – The refers to the horizontal, down-slope length of the fill slope. Again, trails in the action area do not typically have fill slopes. However, the WEPP Road Batch model requires a minimum fill slope length of 1 foot, and this value was used for trails. For roads, the fill slope length was determined by first calculating the average road height (using the hillslope gradient and average road width); then by projecting the hillslope gradient and fill slope gradient down-slope and calculating the horizontal distance from the edge of the road to the point where the two projected slopes intersect.

- **Buffer Gradient** – This refers to the percent slope of the buffer area, which, in this case, was assumed to be the area within 300 feet of a trail or road. The average buffer gradient was calculated for the three trail/road types modeled: existing roads, existing trails, and proposed new trails. Using ArcGIS®, a slope map was derived for the action area using a 10-meter Digital Elevation Model (DEM). Using the slope map, the average slope for all cells within the 300-foot buffer, for each trail/road type, was calculated used to represent the buffer gradient value (for purposes herein, the calculated buffer gradient was used as the hillslope gradient in deriving the road fill slope parameters). One average buffer gradient was calculated for each modeled trail/road type (e.g., separate gradients were not calculated for Category 1 and Category 2 trails/roads).

- **Buffer Length** – This refers to the average horizontal length of the buffer area. For the Category 1 trails/roads, the average buffer length was calculated for the three trail/road types modeled using topographic maps and a measuring tool within ArcGIS®. For the Category 2 trails/roads, the average buffer was assumed to be 600 feet.

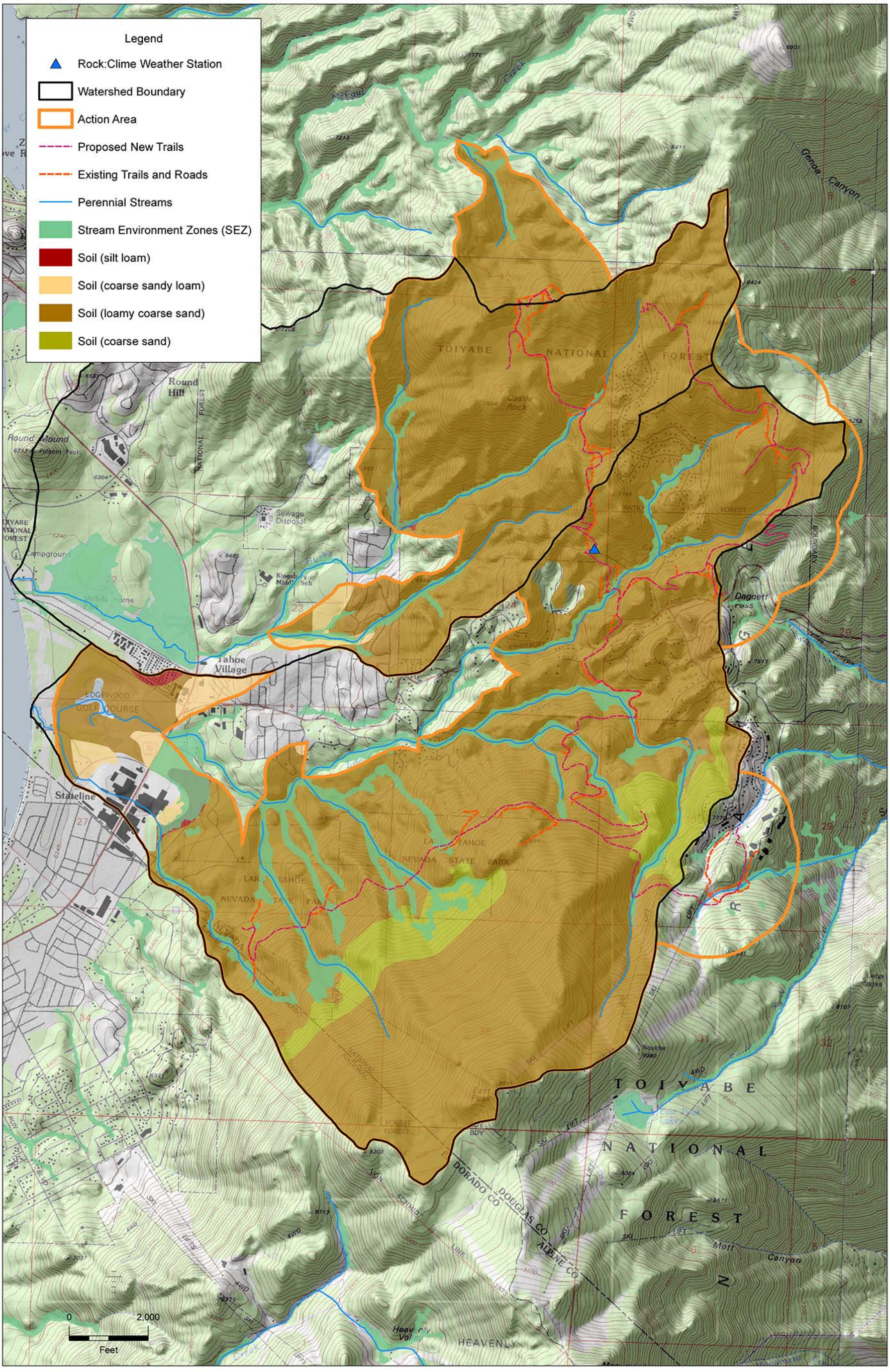
References

Breibart, A., 2005. North Shore Trails ATM - Soil and water quality input. Lake Tahoe Basin Management Unit.

Breibart, A., 2007. The WEPP Road Batch Model: A Tool for Reducing Erosion from Trails. *In* Stream Notes, July 2007, USDA Forest Service, Rocky Mountain Research Station, Stream Systems Technology Center, Fort Collins, Colorado.

USDA Forest Service (USFS), 2008. WEPP Road Batch Model (online version). USDA Forest Service, Rocky Mountain Research Station, Moscow Forestry Sciences Laboratory, Moscow, Idaho. Available online: http://forest.moscowfsl.wsu.edu/cgi-bin/fswepp/wr/wepproadbat.pl

USDA Natural Resources Conservation Service (NRCS), 2008. Soil Survey Geographic (SSURGO) database for Tahoe Basin Area, California and Nevada, CA693. Available online: http://soildatamart.nrcs.usda.gov/



SOURCE: USGS, 1970-83; NRCS, 2008; USFS, 2008; ESA, 2008

Figure C-1
Action Area Overview (WEPP Analysis)

WEPP: Road Batch Results
RUN Date: 5/19/2008

Run number	Design	Surface, traffic	Road grad (%)	Road length (ft)	Road width (ft)	Fill grad (%)	Fill length (ft)	Buff grad (%)	Buff length (ft)	Rock cont (%)	Average annual rain runoff (in)	Average annual snow runoff (in)	Average annual sediment leaving road (lb)	Average annual sediment leaving buffer (lb)	Comment	Average annual sediment leaving road (lb/linear ft)	Average annual sediment leaving buffer (lb/linear ft)
1	Insloped, bare ditch	native low	7.9	656	8.8	38.9	60	33.9	172	41.8	0.4	0.3	3,181	1,180	Existing rds, within SEZ or 300ft buffer	4.85	1.80
2	Insloped, bare ditch	native low	7.9	656	8.8	38.9	60	33.9	600	41.8	0.1	0	3,098	365	Existing rds, outside SEZ or 300ft buffer	4.72	0.56
3	Insloped, bare ditch	native low	11.8	656	2.2	0.3	1	28.5	148	41.7	0.5	0.3	727	229	Existing trails, within SEZ or 300ft buffer	1.11	0.35
4	Insloped, bare ditch	native low	11.8	656	2.2	0.3	1	28.5	600	41.7	0.1	0	739	46	Existing trails, outside SEZ or 300ft buffer	1.13	0.07
5	Insloped, bare ditch	native low	8.2	164	2	0.3	1	34.1	165	40.9	0.2	0	30	8	New trails, within SEZ or 300ft buffer	0.18	0.05
6	Insloped, bare ditch	native low	8.2	164	2	0.3	1	34.1	600	40.9	0.1	0	31	8	New trails, outside SEZ or 300ft buffer	0.19	0.05

WEPP:Road Batch results

U N D E R C O N S T R U C T I O N

[1] -- Existing rds, within SEZ or 300ft buffer

[2] -- Existing rds, outside SEZ or 300ft buffer

[3] -- Existing trails, within SEZ or 300ft buffer

[4] -- Existing trails, outside SEZ or 300ft buffer

[5] -- New trails, within SEZ or 300ft buffer

[6] -- New trails, outside SEZ or 300ft buffer

Daggett Summit Trail System Project

CARSON CITY NV_mod2 +
Modified by Rock:Clime on May 17, 2008 from CARSON CITY NV 261485 0
T MAX 45.50 51.26 55.45 63.12 71.17 80.50 88.94 87.39 80.46 69.76 55.94 47.10 deg F

T MIN 19.98 24.34 28.04 32.34 39.04 45.87 50.60 48.58 41.57 32.94 25.77 20.55 deg F
MEANP 5.07 3.59 3.83 1.69 1.44 0.77 0.34 0.49 0.96 1.56 4.11 4.35 in
WET 5.11 5.13 5.71 3.18 3.44 2.65 1.72 2.21 2.40 3.26 4.78 5.72

sandy loam soil | 45 year run

Average annual precipitation 29 in

[Help copying output to a spreadsheet]

Run number	Design	Surface, traffic	Road grad (%)	Road length (ft)	Road width (ft)	Fill grad (%)	Fill length (ft)	Buff grad (%)	Buff length (ft)	Rock cont (%)	Average annual rain runoff (in)	Average annual snow runoff (in)	Average annual sediment leaving road (lb)	Average annual sediment leaving buffer (lb)	Comment
1	Insloped, bare ditch	native low	7.9	656	8.8	38.9	60	33.9	172	41.8	0.4	0.3	3,181	1,180	Existing rds, within SEZ or 300ft buffer
2	Insloped, bare ditch	native low	7.9	656	8.8	38.9	60	33.9	600	41.8	0.1	0.0	3,098	365	Existing rds, outside SEZ or 300ft buffer
3	Insloped, bare ditch	native low	11.8	656	2.2	0.3	1	28.5	148	41.7	0.5	0.3	727	229	Existing trails, within SEZ or 300ft buffer
4	Insloped, bare ditch	native low	11.8	656	2.2	0.3	1	28.5	600	41.7	0.1	0.0	739	46	Existing trails, outside SEZ or 300ft buffer
5	Insloped, bare ditch	native low	8.2	164	2	0.3	1	34.1	165	40.9	0.2	0.0	30	8	New trails, within SEZ or 300ft buffer
6	Insloped, bare ditch	native low	8.2	164	2	0.3	1	34.1	600	40.9	0.1	0.0	31	8	New trails, outside SEZ or 300ft buffer

Provisional results for 'no' traffic

Return to previous screen

Climate parameters for CARSON CITY NV_mod2 +

38.98°N 119.90°W; 6973 feet elevation
45 years of record

Month	Mean Maximum Temperature (°F)	Mean Minimum Temperature (°F)	Mean Precipitation (in)	Number of wet days
January	45.5	20.0	5.07	6.1
February	51.3	24.3	3.59	5.1
March	55.5	28.0	3.83	5.7
April	63.1	32.3	1.68	3.2
May	71.2	39.0	1.45	3.4
June	80.5	45.9	0.77	2.6
July	88.9	50.6	0.34	1.7
August	87.4	48.6	0.49	2.2
September	80.5	41.6	0.96	2.4
October	69.8	32.9	1.57	3.3
November	55.9	25.8	4.11	4.8
December	47.1	20.6	4.35	5.7
Annual			28.21	46.3

Show map | Show PAR | Return to input screen

INTERPOLATED DATA

Station	Weighting	Station	Weighting
Wind Stations		**Solar Radiation and Max .5 P Stations**	
RENO/STEAD NV	37.4 %	RENO, NEVADA	77.9 %
RENO NV	37.4 %	WINNEMUCCA, NEVADA	11.3 %
DONNER SUMMIT CA	25.2 %	FRESNO, CALIFORNIA	10.8 %
Dewpoint Stations		**Time-to-Peak Stations**	
RENO NV	78.3 %	MINDEN AIRPORT NV	44.3 %
WINNEMUCCA NV	11 %	MT ROSE CHRSTMS TRE	37.2 %
FRESNO CA	10.7 %	SMITH 6 N NV	18.5 %

Modified by Rock:Clime on May 17, 2008 from CARSON CITY NV 261485 0

Rock:Clime 'descpar.pl' version 2005.06.07
USDA Forest Service, Rocky Mountain Research Station

New and Reconstructed Trails

Trail/Road ID	SEZ or 300 ft. length (ft)	SEZ or 300 ft. slope (ft/ft)	non-SEZ length (ft)	non-SEZ slope (ft/ft)	
Northwest	503	0.064	603	0.043	delineated N to S
	398	0.040	899	0.130	
	593	0.057	765	0.090	
	446	0.112	1,830	0.051	
			769	0.122	
			1,657	0.054	
			880	0.044	
			522	0.205	
			2,326	0.108	
			584	0.125	
			337	0.113	
			1,095	0.093	
Northeast	624	0.176	2,447	0.060	delineated N to S
	958	0.086	2,686	0.035	
	1,020	0.049	1,050	0.033	
	525	0.143	1,203	0.052	
	358	0.087	1,268	0.188	
	630	0.038	952	0.066	
			540	0.026	
N. King Cross.	640	0.075	892	0.123	delineated W to E
	362	0.108	1,566	0.011	
D. Summit Conn.			738	0.188	delineated S to N
			472	0.153	
NE Vista			380	0.034	delineated S to N
			748	0.029	
NW Vista 1			129	0.310	
NW Vista 2			181	0.227	
NW Vista 3			227	0.084	delineated N to S
			911	0.013	
Southwest	576	0.021	782	0.054	delineated N to S
	577	0.112	738	0.072	
	902	0.011	818	0.087	
	100	0.030	311	0.093	
	300	0.063	519	0.035	
	370	0.119	589	0.088	
	318	0.167	737	0.069	
	374	0.094	1,132	0.084	
	926	0.085	233	0.091	
	262	0.237	482	0.178	

New and Reconstructed Trails

Trail/Road ID	SEZ or 300 ft. length (ft)	SEZ or 300 ft. slope (ft/ft)	non-SEZ length (ft)	non-SEZ slope (ft/ft)	
	207	0.091	1,368	0.034	
	1,014	0.020	1,150	0.066	
	404	0.065	682	0.065	
	308	0.185	594	0.022	outside watershed
	321	0.012	335	0.033	outside watershed
SW Vista			265	0.011	
Van Sickle	233	0.112	252	0.167	delineated W to E
	369	0.095	435	0.028	
	323	0.087	1,349	0.102	
	359	0.164	571	0.099	
	174	0.099	532	0.063	
	182	0.063	526	0.122	
	634	0.074	463	0.132	
	342	0.070	436	0.165	
	288	0.292	170	0.005	
	425	0.005	203	0.005	
	231	0.040	1,432	0.164	
			1,515	0.040	
			1,099	0.070	
King. South Conn.	428	0.203	862	0.175	del. N to S; outside watershed
	633	0.012			
	611	0.173			
	19,248	**0.085**	**49,237**	**0.080**	
		All segments:	**68,485**	**0.082**	

Existing Roads

Trail/Road ID	SEZ or 300 ft. length (ft)	SEZ or 300 ft. slope (ft/ft)	non-SEZ length (ft)	non-SEZ slope (ft/ft)
Road 1	938	0.082	175	0.082
Road 2	943	0.105	233	0.105
Road 3			940	0.128
			587	0.121
			606	0.178
Road 4	140	0.029	184	0.124
	302	0.132	256	0.000
	628	0.070		
	486	0.124		
Road 5	390	0.038	1,055	0.038
			443	0.169
Road 6			1,755	0.042
Road 7	215	0.150	390	0.067
			450	0.150
Road 8	1,893	0.038		
	600	0.103		
Road 9			3,209	0.056
	6,535	**0.077**	**10,283**	**0.080**
		All segments:	**16,818**	**0.079**

Existing Trails

Trail/Road ID	SEZ or 300 ft. length (ft)	SEZ or 300 ft. slope (ft/ft)	non-SEZ length (ft)	non-SEZ slope (ft/ft)	
Trail 1			828	0.196	
			1,810	0.145	
Trail 2	1,319	0.104			
Trail 3			650	0.034	
			505	0.065	
Trail 4	327	0.021	1,330	0.068	
			2,155	0.142	
Trail 5	565	0.140			
	312	0.090			
Trail 6			482	0.000	
			585	0.130	
Trail 7	236	0.110	539	0.048	
Trail 8			1,238	0.196	
Trail 9	906	0.130	528	0.198	outside watershed
	310	0.198			
	300	0.070			
	250	0.152			
Trail 10	1,003	0.109			outside watershed
Trail 11	1,039	0.151	718	0.054	outside watershed
	244	0.107			
Trail 12	270	0.022			
Trail 13	170	0.000	336	0.071	
	417	0.115			
	173	0.052			
Trail 14	1,037	0.108	866	0.128	
Trail 15			1,126	0.190	
Trail 16	928	0.115	1,348	0.126	
Trail 17	341	0.044			
	162	0.395			
Trail 18	446	0.126	98	0.194	

Existing Trails

Trail/Road ID	SEZ or 300 ft. length (ft)	SEZ or 300 ft. slope (ft/ft)	non-SEZ length (ft)	non-SEZ slope (ft/ft)	
Trail 19	304	0.112	265	0.158	
Trail 20			383	0.005	
Trail 21			353	0.045	
Trail 22			330	0.409	
Trail 23			690	0.020	
			382	0.016	
	11,059	**0.114**	**17,545**	**0.121**	
		All segments:	**28,604**	**0.118**	