United States
Department of
Agriculture

**Forest
Service**

Pacific
Southwest
Region

R5-MB-241C
June 2012

Draft Revised
Land and Resource Management Plan

Volume III –
DEIS and Draft Plan Appendices

Lake Tahoe Basin Management Unit

Cover photo:

Eagle Falls Trail located on National Forest System lands on Lake Tahoe's southwest shore. The trailhead and parking lot kiosk, across US Highway 89 from the Emerald Bay overlook, offer information about hiking into Desolation Wilderness, looking westward toward Eagle Lake, a popular short, but steep, hike (less than half an hour).

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June 2012

Alpine, El Dorado, and Placer Counties, California
and
Douglas and Washoe Counties, and Carson City, Nevada

Responsible Agency: USDA Forest Service

Responsible Official: Randy Moore
Regional Forester
Pacific Southwest Region.
1323 Club Drive
Vallejo, CA 94592
(707) 562-9000

For more information contact: Jeff Marsolais
Deputy Forest Supervisor
LTBMU
35 College Drive
South Lake Tahoe, CA 96150
(530) 543-2600

This Proposed Land and Resource Management Plan (Forest Plan) describes the framework that will guide on-the-ground projects and program activities. We encourage your comments on all aspects of the Plan.

Public notification for commencement of the 90-day comment period has been published in the Federal Register.

A copy of the notice may be accessed from the LTBMU Forest Plan Revision website at: http://www.fs.usda.gov/goto/ltbmu/ForestPlanRevision

E-mail comments to: comments-pacificsouthwest-ltbmu@fs.fed.us

Subject: "Draft Land Management Plan"

Or submit written comments to: Draft Land Management Plan
LTBMU
35 College Dr.
South Lake Tahoe, CA 96150

Draft Plan and DEIS Appendices Contents

Appendix A – Forest Plan Monitoring and Evaluation Plan

Forest Plan monitoring is an integral part of the adaptive management cycle that guides future management decisions and actions. Adaptive management includes defining measurable objectives, monitoring, learning and changing, and recognizing uncertainties that may affect achievement of objectives and achievement or maintenance of desired conditions.

Periodic evaluations summarizing the monitoring results will be reviewed by the Forest Supervisor and other managers to determine if any changes are needed in management actions or plan guidance.

The monitoring plan describes the program area associated with the monitoring, monitoring questions, associated indicators or performance measures, a cross-reference to the plan component(s) being monitored, and the frequency of monitoring and reporting (annual or other time period). It also documents the source (i.e. who does the monitoring), which may be the LTBMU, the Pacific Southwest Region, or a collaborative effort.

This monitoring plan is intended to inform resource management on the unit, by testing relevant assumptions, tracking relevant changes, and measuring management effectiveness and progress toward achieving or maintaining desired conditions or objectives.

Although inventories and implementation monitoring are important and will continue to be implemented on the LTBMU, they are not included in this monitoring plan because they only indirectly inform progress towards the objectives and desired conditions in the Forest Plan. Inventories describe how much or how many of a given resource is present, while implementation monitoring describes how well management direction and intent was followed in projects and activities.

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Air Quality	O3 injury to pine	What is the status and trend of O3 injury to pine?	USFS (RO), TRPA	Life of plan	4 to 5 yrs	4 to 5 yrs
Air Quality	N compounds, O3 concentrations, and lichen analysis	What is the status and trend of N compounds and 03 ?	USFS, USFS (RO)	Life of plan	4 to 5 yrs	4 to 5 yrs
Air Quality	Acid deposition	What is the status and trend of acid deposition?	USFS, USFS (RO, PSW Station)	Life of plan	4 to 5 yrs along with N compounds monitoring	4 to 5 yrs
Air Quality	California Regional Haze State Implementation Plan goal	Is visibility improving and data following the Regional Haze glide path?	USFS (RO), TRPA, CARB	Life of plan	Continuously	Annually
Soil Quality	bulk density, soil cover	Are desired soil conditions being maintained within vegetation management project areas?	USFS	Life of plan	Project dependent	Annually, when conducted
Soil Quality	BMPEP Evaluations (also addresses DC2-WQ).	To what degree are best management practices implemented and effective in protecting soil and water resources for LTBMU management activities?	USFS	Life of plan	Annually	Annually
Water Quality	Lake Clarity	What is the status and trend of Lake Tahoe Clarity?	TRPA	Life of plan	Annually	Annually

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Water Quality	tributary sediment and nutrient concentrations	What is the status and trend of sediment and nutrients loads in Lake Tahoe Tributaries	TRPA/USGS	Life of plan	Annually	Annually
Water Quality	geormorphic assessment of road condition and connectivity (also addresses DC2-Soils)	To what degree are best management practices implemented on roads effective in protecting soil and water resources ?	USFS	Life of plan	Project dependent	Annually, when conducted
Water Quality	urban stormwater - turbidity, flow, suspended sediment, and nutrients	What is the status and trend of sediment and nutrients loads in Lake Tahoe urban runoff?	Lahontan, Local Jurisdictions	Life of plan	Annually	Annually
Water Quality	urban stormwater sediment and nutrient concentrations	How effective are urban stormwater BMPS in reducing urban stormwater pollutants?	LWRQCB, Local Jurisdictions	Life of plan	Annually	Annually
Hydro & Geomorphic Process	Region 5-Stream Condition Inventory Metrics, Vegetation Transects/Plots, Photopoints	To what degree have restoration efforts been successful in restoring floodplain connectivity and channel/riparian habitat, improving water quality, stabilizing stream banks and sediment transport regimes.	USFS	Life of plan	Depends on metric and project	5 yrs
Hydro & Geomorphic Process	multiple, see WCA protocol	Is watershed condition improving in the Lake Tahoe Basin, as evaluated through Watershed Condition Ratings.	USFS	Life of plan	5 yrs	5 yrs

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Forest Veg – Forest Structure	Seral Stage/ Percent	Are the seral stage percentages for a major forest type within the historic reference condition?	USFS (R5-Ecology), USFS (RSL)	Life of plan	5 to 10 yrs	Reported every 5 years as part of TRPA Common Vegetation Threshold
Forest Veg - Forest Composition	Forest Type/ Proportion of Total Acres of Major Forest Types	Are the proportions of each major forest type in the Basin within the historic range?	USFS (RSL)	Life of plan	5-10 yrs	Reported every 5 yrs as part of TRPA Common Vegetation Threshold
Forest Veg - Forest Stand Resilience	Mortality-Actual/ Trees Per Acre	Are levels of tree mortality, by causal agent, at background levels?	USFS (S&PF-FHP)	Life of plan	Annually	Reported annually as the Annual Mortality Report from Forest Health Protection
Forest Veg	Parcel Condition related to forest health, fuels, hydrologic condition	What is the condition of urban forest parcels	USFS	Life of plan	3-6 yrs depending on proximity to developed private lands	

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Habitat & Species Diversity	MIS habitat and population distribution at the bioregional scale	What are the trends for Management Indicator Species at the bioregional (Sierra Nevada) scale?	USFS / Partners; *MIS monitoring is conducted at the Sierra Nevada scale, including sampling on the LTBMU; see DEIS for more information.*	Life of plan	1-3 yrs	1-3 yrs
Habitat & Species Diversity	TEPCS Census Counts	What is the status and trend in TEPCS plant populations and communities within the Lake Tahoe Basin?	USFS (LTBMU)	Life of Plan	Annually (not every species or site will be monitored annually)	5 yrs

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Habitat & Species Diversity	Draba asterophora and Lewisia longipetala: Density & Plant Size, demographic structure	What is the status and trend of plant density and plant size within the Lake Tahoe Basin? What is the status and trend of plant demographic structure within the Lake Tahoe Basin? Are changes in climate (snowpack persistence, total snowfall, timing of spring runoff) influencing the density, demographic structure or transition rates of plant populations? Are changes in inter-specific competition (total vegetative cover) or habitat suitability (ground cover, erosion features) related to density, demographic structure or transition rates of populations?	USFS (LTBMU)	Life of Plan or until species is removed from TES or SI list	5 yrs	6 yrs
Habitat & Species Diversity	Stream Temperature Monitoring: temperature	Are stream temperatures suitable for life history of native aquatic species?	USFS (LTBMU)	Life of Plan	Annually (not every site will be monitored annually)	5 yrs
Habitat & Species Diversity	Groundwater-dependent ecosystems, including fen and meadow habitats, (e.g Hell Hole ecosystems, Osgood Swamp, etc)	What is the status and trend of groundwater-dependent ecosystems found on FS land? Are changes in climate influencing wetland trends?	USFS (LTBMU)	Life of Plan	5 yrs	5 yrs

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Habitat & Species Diversity	Meadow Monitoring Region 5 Range monitoring protocol: Species composition, ground cover, wetland rating, vegetation rating, ecological status	What is the current condition and ecological status and trend of wetlands (e.g., wet meadows, fens, marshes, etc.) in the Lake Tahoe basin, based on key indicators of biological integrity and water quality, and how is that condition changing over time? Are changes in climate influencing wetland trends? What is the ecological condition and trend in meadow systems where grazing has been removed or restoration has occurred?	USFS (LTBMU; RO)	Life of Plan	5 yrs	6 yrs
Habitat & Species Diversity **Species Refuge Areas**	TYC Interagency Survey - fall census count for population numbers	What is the status and trend of Tahoe yellow cress?	TAG team with LTBMU partner	Life of Plan	Set of conditions based on lake level	Annually when survey is conducted
Invasive Species Management	Invasive species sites/acres	What is the status and trend of invasive species within the Lake Tahoe basin?	Coordination with Basin Invasive groups, LTBMU partner	Life of Plan	5 yrs if treatment does not occurring	5-6 yrs

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Species Refuge Areas	Amphibian visual encounter surveys: number of amphibians, demographics, presence of Bd (chytrid swab) [includes western toad and MYLF]; number of fish	What is the current status of amphibian populations in the Lake Tahoe basin and how are they changing over time? What is the current status of Sierra Nevada (mountain) yellow-legged frog (SNYLF) populations in the Lake Tahoe basin and how are they changing over time? What is the distribution of Bd around the basin and infection level?	USFS (LTBMU); CA Dept. of Fish and Game	Life of Plan	Annually (not every species or site will be monitored annually)	5 yrs
Species Refuge Areas **Habitat & Species Diversity**	Ecological condition of streams (including SEZs)- Physical/chemical habitat condition (no. of pools, no. pieces of CWD, % bank instability, w/d ratio, entrenchment, % stream shade, etc) (Rosgen channel/habitat typing)	What is the current ecological condition of streams (including SEZs) and wetlands (e.g. meadows, fens, marshes, etc) in the Lake Tahoe basin, based on key indicators of biological integrity and water quality, and how is that condition changing over time?	Basin M&E; USFS (LTBMU)	Life of Plan	At least twice during the life of the plan selected SCI sites will be visited	10 yrs
Species Refuge Areas **Habitat & Species Diversity**	Number of self sustaining sub-populations LCT	Have recovery actions resulted in an increase in LCT abundance and associated native non-game species and decrease in non-native salmonides? Does the LCT population have multiple age and size classes as a positive population response to brook trout removal?	US Fish and Wildlife, in collaboration with USFS (LTBMU) and partners	Life of Plan	5 yrs	5 yrs

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Protected Activity Center	California Spotted Owl; Northern Goshawk	What is the status and trend of California Northern Spotted Owl and Goshawk populations in the Basin?	USFS (LTBMU)	Life of Plan or until species is removed from TES or SI list	3 times in 10 yrs monitoring plan - protocol developed by PSW(each of the 3 times is a 2 year proctocol so 6 times in 10 years), annually known nests	10 yrs
Habitat & Species Diversity	Number of detections, nests, and or roosts	What is the status and trend of TEPCS populations in the Basin?	USFS (LTBMU)	Life of Plan or until species is removed from special status list	Annually (not every species or site will be monitored annually)	Annually
Habitat & Species Diversity	Proportion of terrestrial wildlife habitat (i.e. aspen, marsh, meadows, etc.) by area (e.g. by watershed or similar landscape scale), acres, and relative risk of loss from the landscape.	What is the current distribution, extent, and condition of select terrestrial wildlife habitat within the Lake Tahoe Basin?	USFS (LTBMU)	Life of Plan	5 yrs	6 yrs

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Recreation Opportunities	Visitor Use/Satisfaction	National Visitor Use Monitoring (NVUM)	USFS (LTBMU)	Life of Plan	5 yrs or agency standard	5 yrs or agency standard
Direction in Desolation Wilderness Management Guidelines	Limits of Acceptable Change	Are conditions in the Desolation Wilderness within the limits of acceptable change?	USFS (LTBMU)	Life of Plan	Annually when conducted	Annually when conducted

Appendix B – Wild and Scenic River Evaluation

B.1. Introduction and Background

In 1990, a seven member interdisciplinary team (IDT) of resource specialists from the Lake Tahoe Basin Management Unit (LTBMU), in conjunction with the Tahoe National Forest (TNF), undertook an analysis to determine eligibility and suitability of potential candidate streams for designation under the Wild and Scenic Rivers Act of 1968. The resources represented on the LTBMU team included fisheries, forest archaeology, wildlife, grazing, hydrology, sensitive plants and planning.

The initial analysis, coordinated by the Tahoe National Forest, evaluated a total of about 600 rivers and streams using forest-wide resource information, as well as local field knowledge. From this screening process, 100 rivers were identified for more detailed study. Eligibility indicators were developed to help the IDT determine which rivers were eligible. These indicators defined local, regional and national significance for each resource. Out of the 100 rivers and streams identified for more detailed study, 30 were found eligible. Suitability of these 30 rivers was evaluated in two studies, one for the east side and one for west side.

Eight rivers (a total of 59 miles) were evaluated in the Eight Eastside Rivers Wild and Scenic River Study Report and FEIS (Eastside Study), and two rivers in the Basin were found eligible based on Outstandingly Remarkable Values (ORVs) of national or regional significance. The Upper Truckee River was recommended for "Wild" designation due the mix of recreation, scenic, and historic values that were all considered outstandingly remarkable. The Truckee River was also considered due to its outstandingly remarkable recreation and prehistoric values. However, it was later considered not suitable for several reasons including management limitations due to existing land uses and water right constraints and opposition from the city of Truckee.

In 1999, the Record of Decision (ROD) for the Eight Eastside Rivers FEIS documented the LTBMU Forest Supervisor's recommendation to designate a segment of the Upper Truckee as Wild under the Wild and Scenic Rivers Act (16 U.S.C. 1271-1287, Public law 90-542 October 2, 1968). The Regional Forester approved the decision at the time but no further action was taken to designate this segment.

To provide interim protection, the management plan (USDA Forest Service 1999, ROD, Appendix A) for that segment has remained in effect since the recommendation to ensure that eligibility is maintained. Interim protection requires that all projects proposed on National Forest System lands maintain the free-flowing status and that the ORVs listed for these rivers be protected or enhanced.

B.2. LTBMU Wild and Scenic River Review

"A comprehensive evaluation of the potential for rivers to be eligible for inclusion in the national Wild and Scenic River system is required during land management planning. However, if a systematic inventory or other unit-wide suitability study has previously been completed and documented, additional assessment and study at the time of Forest Plan revision is only required if changed circumstances warrant additional review or if the Responsible Official decides to evaluate suitability (FSH 1909.12, Ch. 81.2)."

In accordance with this direction, an IDT of resource specialists was convened in 2011 to consider whether there were any ***changed circumstances*** (e.g. increasing rarity of a river–related value or new outstandingly remarkable values) that warranted additional review of eligibility within the Basin since the completion of the Eastside Study (USDA Forest Service 1999).

Considering this FEIS and ROD along with input provided by the public during scoping, the IDT reviewed the rivers, streams, and creeks in the Lake Tahoe Basin to determine whether additional assessment is needed. To maintain consistency with the original analysis, this review utilized the same region of comparison as the original. This means that a river value would need to be outstandingly remarkable when considered in the context of the original area of analysis, and not just the Lake Tahoe Basin.

The IDT used the criteria in FSH 1909.12 82.14a to determine if there were any ***changed circumstances*** from the original 1990's eligibility inventory that constitute ORVs not present at the time of the previous analysis: Scenery, Recreation, Geology, Fisheries, Wildlife, Historic and Cultural, and Other Values.

The results are presented in the following narratives.

B.2.1. Upper Truckee River

"The Upper Truckee River has a special mix of recreation, scenic, and historic values that are all considered Outstandingly Remarkable (OR). The largest watershed feeding Lake Tahoe, it has scenic landforms, attractive meadows, and easy access, attracting various backcountry users. In addition, the historic cabin provides a scenic accent to the high-country meadows…In addition to these values, self-sustaining populations of Lahontan cutthroat trout and highly valued early summer deer fawning habitat provide for special natural values which are also identified as OR values. The combination of these values indicates that this stream can clearly be considered an excellent candidate representing eastside Sierra streams and a worthy addition to the National System of Wild and Scenic Rivers. (USDA Forest Service 1999)"

Finding: The Upper Truckee River continues to have the outstanding remarkable scenic and recreation values resources as described in the 1999 Report and continues to be supported by the IDT as "Wild" under Wild and Scenic River Act.

B.2.2. Truckee River

While the Truckee River was found eligible for designation on the basis of its outstandingly remarkable recreation values, it was not found suitable based on its complex management challenges. The Truckee River Operating Agreement (TROA) has clarified the complex

management of this river, but the management situation has not changed in a way that would change the suitability of the river for designation.

The Forest Service has limited jurisdiction over the management of the Truckee River. In addition, Nation Forest System lands along the Truckee River have reserved rights retained by Liberty Energy that allow power development and power lines along the bed and banks for 100 feet adjoining the river. The Truckee River is also a corridor tor power lines, sewage lines, water lines. The utility lines have no alternative location in this area. Designation could create difficult or costly requirements for future infrastructure modification or improvements. A bicycle trail and Highway 89 run parallel and immediately adjacent to the river. Private ownership is concentrated on the banks of the river in small parcels which constitute 27 percent of the river corridor and include 11 private bridges in 13 miles.

In addition, provisions in the TROA provide protections equivalent to those of a Recreation designation in the Wild and Scenic River System, including managing Truckee River waters in a manner that enhances beneficial uses of water for fish, wildlife, and recreation in the Truckee River basin (TROA Part 419.1 (*b-2*)

Finding: The Truckee River continues to have the outstanding remarkable recreation values resources as described in the 1999 Report. The recreation values were considered significant due to the high levels of general recreation use, the orientation of most of this use towards the river, and the opportunity for the public to raft without guides in a high-mountain environment.

B.2.3. Analysis of Change

Scenery

"The landscape elements of landform, vegetation, water, color, and related factors result in notable or exemplary visual features and/or attractions. When analyzing scenic values, additional factors such as seasonal variations in vegetation, scale of cultural modifications, and the length of time negative intrusions are viewed, may be considered. Scenery and visual attractions may be highly diverse over the majority of the river or river segment (FSH 1909.12, CH 82.14a ,1)."

> **Rationale:** Major changes to the scenic resource in the Lake Tahoe Basin include installation of the Heavenly Gondola, the Gondola and Angora fires, none of which enhanced scenic values. While vegetation management projects have altered views in localized areas**,** scenic values associated with rivers and streams in the Lake Tahoe Basin have not materially changed since 1999.
>
> **Finding:** Scenic values associated with other rivers in the Lake Tahoe Basin have not changed.

Recreation

"Recreational opportunities are, or have the potential to be, popular enough to attract visitors from throughout or beyond the region of comparison or are unique or rare within the region. River-related opportunities include, but are not limited to, sightseeing, interpretation, wildlife observation, camping, photography, hiking, fishing, hunting, and boating. The river may provide settings for national or regional usage or competitive events (FSH 1909.12, CH 82.14a ,2)".

Rationale: While visitation to Lake Tahoe has increased, the lake remains the primary destination. The range of recreation opportunities available on Lake Tahoe tributaries has not changed, and opportunities are not unique or rare within the region.

Finding: Recreation values associated with other rivers in the Lake Tahoe Basin have not changed.

Geology

"*The river, or the area within the river corridor, contains one or more examples of a geologic feature, process, or phenomenon that is unique or rare within the region of comparison. The feature(s) may be in an unusually active stage of development, represent a "textbook" example, and/or represent a unique or rare combination of geologic features (erosional, volcanic, glacial, or other geologic structures) (FSH 1909.12, CH 82.14a ,3)."*

Finding: Geologic characteristics of Lake Tahoe Basin rivers and river corridors have not changed.

Fish

"Fish values may be judged on the relative merits of either fish populations or habitat, or a combination of these river-related conditions (FSH 1909.12, CH 82.14a ,4)."

a. *"Populations. The river is nationally or regionally an important producer of resident and/or anadromous fish species. Of particular significance is the presence of wild stocks and/or federal or state listed or candidate threatened, endangered, or sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable. "*

Rationale: A recovery plan for LCT is being implemented, but self-sustaining populations are not yet present in any tributaries except the Upper Truckee. Populations of other native fish have not increased significantly since 1999.

Finding: Fish populations of Lake Tahoe Basin rivers have not changed such that they would constitute an ORV.

b. *"Habitat. The river provides exceptionally high quality habitat for fish species indigenous to the region of comparison. Of particular significance is habitat for wild stocks and/or federal or state listed or candidate threatened, endangered, or sensitive species. Diversity of habitats is an important consideration and could, in itself, lead to a determination of outstandingly remarkable."*

Rationale: Stream channel restoration projects to improve aquatic habitat have been undertaken on several tributaries in the Lake Tahoe Basin. Most of these projects are still in progress or have not been completed long enough for the habitat benefits to be realized.

Finding: Fish habitat has not improved such that it would constitute an ORV.

Wildlife

"Wildlife values may be judged on the relative merits of either terrestrial or aquatic wildlife populations or habitat, or a combination of these conditions. (FSH 1909.12, CH 82.14a ,5)."

a. *"Populations - The river, or area within the river corridor, contains nationally or regionally important populations of indigenous wildlife species. Of particular significance are species considered to be unique, and/or populations of federal or state listed or candidate threatened, endangered, or sensitive species. Diversity of species is an important consideration and could, in itself, lead to a determination of outstandingly remarkable. "*

   Finding: Wildlife populations have not changed in any river or river corridors in the Lake Tahoe Basin such that they constitute an ORV.

b. *"Habitat - The river, or area within the river corridor, provides exceptionally high quality habitat for wildlife of national or regional significance, and/or may provide unique habitat or a critical link in habitat conditions for federal or state listed or candidate threatened, endangered, or sensitive species. Contiguous habitat conditions are such that the biological needs of the species are met. Diversity of habitat is an important consideration and could, in itself, lead to a determination of outstandingly remarkable. "*

   Rationale: While a number of small wildlife habitat improvement projects associated with Lake Tahoe tributaries have been accomplished (e.g. Cookhouse meadow, aspen restoration), they have not significantly changed habitat on any given tributary. Habitat restoration for Sierra Nevada Yellow-legged Frog is underway in several lakes in the Desolation Wilderness, but reintroduction has not yet been accomplished, and the projects are associated with lakes rather than tributaries.

   Finding: Wildlife habitat in rivers or river corridors has not improved such that it constitutes an ORV.

Historic and Cultural

"The river, or area within the river corridor, contains important evidence of occupation or use by humans. Sites may have national or regional importance for interpreting history or prehistory. (FSH 1909.12, CH 82.14a ,6)."

a. *"History - Site(s) or feature(s) associated with a significant event, an important person, or a cultural activity of the past that was rare or one-of-a-kind in the region. A historic site or feature, in most cases, is 50 years old or older."*

   Finding: No additional historic resources have been found that would constitute an ORV.

b. *"Pre-history - Sites may have unique or rare characteristics or exceptional human interest value; represent an area where a culture or cultural period was first identified and described; may have been used concurrently by two or more cultural groups; or may have been used by cultural groups for rare sacred purposes."*

   Finding: No additional pre-historic resources have been found that would constitute an ORV.

Other Values

"While no specific national evaluation guidelines have been developed for the "other similar values" category, assessments of additional river-related values consistent with the foregoing guidance may be developed, including, but not limited to, hydrology, paleontology, and botany resources(FSH 1909.12, CH 82.14a ,7)."

Finding: No additional river-related values have been found that would constitute an ORV.

B.2.4. Summary and Conclusion

As defined by FSH 1909, it was the goal of the IDT to determine if there were any "***changed circumstances"*** from those described in 1999 Eight Eastside Rivers Wild and Scenic River Study Report and Final Environmental Impact Statement that affected the free-flowing status, and to determine if any new Outstandingly Remarkable Values are associated with any Lake Tahoe Basin rivers, stream, or creeks. T

This evaluation reaffirms the 1999 Record of Decision, and the original recommendation to designate the identified segment of Upper Truckee River as a Wild River pursuant to the Wild and Scenic Rivers Act of 1968.

It also reaffirms the decision to not recommend the Truckee River. The Truckee River has sustained the Outstandingly Remarkable Values described in the ROD, but its suitability is still challenged by the same issues that existed in 1999. In addition, the Truckee River has benefited from the more recent adoption of the 2008 TROA, which provides many of the protections that were originally sought under the Wild and Scenic River designation.

Since 1999, the free-flowing status of rivers in the Lake Tahoe Basin has not changed, nor were additional Outstandingly Remarkable Values identified for any rivers, so no additional rivers are proposed for further study.

It is important to note that the Lake Tahoe Basin represents one of the most heavily managed landscapes in the United States. Federally designated as an Outstanding National Resource Water, Lake Tahoe and its surrounds have evolved into a rigorously scrutinized environment in which a cadre of federal, state, regional, and local regulatory agencies cooperatively manage and protect its most precious natural resource - Lake Tahoe and its contributing watersheds.

Appendix C – Evaluation of Areas for Potential Wilderness

C.1. Introduction

This document describes the process used to evaluate the wilderness potential of six areas on the Lake Tahoe Basin Management Unit (LTBMU).

The analysis is based on GIS mapping of existing wilderness and inventoried roadless area polygon data, adjusted based on local knowledge

Three tests were used—capability, availability, and need—to determine suitability as described in Forest Service Handbook 1909.12, Chapter 70. In addition to the inherent wilderness qualities an area might possess, the area must provide opportunities and experiences that are dependent on and enhanced by a wilderness environment. The area and boundaries must allow the area to be managed as wilderness.

Capability is defined as the degree to which the area contains the basic characteristics that make it suitable for wilderness designation without regard to its availability for or need as wilderness. See Section 3.

The **availability** determination is conditioned on the value of and need for the wilderness resource compared to the value of and need for the area for other resources. This is contained in Section 4.

Need (contained in section 5) is the determination that the area should be designated as wilderness through an analysis of the degree the area contributes to the local and national distribution of wilderness.

The March 2009 inventory conducted according to Forest Service Handbook 1909.12, Chapter 70 is the basis for this evaluation.

Section 6: The Inventory Process contains detail regarding the process of mapping the inventory, including the determination criteria and boundary adjustments.

C.2. Overview of Areas Evaluated

Desolation Wilderness Additions - Pyramid (0519-001)

The Pyramid area encompasses 7,732 acres. This area is contiguous to the eastside of the Desolation Wilderness.

The location of the Pyramid addition runs along the eastern border of the Desolation Wilderness. It would extend the Desolation Wilderness boundary closer to Lake Tahoe and would provide a buffer between Lake Tahoe and the present Wilderness. It would also include portions of the watersheds of General Creek and Meeks Creek to the north as well as abutting boundaries with D.L. Bliss and Sugar Pine Point California State Parks.

The Pyramid area is accessed by numerous trailheads and roads that originate from Highway 89. Access roads include the Angora Lookout FS1214, Fallen Leaf road, Glen Alpine Trailhead road 12N16, Mt. Tallac FS1306, Meeks Creek FS14N42 and several other roads that access summer recreation residences. Major trailheads that access the Pyramid area are Glen Alpine, Mt. Tallac, Bayview, Eagle Falls, and Meeks trailheads.

Geology of the Pyramid area is dominated by the granite batholith typical of the Desolation Wilderness. The Pyramid area includes some major peaks in the Basin: Echo Peak (8,895 ft), Flagpole Peak (8,363 ft), and Angora Peak (8,588 ft). A majority of the topography is steep with slopes greater than 30%, which includes the easterly toe slopes of Rubicon Peak, Jakes Peak and Mt. Tallac. Elevations within the Pyramid area range from 8,900 ft to 6,300 ft.

Vegetation types within the Pyramid area vary from predominately white and red fir, sub-alpine conifer in the northern reaches to montane chaparral, jeffery pine and lodgepole pine in the southern part.

Little recreational use takes place during the summer in most of the Pyramid area, and consists of trails and roads that are used to access Desolation Wilderness. However, winter recreation in the form of backcountry skiing is growing exponentially in popularity and several areas of the Pyramid area see quite significant use. These include Jakes Peak, Flagpole Peak, Mt. Tallac, and the Angora area. There is no detailed analysis at this time on specific numbers.

The area's appearance ranges from densely forested slopes in the northern reach to sparse stands of trees and barren granite slopes of rock and chaparral in the mid to southern segment. The Pyramid area incorporates the dramatic backdrop that borders Lake Tahoe and is one of the majestic view sheds in the western United States.

Cascade Falls and the dramatic summits of Angora Peak, Echo Peak and Flagpole Peak are key attractions. The cliffs found in this area provide valuable habitat for Peregrine falcon. Mature stands of timber also provide habitat for the Northern goshawk.

Dardanelles Roadless Area (0519-002)

Dardanelles Roadless Area, commonly known as "Meiss Country" after a local ranching family's summer range, contains 14,227 acres. This roadless area lies in the southernmost tip of the Lake Tahoe Basin. It is roughly bounded by Highway 50 and 89 on the north and Highway 88 to the east and south. The Lake Tahoe Basin is defined by the parallel Sierra Crest and Carson Range. These converge at Carson Pass, and, in the "V" formed by this merging, the Upper Truckee River begins. Dardanelles lies in the high meadow at the Truckee River's headwaters. The Truckee headwaters flow through what is known as Meiss Meadows, an extensive meadow system that is bordered by the high peaks named Stevens and Red Lakes Peaks. It was from Red Lake Peak that the first European explorers John C. Fremont, and his cartographer Charles Preuss, viewed Lake Tahoe.

Elevations range from a low of 6,400 feet in Christmas Valley on the southern edge of the settled area of the Tahoe Basin, to the 10,000-foot summit of the Carson Range. Precipitation is 40-50 inches per year. The ecosystem is classified as Sierra Forest Province (Bailey) with small portions of lodgepole pine/sub-alpine forest (Kuchler). Two-thirds of the land in Dardanelles is barren, brush, sub-alpine, lodgepole pine or large productive meadows. Over three quarters of the slopes are above 30%.

Dardanelles is second only to Desolation Wilderness in popularity for non-motorized backcountry recreation. It sees prolific hiking, equestrian use and in recent years increased mountain bike use. Trailheads at Echo Summit, Big Meadow, Carson Pass, Christmas Valley and Sayles Canyon provide access to Dardanelles, and are accessed from Highways 50, 89 and 88.

There is good opportunity for primitive recreation. The southern part, where the Upper Truckee begins, has broad meadows with shallow lakes and unobstructed views of the high alpine ridges to the east and west. The northern part is more steeply dissected, with granite terrain and the cliffs of the Sierra Crest to the west and dramatic outcrops of tertiary volcanic breccias to the east. The pocket lakes scattered through this varied terrain are isolated and relatively undisturbed. Red Lake Peak and the nearby Stevens Peak are the highest peaks in the area and are formed of mudflow breccias as its geologic parent material. The two peaks are, in this respect, a unique habitat.

Key attractions are the numerous lakes, prolific wildflowers and expansive meadows that the Upper Truckee flows through. The Dardanelles area has a high degree of integrity and apparent naturalness, fostered by the physical enclosure of the landscape: very little of the outside world can be seen or heard while traveling in the heart of Dardanelles. Although non-conforming with wilderness standards, the remarkable "Meiss cabin," built in 1878, still stands in Meiss Meadow. In 1998, seven miles of the Upper Truckee River was recommended to be added to the National Wild and Scenic River inventory as a “Wild” river. It has since been managed to protect its Outstanding Remarkable values to maintain its eligibility.

Freel Roadless Area (0519-003)

The Freel Roadless area includes 15,341 acres. Of this total acreage only 800 acres lie within ¼ mile of a road. Freel Peak (10,881 ft) is the highest point in the Lake Tahoe Basin and is the dominant feature of this roadless area. This section resides in the Carson Range looming over the South Lake Tahoe and Meyers.

The Freel potential wilderness area is accessed from the north by the High Meadows Road FS 12N05, Star Lake Trail 18EO1 and by the Tahoe Rim Trail from the South Kingsbury Trailhead. Main access points to the southern section of the area are the Oneidas Road FS 1201, Hell Hole Road, Saxon Road and related trails Hell Hole 18E 12, Saxon 18E 13 and the Tahoe Rim Trail which is accessed from the Big Meadow Trailhead on Highway 89. FS25 is another major access point from the south side of Luther Pass which runs within the Humboldt-Toiyabe National Forest and leads to the south side of Armstrong Pass. This primarily is used by mountain bikers who are accessing Saxon Creek trail (Mr. Toad's Wild Ride), a very popular downhill ride.

The higher elevations of the roadless area have distinctive visual quality: high, barren peaks, wind-deformed trees, and panoramic views of regional scale down the Sierra Crest and across the basin and range country of Nevada. At the head of Cold Creek on the northern flank of Freel Peak is Star Lake, the highest lake in the Basin. Unsurpassed views of Lake Tahoe exist, in which the Crystal Range in Desolation Wilderness serves as a dramatic backdrop. The deep, decomposed granite soils conceal groundwater well below the surface. Hell Hole basin, with its cliffs and boggy meadows, and Freel meadows typify the spring fed surface water of the area. Over 80% of this area has slopes over 30%.

The ecosystem is classified as the Northern Sierra Nevada physiographic province (Bailey classification M261 0). The western portion is representative of a mixed conifer forest (Kuchler type 5) and the eastern is lodgepole pine-sub-alpine forest (Kuchler type 8).Over half of the area is timbered with species such as lodgepole pine, red fir and sub-alpine conifer. Seven percent of the area is montane chaparral and sagebrush, 3% riparian and less than 1 % aspen. Thirty-nine percent of the area is barren or has sparse high elevation lodgepole and whitebark pine.

Summer use levels have increased since the release of the previous LTBMU forest plan. The completion of the Tahoe Rim Trail from Kingsbury West Trailhead to Big Meadow has made the area more accessible to backpackers, mountain bikers and day hikers. Also, development of new trails from Oneidas Road up to Armstrong Pass and further improvements to the Saxon Creek trail have increased recreation opportunities for mountain biking. The Saxon Creek trail is now one of the most popular mountain bike trails on the south shore of Tahoe and has gained region-wide popularity among this user group. Winter use includes snowmobile and backcountry skiing in parts of the Freel Roadless Area. Currently, snowmobiles are allowed throughout the Saxon Creek and Hell Hole drainages. The Saxon Creek area receives consistent use when snow levels make it possible to ride from bordering communities. The segment of roadless area north of Freel Peak including High Meadows and the south side of Heavenly ski area is currently closed to motorized use.

The distance from the perimeter of this area to the core is short. Occasional views of the nearby urban areas and of airplanes at the Lake Tahoe Airport detract from the experience of solitude.

Combining the Freel Roadless area (15,341 acres) with the Jobs Peak Roadless area (24,052 acres) to the east (part of the Humboldt-Toiyabe National Forest), would connect a large

contiguous area of roadless terrain and would include a substantial part of the Carson Range as wilderness.

Key attractions of this area are Freel Peak (the highest mountain in the Lake Tahoe Basin), Star Lake (the highest lake in the Basin), high alpine meadows and an uncommon community of alpine cushion plants (draba asterophora var. asterophora) that grow on a 600-acre area around the summit of Freel Peak. The views from this area are among the most majestic found in the Basin.

Lincoln Creek Roadless Area (0519-004)

This segment lies along the east shore of Lake Tahoe in Nevada.

The Lincoln Creek Roadless area has a total of 6,562 acres. It lies between U.S. Highway 50 to the west, the Genoa Peak road to the east, Kingsbury Grade on the south, and Highway 50 (Spooner Summit) to the north. Access to the area is from the Genoa Peak Road FS14N32, FS14N33 and the multitude of suburban roads that service the subdivisions that border this area on the west and south boundaries of the segment. The Tahoe Rim Trail runs through the south east side of the segment and can be accessed by the Spooner Summit South trailhead and the Kingsbury North Trailhead. The Tahoe Rim Trail travels in this area for a short length through the southeast corner of the segment.

Lincoln Creek is unglaciated, lower elevation topography with a lack of lakes, high peaks or cliffs. The area is composed of numerous small hills containing granite outcroppings and intermixed timber. The area is bisected from east to west by many steep, V-shaped drainages. Nearly all the land has a high erosion hazard, and 80% of the area has slopes greater than 30%. Elevation ranges from 6,400 feet near Lake Tahoe to slightly over 8,000 feet on the east.

The ecosystem is classified as Sierran Forest Province (Bailey classification M261O) with a mixed conifer forest (Kuchler type 8). The Lincoln Creek area was logged intensely in the late 1800s. The second growth stand is dominated by a Sierran mixed conifer stand and pure stands of red fir, jeffery and lodgepole pine. There is minor acreage of montane riparian and montane chaparral.

Compared to other areas of the Tahoe Basin, this area has low recreational opportunity and use. The Tahoe Rim Trail is popular, but only runs through a short length of this area. It is estimated that most recreation comes from local neighborhoods in the form of short hikes, bike rides and cross-country skiing. Snowmobile use is allowed within the entire area.

The opportunities for solitude are moderate. The area is small and narrow, allowing a visitor to get only about a mile away from a road. Road noise can be audible and views of urban development and Heavenly ski area are intrusive. The broken topography and the uniform vegetative cover do provide some visual and auditory screening from these intrusions. Because the area occupies an intermediate position on a continuous slope, it has "no top or bottom" and therefore lacks physiographic unity.

The existing boundary is complicated and is bordered nearly on all sides by development and uses that are non-conforming with wilderness. With the exception of the Lincoln Creek area itself, surrounding lands offer little primitive value or undeveloped nature.

The scenic landmark of the area is a large outcrop, Castle Rock, which is near the boundary of the roadless area, but not included within the Lincoln Creek section. Views of Lake Tahoe, the Carson Valley and the Sierra Crest are spectacular.

Mt. Rose Wilderness Area Additions (0519-005)

The additions to the Mt. Rose Wilderness within the LTBMU total 473 acres. There are two additions, one expanding the western border of the LTBMU managed section of the Mt. Rose Wilderness, and a larger segment on the north east side of the LTBMU managed area. The western segment runs roughly north to south from Mt. Baldy along the present boundary in a narrow strip. The northeastern section occupies the land east of Relay Peak and north of Ginny and Incline Lakes. Road FS 17N 85 to the relay communication station runs along the northern boundary of this segment. In this document, the western addition is identified as the Mt. Baldy Addition and the eastern addition, the Relay Addition.

The Mt. Baldy Addition can be directly accessed from the Tahoe Rim Trail. The Mt. Baldy Addition runs down the top of the southerly reaching ridge. Baldy and the trail runs right through the northern edge of the addition. This addition could also be potentially accessed by roads FS16N54 and FS16N52, which come within a mile of the area, but do not offer direct access.

Access to the Relay Addition would be from FS 17N85 (the relay communication station road) and from the Tahoe Rim Trail.

These additions incorporate segments of land that are part of the satellite peaks of Mt. Rose (itself entirely outside of the LTBMU). Relay Peak at 10,366 ft. is second only to Freel Peak in elevation. Unlike the other prominent peaks (in the Desolation and Freel areas), these summits rise continuously three to four thousand feet from the surface of Lake Tahoe. Visual quality is distinctly alpine, though not markedly glaciated in appearance. The treeless upper slopes, when snow covered, are a visual apex of Tahoe's north shore. Because the peaks are sometimes less than two miles from the shoreline, the views of Lake Tahoe from their summits is awesome. The sparse vegetation on the decomposed granite soils is relieved at intervals by small, lush pocket - meadows and ponds at 8,900 to 9,200 feet and by frequent massive rock outcrops and cliff-bands.

The predominantly south facing slopes are dry, sandy and support sparse stands of lodgepole and whitebark pine. Intermixed are slopes of sagebrush and montane/mixed chapparal. The upper slopes are nearly barren of vegetation. The ecosystem is classified as Kuchler type 8, lodgepole pine/sub-alpine forest. Snowmobile use is intensive within the Relay Addition. It is very popular and occurs through out the identified Relay Addition. Backcountry skiing is also a favorite winter time activity. Summer use entails both overnight and day hikers on the Tahoe Rim Trail. Intrusion into the present wilderness by mountain bikers continue to present a management problem. The Mt. Baldy addition in all likelihood sees little use other than perhaps backcountry skiing in the winter.

These additions would expand the Mt. Rose Wilderness and add to an already permanently protected high elevation landscape. Opportunities for solitude are high. The Mt. Rose wilderness occupies many square miles at the head of Gray and Bronco Creeks, and this area itself is buffered by the little used lower drainages of these creeks extending ten or fifteen miles north to the Truckee River canyon. Immediately south is Incline Village which, despite its proximity, generates very few hikers willing to climb the steep slopes. Skiers on the other hand find the area well suited for winter backcountry travel.

The Granite Chief Wilderness Additions (0519-006)

The additions to the Granite Chief Wilderness within the LTBMU total 1,160 acres in two separate segments that are bisected by CA State owned land. The additions border the present Granite Chief Wilderness along its east side and run roughly along this boundary from Barker Pass to the south up to Alpine Meadows ski area (Ward Creek Blvd.) to the north. For ease of description we will refer to the addition as Granite Chief North and Granite Chief South.

Access to Granite Chief North would be from the Alpine Meadows ski area road.

The Pacific Crest Trail/Tahoe Rim Trail runs along the Sierra Crest/wilderness boundary and presents the best opportunity to access both Granite Chief additions. The "Stanford Rock trail" also provides access to the additions from the east with a northerly spur 16E07 to the northern addition and a southerly spur 16E08 that reaches the southern addition. The Blackwood Canyon/Barker Pass road affords the closest access at Barker Pass to the Granite Chief South addition.

The geography of these additions is of a predominately eastern aspect with sections of steep granitic faces and cliffs. The western borders of the additions start at ridge top elevations of around 8,300-8600 feet and run down slope to the east to elevations around 6800-7600 feet. Tributaries of Blackwood creek start within Granite Chief South and flow from steep slopes all over 30% in grade.

A majority of the additions vegetation cover is White Fir with Sierran Mixed Conifer, Sub-alpine Conifer and Montane/Mixed Chaparral dominating the drier southerly slopes. The ecosystem could be classified as Sierran Forest Province (Bailey).

Granite Chief South sees moderate use on the Pacific Crest Trail/Tahoe Rim Trail with overnight backpackers and day hikers alike. The Granite Chief North addition sees more backcountry skiing use, as it is easily accessible from Alpine Meadows ski area. Overall it is estimated that these two additions see low to slightly moderate use year round and remain in a very natural state.

Granite buttes, rolling faces intermixed with volcanic outcroppings and soils make up the landscape here. There are dense stands of White Fir and Mixed Conifers, as well as sparse exposed slopes mostly composed of bedrock and dispersed sagebrush and chaparral vegetation. Pocket meadows are found sporadically where wetter conditions persist. It resides as the backdrop for Tahoe City and the beginning of the Granite Chief Wilderness.

These additions offer an expansion of the present wilderness to the east. The crest which the PCT runs along offers good views of Lake Tahoe and up the Truckee River canyon. A majority of the terrain is forested and is typical of the northeast shore of Lake Tahoe.

Table C1. Overview of LTBMU Wilderness

Numerical ID	Area Name	GIS acreage	State	Area> 5000 ac, undeveloped?	Area<5000 ac, adjacent Wilderness?	P or SPNM ROS setting	Carry forward for attribute rating?
0519-001	**Pyramid LTBMU**	7,732	CA	X	X	SPNM	X
-	**Pyramid El Dorado NF**	28,104	CA	X	X	SPNM	
0519-002	**Dardanelles LTBMU**	14,227	CA	X		SPNM	X
	Dardanelles El Dorado NF	8,116	CA	X		SPNM	
0519-003	**Freel LTBMU**	15,341	CA	X		SPNM	X
-	**Jobs Peak Humboldt-Toiyabe NF**	24,052	CA/NV	X		SPNM	
0519-004	**Lincoln Creek**	6,562	NV	X		SPNM	X
0519-005	**Mt. Rose LTBMU**	473	NV		X	SPNM	X
-	**Mt. Rose Humboldt-Toiyabe & Tahoe NF**	19,871	NV	X		SPNM	
0519-006	**Granite Chief LTBMU**	1,160	CA		X	SPNM	X
	Granite Chief Tahoe NF	6,471	CA		X	SPNM	

Notes: P – Primitive; SPNM – Semi-Primitive Non-Motorized

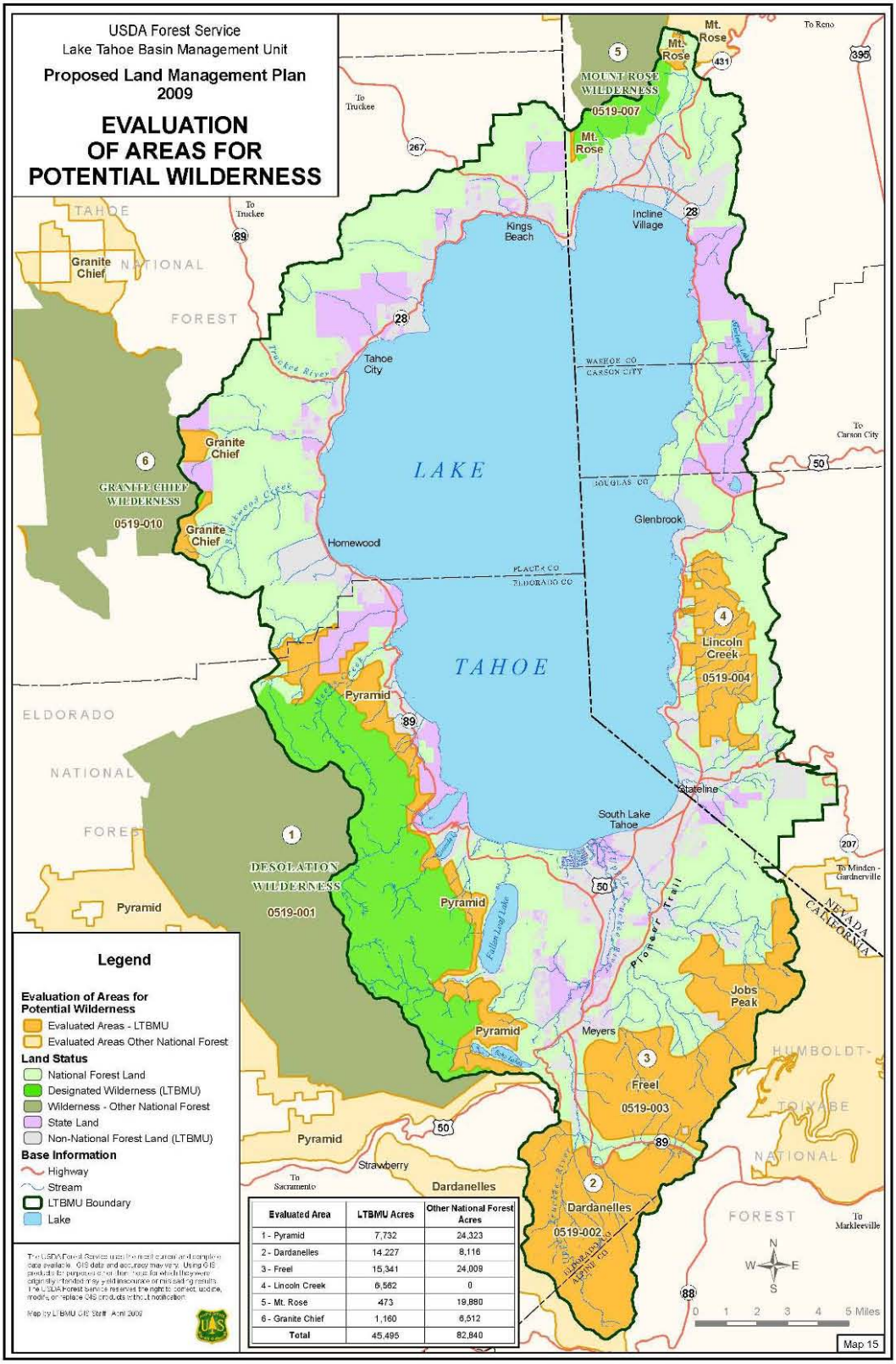

Figure C1. LTBMU Evaluated Areas and Land Status Map

C.3. Capability

Per Forest Service Handbook 1909.12 Chapter 70, Section 72.1, each potential area's capability for wilderness is described by basic characteristics that make the area appropriate and valuable for wilderness, regardless of the area's availability or need. The following characteristics were addressed:

a) **Naturalness of the area**; the degree to which humans and past or present human activity have affected natural ecological processes and conditions.

b) **Undeveloped**; the degree to which the area's appearance is appropriate and valuable for wilderness.

c) **Opportunities** for experiences often unique to wilderness such as solitude, self-reliance, adventurous and challenging experiences, and primitive recreation.

d) **Special features and values** of the area including those of ecological, geological, scientific, educational, recreational, scenic, or historical value, rare and endangered plant and animal species and other wildlife.

e) A description of **size and shape** to include the implications of the area's size, shape, and juxtaposition to external influences on the wilderness attributes.

f) A summary of the **boundary conditions, needs, and management requirements** should the area be designated for wilderness. Addressing whether or not boundary changes would enhance the wilderness characteristics or whether or not it would be possible to use boundary modifications to separate incompatible activities from those characteristics.

In order to evaluate the basic characteristics, they were broken down into elements, activities, or features that describe the basic characteristics and provide a basis for rating. Since criteria were not of equal importance, criteria are in order of priority for each element, activity, or feature. Resource specialists evaluated each criterion, rating each as high, moderate, or low.

Elements contributing to the rating are shown in **bold** type.

Table C2. Wilderness Capability Ratings (Desolation-Pyramid Roadless)

Desolation Wilderness Addition - Pyramid Roadless (0519-001)			
High	Moderate	Low	Rating
A. Naturalness of Area			
Variety and abundance of wildlife, presence of T&E, SOC			**M**
1. Diverse community of native mammals, birds, and fish.	**1. Moderate variety of native mammals, birds, and fish.**	1. Community of native mammals, birds, and fish is not diverse.	
2. Presence of threatened and endangered species.	2. Known moderate variety of threatened and endangered species.	**2. Low variety of threatened and endangered species.**	
3. Streams are critical to historic distribution of Lahontan cutthroat trout.	3. Streams are important to historic distribution of Lahontan cutthroat trout.	**3. Streams are not important to historic distribution of Lahontan cutthroat trout.**	
4. Provides critical linkage between wildlife areas or habitats.	4. Provides linkage between wildlife areas or habitats.	**4. Does not provide linkage between wildlife areas or habitats.**	
5. Non-native species, Noxious weeds are not evident.	5. Noxious weeds evident only along trails.	5. Noxious weeds common or scattered throughout the area.	
6. High water quality. Fully supports beneficial uses.	6. Good water quality. Partially supports beneficial uses.	6. Poor water quality. Does not support beneficial uses.	
B. Undeveloped			
Natural and free from Human disturbance			**M**
7. Area appears free of human disturbance. Disturbance appears to be natural, e.g., small wildfire.	**7. Area appears mostly free of human disturbance. Natural disturbance evident but does not dominate the landscape.**	7. Area shows signs of human disturbance.	
8. Area visible in surrounding foreground (outside the area) may show some human disturbance but does not dominate the view.	8. Area visible in surrounding foreground has signs of human activities, e.g., road, farm house.	**8. Area visible in surrounding foreground shows obvious human activities, e.g., clearcuts, town.**	

Desolation Wilderness Addition - Pyramid Roadless (0519-001)			
High	Moderate	Low	Rating
9. Only a minor improvement, e.g., trail.	**9. Several minor improvements.**	9. Major improvements, e.g., power line, dam, road or structures.	
C. Opportunities for Primitive Recreation			
Opportunity for solitude			
10. Feeling of being alone or remote from civilization.	**10. Feeling of being alone is possible but signs of civilization are likely.**	10. Little opportunity of feeling alone.	
11. Recreation use by other parties is light. (encounters)	**11. Recreation use by other parties is moderate.**	11. Recreation use by other parties is high.	
Primitive Type Recreation Activities			
Hiking/backpacking opportunities			
12. Multiple system trails into area.	12. At least one system trail into area.	12. No system trails that are maintained.	
13. Several dispersed camping sites that are routinely used.	**13. At least one dispersed camping site that is occasionally used.**	**13. No dispersed camping sites that are used, but progressive camping may occur.**	
Fishing opportunities			
14. Good populations of native game fish.	14. Fair populations of native game fish.	**14. Low populations of native game fish.**	
Cross country Skiing and snowshoeing opportunities			
15. Easily accessible in winter by motorized wheeled vehicles.	15. Snow keeps wheeled vehicles several miles from area, but access is possible by snowmobile.	**15. Area is difficult or rarely accessed by snowmobile.**	
Snowmobiling use			
16. Terrain is steep or vegetation too dense that cross country travel is difficult.	16. Terrain is moderate or vegetation brushy that impedes cross country travel.	**16. Terrain is gentle and vegetation open to allow easy cross country travel.**	
17. Snowmobile use prohibited, or if allowed, rarely used.	17. Snowmobile use restricted to two months or less, or on half or less of the area.	**17. Snowmobile use permitted.**	

Desolation Wilderness Addition - Pyramid Roadless (0519-001)			
High	Moderate	Low	Rating
D. Special Features and Values			
Scenic features			
18. Area has peaks or rocky formations considered spectacular from the rest of the Forest and/or special vegetative features that are considered very scenic.	**18. Area has a peak or formation that stands out from surrounding terrain and/or vegetative features considered scenic.**	1820. Terrain is typical of the Forest or surrounding area and vegetation is common to the surrounding area.	
19. Area has alpine lakes, creeks in alpine meadows, or waterfalls.	19. Area may have bodies of water that are typical for the Forest.	**19. Area has no permanent lakes but may have perennial creeks or ponds.**	
Other special features			
20. Area has at least one major other special feature, e.g., high mountain meadow, fen, etc.	20. Several minor other special features, e.g., flat creek bottom, small waterfall, etc.	**20. No major or very few minor other special features.**	
21. Contains a designated special area, e.g., wild and scenic river, research natural area, etc.	21. Contains a candidate or eligible special area, e.g., wild and scenic river, research natural area, etc.	**21. Does not contain an established, candidate, or eligible special area.**	
Scientific, educational, or historical values			**L**
22. Several significant scientific, educational, or historical values have been identified in the area.	22. At least one significant or several minor scientific, educational, or historical values have been identified in the area.	**22. No scientific, educational, or historical value has been identified in the area.**	
23. Identified values are unique to the Sierra Nevada region.	23. Identified values are common in the Sierra Nevada region but uncommon on the Forest.	**23. Any identified values are common throughout the Forest and the Sierra Nevada region.**	
E. & F. Manageability			
Ability to Manage as Wilderness Manageable			**L**
24. Size and shape of area allows effective management.	24. Size or shape will affect manageability but can be mitigated by boundary changes.	**24. Size is small or has irregular shape that makes management difficult.**	
25. Minimum activity in surrounding area that affects manageability.	25. Activity is evident and ongoing in surrounding area but will not keep area from being managed.	**25. Activity in surrounding area will affect the manageability of the inventoried area.**	

Desolation Wilderness Addition - Pyramid Roadless (0519-001)			
High	Moderate	Low	Rating
26. Located adjacent to existing wilderness or other inventoried areas.	26. Located near existing wilderness or other inventoried areas. May be difficult to access.	26. Isolated, small parcel of land.	
Area boundaries are recognizable			
27. The vast majority of the boundary follows features that can be easily found and identified on the ground, e.g., dominant ridge, creek, road, or trail.	27. More than half the boundary follows a feature that can be easily found and identified on the ground.	**27. Boundary generally lies across the hillside and can rarely be located without equipment, e.g. GPS unit.**	
28. Boundary can be easily adjusted to follow locatable and identifiable features without significantly modifying the area boundaries.	28. Boundary can be adjusted to follow locatable and identifiable features but will modify the general size and shape of the area. Boundary may be identified with minimal signing.	**28. Boundary cannot be adjusted to follow locatable and identifiable, or requires extensive signing.**	
Area boundaries are manageable			
29. Area access by trail or closed and revegetated road, adjacent area has natural setting.	29. May be accessed by narrow or two-track open road that is lightly traveled, minimal human presence evident.	**29. Boundary adjacent to heavily used road or along area showing high human presence, e.g., a number of farm houses with outbuilding, pasture land, etc.**	
30. Boundary totally on national forest and not adjacent to private property.	**30. Boundary follows property line forming irregular shape.**	30. Boundary crosses private property so there are inholdings along the boundary.	
31. No inholdings.	**31. Few small inholdings may be present.**	31. Several small or one large inholding.	
Area boundaries constitute barrier to prohibited use			
32. Human improvement is significant to physically provide a barrier, e.g., road cut slope.	32. Human improvement places user on notice of prohibited use, e.g., a sign.	**32. Human improvement not a deterrent may provide point of access of prohibited use.**	

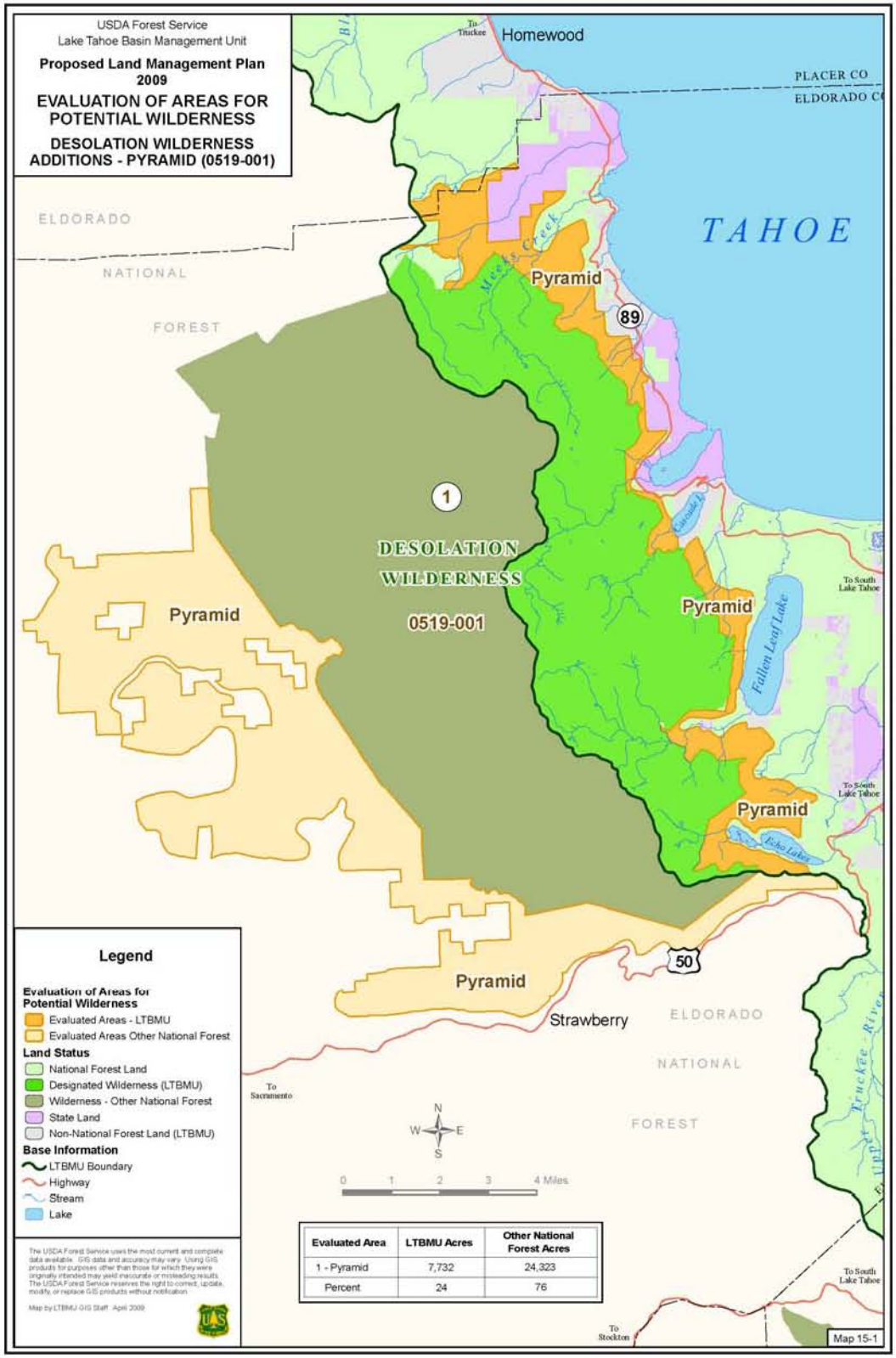

Figure C2. Desolation Wilderness Addition- Pyramid Roadless Map (0519-001)

Table C3. Wilderness Capability Ratings (Dardanelles Roadless)

Dardanelles Roadless (0519-002)			
High	Moderate	Low	Rating
A. Naturalness of Area			
Variety and abundance of wildlife, presence of T&E, SOC			**H**
1. Diverse community of native mammals, birds, and fish.	1. Moderate variety of native mammals, birds, and fish.	1. Community of native mammals, birds, and fish is not diverse.	
2. Presence of threatened and endangered species.	**2. Known moderate variety of threatened and endangered species.**	2. Low variety of threatened and endangered species.	
3. Streams are critical to historic distribution of Lahontan cutthroat trout.	**3. Streams are important to historic distribution of Lahontan cutthroat trout.**	3. Streams are not important to historic distribution of Lahontan cutthroat trout.	
4. Provides critical linkage between wildlife areas or habitats.	**4. Provides linkage between wildlife areas or habitats.**	4. Does not provide linkage between wildlife areas or habitats.	
5. Non-native species, Noxious weeds are not evident.	5. Noxious weeds evident only along trails.	5. Noxious weeds common or scattered throughout the area.	
6. High water quality. Fully supports beneficial uses.	6. Good water quality. Partially supports beneficial uses.	6. Poor water quality. Does not support beneficial uses.	
B. Undeveloped			
Natural and free from Human disturbance			**H**
7. Area appears free of human disturbance. Disturbance appears to be natural, e.g., small wildfire.	7. Area appears mostly free of human disturbance. Natural disturbance evident but does not dominate the landscape.	7. Area shows signs of human disturbance.	
8. Area visible in surrounding foreground (outside the area) may show some human disturbance but does not dominate the view.	8. Area visible in surrounding foreground has signs of human activities, e.g., road, farm house.	8. Area visible in surrounding foreground shows obvious human activities, e.g., clearcuts, town.	
9. Only a minor improvement, e.g., trail.	**9. Several minor improvements (Historic Meiss cabin/barn, circa 1878).**	9. Major improvements, e.g., power line, dam, road or structures.	

Dardanelles Roadless (0519-002)			
High	Moderate	Low	Rating
C. Opportunities for Primitive Recreation			
Opportunity for solitude			**M**
10. Feeling of being alone or remote from civilization.	10. Feeling of being alone is possible but signs of civilization are likely.	10. Little opportunity of feeling alone.	
11. Recreation use by other parties is light. (encounters)	**11. Recreation use by other parties is moderate.**	11. Recreation use by other parties is high.	
Primitive Type Recreation Activities			
Hiking/backpacking opportunities			
12. Multiple system trails into area.	12. At least one system trail into area.	12. No system trails that are maintained.	
13. Several dispersed camping sites that are routinely used.	13. At least one dispersed camping site that is occasionally used.	13. No dispersed camping sites that are used, but progressive camping may occur.	
Fishing opportunities			
14. Good populations of native game fish.	**14. Fair populations of native game fish.**	14. Low populations of native game fish.	
Cross country Skiing and snowshoeing opportunities			
15. Easily accessible in winter by motorized wheeled vehicles.	15. Snow keeps wheeled vehicles several miles from area, but access is possible by snowmobile.	**15. Area is difficult or rarely accessed by snowmobile.**	
Snowmobiling use			
16. Terrain is steep or vegetation too dense that cross country travel is difficult.	68. Terrain is moderate or vegetation brushy that impedes cross country travel.	16. Terrain is gentle and vegetation open to allow easy cross country travel.	
17. Snowmobile use prohibited, or if allowed, rarely used.	17. Snowmobile use restricted to two months or less, or on half or less of the area.	17. Snowmobile use permitted.	
D. Special Features and Values			
Scenic features			**H**
18. Area has peaks or rocky formations considered spectacular from the rest of the Forest and/or special vegetative features that are considered very scenic.	18. Area has a peak or formation that stands out from surrounding terrain and/or vegetative features considered scenic.	18. Terrain is typical of the Forest or surrounding area and vegetation is common to the surrounding area.	

Dardanelles Roadless (0519-002)			
High	Moderate	Low	Rating
19. Area has alpine lakes, creeks in alpine meadows, or waterfalls.	19. Area may have bodies of water that are typical for the Forest.	19. Area has no permanent lakes but may have perennial creeks or ponds.	
Other special features			
20. Area has at least one major other special feature, e.g., high mountain meadow, fen, etc.	20. Several minor other special features, e.g., flat creek bottom, small waterfall, etc.	20. No major or very few minor other special features.	
21. Contains a designated special area, e.g., wild and scenic river, research natural area, etc.	**21. Contains a candidate or eligible special area, e.g., wild and scenic river, research natural area, etc.(Upper Truckee River segment)**	21. Does not contain an established, candidate, or eligible special area.	
Scientific, educational, or historical values			
22. Several significant scientific, educational, or historical values have been identified in the area.	**22. At least one significant or several minor scientific, educational, or historical values have been identified in the area.**	22. No scientific, educational, or historical value has been identified in the area.	
23. Identified values are unique to the Sierra Nevada region.	23. Identified values are common in the Sierra Nevada region but uncommon on the Forest.	**23. Any identified values are common throughout the Forest and the Sierra Nevada region.**	
E. & F. Manageability			
Ability to Manage as Wilderness Manageable			**H**
24. Size and shape of area allows effective management.	24. Size or shape will affect manageability but can be mitigated by boundary changes.	24. Size is small or has irregular shape that makes management difficult.	
25. Minimum activity in surrounding area that affects manageability.	25. Activity is evident and ongoing in surrounding area but will not keep area from being managed.	25. Activity in surrounding area will affect the manageability of the inventoried area.	
26. Located adjacent to existing wilderness or other inventoried areas.(Freel)	26. Located near existing wilderness or other inventoried areas. May be difficult to access.	26. Isolated, small parcel of land .	

Dardanelles Roadless (0519-002)			
High	Moderate	Low	Rating
Area boundaries are recognizable			
27. The vast majority of the boundary follows features that can be easily found and identified on the ground, e.g., dominant ridge, creek, road, or trail.	**27. More than half the boundary follows a feature that can be easily found and identified on the ground.**	27. Boundary generally lies across the hillside and can rarely be located without equipment, e.g. GPS unit.	
28. Boundary can be easily adjusted to follow locatable and identifiable features without significantly modifying the area boundaries.	28. Boundary can be adjusted to follow locatable and identifiable features but will modify the general size and shape of the area. Boundary may be identified with minimal signing.	**28. Boundary cannot be adjusted to follow locatable and identifiable, or requires extensive signing.**	
Area boundaries are manageable			
29. Area access by trail or closed and revegetated road, adjacent area has natural setting.	29. May be accessed by narrow or two-track open road that is lightly traveled, minimal human presence evident.	29. Boundary adjacent to heavily used road or along area showing high human presence, e.g., a number of farm houses with outbuilding, pasture land, etc.	
30. Boundary totally on national forest and not adjacent to private property.	**30. Boundary follows property line forming irregular shape.**	30. Boundary crosses private property so there are inholdings along the boundary.	
31. No inholdings.	31. Few small inholdings may be present.	31. Several small or one large inholding.	
Area boundaries constitute barrier to prohibited use			
32. Human improvement is significant to physically provide a barrier, e.g., road cut slope.	32. Human improvement places user on notice of prohibited use, e.g., a sign.	32. Human improvement not a deterrent may provide point of access of prohibited use.	

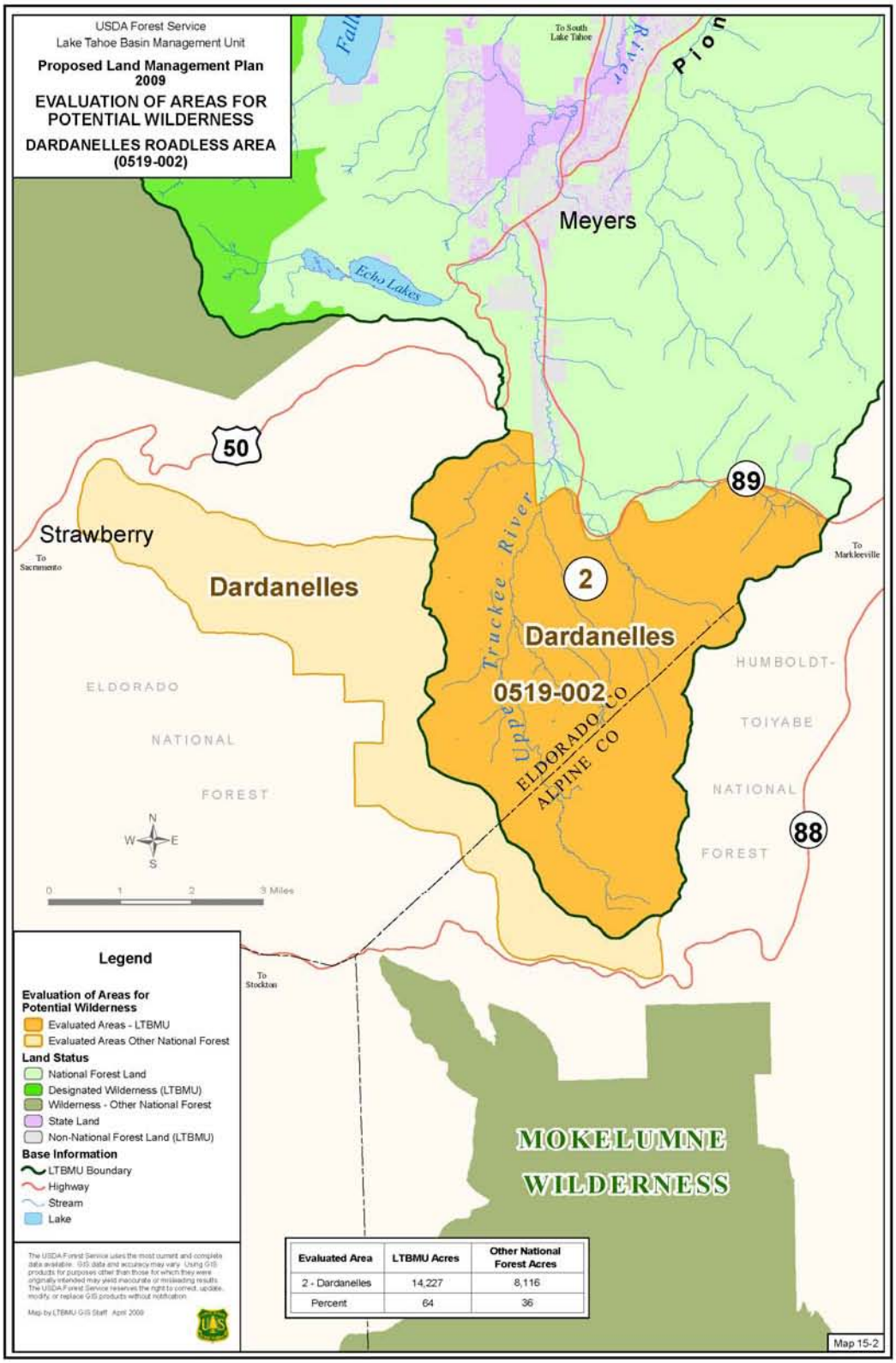

Figure C3. Dardanelles Roadless Area Map (0519-002)

Table C4. Wilderness Capability Ratings (Freel Roadless)

Freel Roadless (0519-003)			
High	Moderate	Low	Rating
A. Naturalness of Area			
Variety and abundance of wildlife, presence of T&E, SOC			**M**
1. Diverse community of native mammals, birds, and fish.	**1. Moderate variety of native mammals, birds, and fish.**	1. Community of native mammals, birds, and fish is not diverse.	
2. Presence of threatened and endangered species.	**2. Known moderate variety of threatened and endangered species.**	2. Low variety of threatened and endangered species.	
3. Streams are critical to historic distribution of Lahontan cutthroat trout.	**3. Streams are important to historic distribution of Lahontan cutthroat trout.**	3. Streams are not important to historic distribution of Lahontan cutthroat trout.	
4. Provides critical linkage between wildlife areas or habitats.	**4. Provides linkage between wildlife areas or habitats.**	4. Does not provide linkage between wildlife areas or habitats.	
5. Non-native species, Noxious weeds are not evident.	5. Noxious weeds evident only along trails.	5. Noxious weeds common or scattered throughout the area.	
6. High water quality. Fully supports beneficial uses.	6. Good water quality. Partially supports beneficial uses.	6. Poor water quality. Does not support beneficial uses.	
B. Undeveloped			
Natural and free from Human disturbance			**M**
7. Area appears free of human disturbance. Disturbance appears to be natural, e.g., small wildfire.	**7. Area appears mostly free of human disturbance. Natural disturbance evident but does not dominate the landscape.**	7. Area shows signs of human disturbance.	
8. Area visible in surrounding foreground (outside the area) may show some human disturbance but does not dominate the view.	**8. Area visible in surrounding foreground has signs of human activities, e.g., road, farm house.**	8. Area visible in surrounding foreground shows obvious human activities, e.g., clearcuts, town.	
9. Only a minor improvement, e.g., trail.	**9. Several minor improvements.**	9. Major improvements, e.g., power line, dam, road or structures.	
C. Opportunities for Primitive Recreation			
Opportunity for solitude			**M**
10. Feeling of being alone or remote from civilization.	10. Feeling of being alone is possible but signs of civilization are likely.	10. Little opportunity of feeling alone.	
11. Recreation use by other parties is light. (encounters)	11. Recreation use by other parties is moderate.	11. Recreation use by other parties is high.	

Freel Roadless (0519-003)			
High	Moderate	Low	Rating
Primitive Type Recreation Activities			
Hiking/backpacking opportunities			
12. Multiple system trails into area.	12. At least one system trail into area.	12. No system trails that are maintained.	
13. Several dispersed camping sites that are routinely used.	**13. At least one dispersed camping site that is occasionally used.**	13. No dispersed camping sites that are used, but progressive camping may occur.	
Fishing opportunities			
14. Good populations of native game fish.	14. Fair populations of native game fish.	**14. Low populations of native game fish.**	
Cross country Skiing and snowshoeing opportunities			
15. Easily accessible in winter by motorized wheeled vehicles.	**15. Snow keeps wheeled vehicles several miles from area, but access is possible by snowmobile.**	15. Area is difficult or rarely accessed by snowmobile. Limited e.g. High Meadows)	
Snowmobiling use			
16. Terrain is steep or vegetation too dense that cross country travel is difficult.	16. Terrain is moderate or vegetation brushy that impedes cross country travel.	**16. Terrain is gentle and vegetation open to allow easy cross country travel. (Limited, e.g. High Meadows)**	
17. Snowmobile use prohibited, or if allowed, rarely used.	17. Snowmobile use restricted to two months or less, or on half or less of the area.	**17. Snowmobile use permitted.**	
D. Special Features and Values			
Scenic features			**M**
18. Area has peaks or rocky formations considered spectacular from the rest of the Forest and/or special vegetative features that are considered very scenic.	18. Area has a peak or formation that stands out from surrounding terrain and/or vegetative features considered scenic.	18. Terrain is typical of the Forest or surrounding area and vegetation is common to the surrounding area.	
19. Area has alpine lakes, creeks in alpine meadows, or waterfalls.	19. Area may have bodies of water that are typical for the Forest.	19. Area has no permanent lakes but may have perennial creeks or ponds.	
Other special features			
20. Area has at least one major other special feature, e.g., high mountain meadow, fen, etc.	20. Several minor other special features, e.g., flat creek bottom, small waterfall, etc.	20. No major or very few minor other special features.	

Freel Roadless (0519-003)			
High	Moderate	Low	Rating
21. Contains a designated special area, e.g., wild and scenic river, research natural area, etc.	21. Contains a candidate or eligible special area, e.g., wild and scenic river, research natural area, etc.	**21. Does not contain an established, candidate, or eligible special area.**	
Scientific, educational, or historical values			
22. Several significant scientific, educational, or historical values have been identified in the area.	**22. At least one significant or several minor scientific, educational, or historical values have been identified in the area.**	22. No scientific, educational, or historical value has been identified in the area.	
23. Identified values are unique to the Sierra Nevada region.	23. Identified values are common in the Sierra Nevada region but uncommon on the Forest.	**23. Any identified values are common throughout the Forest and the Sierra Nevada region.**	
E. & F. Manageability			
Ability to Manage as Wilderness Manageable			**M**
24. Size and shape of area allows effective management.	**24. Size or shape will affect manageability but can be mitigated by boundary changes.**	24. Size is small or has irregular shape that makes management difficult.	
25. Minimum activity in surrounding area that affects manageability.	**25. Activity is evident and ongoing in surrounding area but will not keep area from being managed.**	25. Activity in surrounding area will affect the manageability of the inventoried area.	
26. Located adjacent to existing wilderness or other inventoried areas.	26. Located near existing wilderness or other inventoried areas. May be difficult to access.	26. Isolated, small parcel of land.	
Area boundaries are recognizable			
27. The vast majority of the boundary follows features that can be easily found and identified on the ground, e.g., dominant ridge, creek, road, or trail.	27. More than half the boundary follows a feature that can be easily found and identified on the ground.	**27. Boundary generally lies across the hillside and can rarely be located without equipment, e.g. GPS unit.**	
28. Boundary can be easily adjusted to follow locatable and identifiable features without significantly modifying the area boundaries.	28. Boundary can be adjusted to follow locatable and identifiable features but will modify the general size and shape of the area. Boundary may be identified with minimal signing.	**28. Boundary cannot be adjusted to follow locatable and identifiable, or requires extensive signing.**	

Freel Roadless (0519-003)			
High	Moderate	Low	Rating
Area boundaries are manageable			
29. Area access by trail or closed and revegetated road, adjacent area has natural setting.	**29. May be accessed by narrow or two-track open road that is lightly traveled, minimal human presence evident.**	29. Boundary adjacent to heavily used road or along area showing high human presence, e.g., a number of farm houses with outbuilding, pasture land, etc.	
30. Boundary totally on national forest and not adjacent to private property.	**02. Boundary follows property line forming irregular shape.**	30. Boundary crosses private property so there are inholdings along the boundary.	
31. No inholdings.	**31. Few small inholdings may be present.**	31. Several small or one large inholding.	
Area boundaries constitute barrier to prohibited use			
32. Human improvement is significant to physically provide a barrier, e.g., road cut slope.	**32. Human improvement places user on notice of prohibited use, e.g., a sign.**	32. Human improvement not a deterrent may provide point of access of prohibited use.	

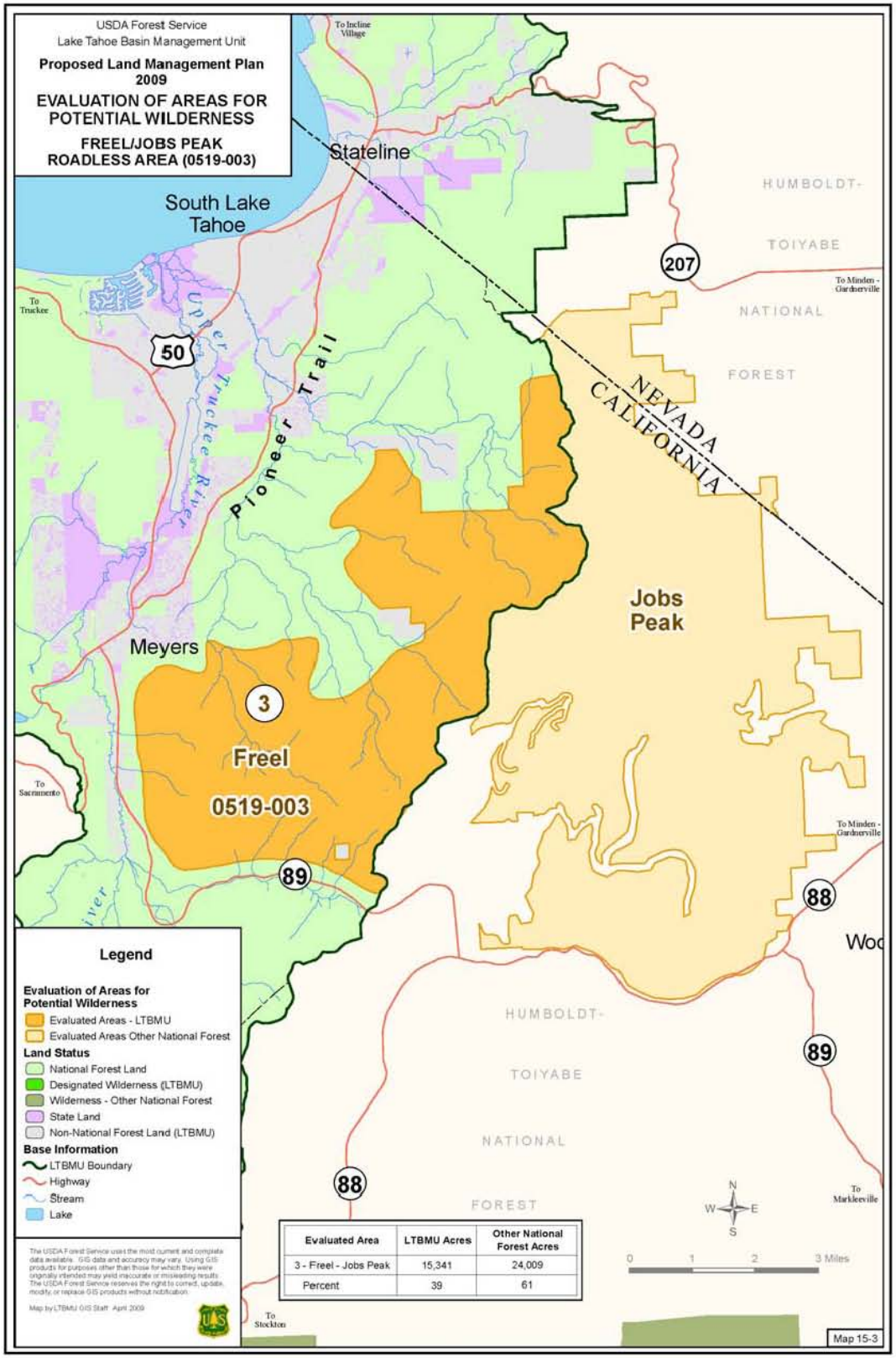

Figure C4. Freel/Jobs Peak Roadless Area Map (0519-003)

Table C1. Wilderness Capability Ratings (Lincoln Creek Roadless)

Lincoln Creek Roadless (0519-004)			
High	Moderate	Low	Rating
A. Naturalness of Area			
Variety and abundance of wildlife, presence of T&E, SOC			**M**
1. Diverse community of native mammals, birds, and fish.	**1. Moderate variety of native mammals, birds, and fish.**	1. Community of native mammals, birds, and fish is not diverse.	
2. Presence of threatened and endangered species.	2. Known moderate variety of threatened and endangered species.	**2. Low variety of threatened and endangered species.**	
3. Streams are critical to historic distribution of Lahontan cutthroat trout.	3. Streams are important to historic distribution of Lahontan cutthroat trout.	**3. Streams are not important to historic distribution of Lahontan cutthroat trout.**	
4. Provides critical linkage between wildlife areas or habitats.	**4. Provides linkage between wildlife areas or habitats.**	4. Does not provide linkage between wildlife areas or habitats.	
5. Non-native species, Noxious weeds are not evident.	5. Noxious weeds evident only along trails.	5. Noxious weeds common or scattered throughout the area.	
6. High water quality. Fully supports beneficial uses.	6. Good water quality. Partially supports beneficial uses.	6. Poor water quality. Does not support beneficial uses.	
B. Undeveloped			
Natural and free from Human disturbance			**M**
7. Area appears free of human disturbance. Disturbance appears to be natural, e.g., small wildfire.	**7. Area appears mostly free of human disturbance. Natural disturbance evident but does not dominate the landscape.**	7. Area shows signs of human disturbance.	
8. Area visible in surrounding foreground (outside the area) may show some human disturbance but does not dominate the view.	8. Area visible in surrounding foreground has signs of human activities, e.g., road, farm house.	**8. Area visible in surrounding foreground shows obvious human activities, e.g., clearcuts, town.**	

Lincoln Creek Roadless (0519-004)			
High	Moderate	Low	Rating
9. Only a minor improvement, e.g., trail.	**9. Several minor improvements.**	9. Major improvements, e.g., power line, dam, road or structures.	
C. Opportunities for Primitive Recreation			
Opportunity for solitude			**M**
10. Feeling of being alone or remote from civilization.	**10. Feeling of being alone is possible but signs of civilization are likely.**	10. Little opportunity of feeling alone.	
11. Recreation use by other parties is light. (encounters)	**11. Recreation use by other parties is moderate.**	11. Recreation use by other parties is high.	
Primitive Type Recreation Activities			
Hiking/backpacking opportunities			
12. Multiple system trails into area.	12. At least one system trail into area.	12. No system trails that are maintained.	
13. Several dispersed camping sites that are routinely used.	13. At least one dispersed camping site that is occasionally used.	**13. No dispersed camping sites that are used, but progressive camping may occur.**	
Fishing opportunities			
14. Good populations of native game fish.	14. Fair populations of native game fish.	**14. Low populations of native game fish.**	
Cross country Skiing and snowshoeing opportunities			
15. Easily accessible in winter by motorized wheeled vehicles.	15. Snow keeps wheeled vehicles several miles from area, but access is possible by snowmobile.	**15. Area is difficult or rarely accessed by snowmobile.**	
Snowmobiling use			
16. Terrain is steep or vegetation too dense that cross country travel is difficult.	16. Terrain is moderate or vegetation brushy that impedes cross country travel.	16. Terrain is gentle and vegetation open to allow easy cross country travel.	

Lincoln Creek Roadless (0519-004)			
High	Moderate	Low	Rating
17. Snowmobile use prohibited, or if allowed, rarely used.	**17. Snowmobile use restricted to two months or less, or on half or less of the area.**	17. Snowmobile use permitted.	
D. Special Features and Values			
Scenic features			**L**
18. Area has peaks or rocky formations considered spectacular from the rest of the Forest and/or special vegetative features that are considered very scenic.	18. Area has a peak or formation that stands out from surrounding terrain and/or vegetative features considered scenic.	**18. Terrain is typical of the Forest or surrounding area and vegetation is common to the surrounding area.**	
19. Area has alpine lakes, creeks in alpine meadows, or waterfalls.	19. Area may have bodies of water that are typical for the Forest.	**19. Area has no permanent lakes but may have perennial creeks or ponds.**	
Other special features			
20. Area has at least one major other special feature, e.g., high mountain meadow, fen, etc.	20. Several minor other special features, e.g., flat creek bottom, small waterfall, etc.	**20. No major or very few minor other special features.**	
21. Contains a designated special area, e.g., wild and scenic river, research natural area, etc.	21. Contains a candidate or eligible special area, e.g., wild and scenic river, research natural area, etc.	**21. Does not contain an established, candidate, or eligible special area.**	
Scientific, educational, or historical values			
22. Several significant scientific, educational, or historical values have been identified in the area.	22. At least one significant or several minor scientific, educational, or historical values have been identified in the area.	**22. No scientific, educational, or historical value has been identified in the area.**	
23. Identified values are unique to the Sierra Nevada region.	23. Identified values are common in the Sierra Nevada region but uncommon on the Forest.	**23. Any identified values are common throughout the Forest and the Sierra Nevada region.**	
E. & F. Manageability			
Ability to Manage as Wilderness Manageable			**L**
24. Size and shape of area allows effective management.	24. Size or shape will affect manageability but can be mitigated by boundary changes.	**24. Size is small or has irregular shape that makes management difficult.**	
25. Minimum activity in surrounding area that affects manageability.	25. Activity is evident and ongoing in surrounding area but will not keep area from being managed.	**25. Activity in surrounding area will affect the manageability of the inventoried area.**	

Lincoln Creek Roadless (0519-004)			
High	Moderate	Low	Rating
26. Located adjacent to existing wilderness or other inventoried areas.	26. Located near existing wilderness or other inventoried areas. May be difficult to access.	**26. Isolated, small parcel of land.**	
Area boundaries are recognizable			
27. The vast majority of the boundary follows features that can be easily found and identified on the ground, e.g., dominant ridge, creek, road, or trail.	27. More than half the boundary follows a feature that can be easily found and identified on the ground.	**27. Boundary generally lies across the hillside and can rarely be located without equipment, e.g. GPS unit.**	
28. Boundary can be easily adjusted to follow locatable and identifiable features without significantly modifying the area boundaries.	28. Boundary can be adjusted to follow locatable and identifiable features but will modify the general size and shape of the area. Boundary may be identified with minimal signing.	**28. Boundary cannot be adjusted to follow locatable and identifiable, or requires extensive signing.**	
Area boundaries are manageable			
29. Area access by trail or closed and revegetated road, adjacent area has natural setting.	29. May be accessed by narrow or two-track open road that is lightly traveled, minimal human presence evident.	**29. Boundary adjacent to heavily used road or along area showing high human presence, e.g., a number of farm houses with outbuilding, pasture land, etc.**	
30. Boundary totally on national forest and not adjacent to private property.	30. Boundary follows property line forming irregular shape.	**30. Boundary crosses private property so there are inholdings along the boundary.**	
31. No inholdings.	31. Few small inholdings may be present.	**31. Several small or one large inholding.**	
Area boundaries constitute barrier to prohibited use			
32. Human improvement is significant to physically provide a barrier, e.g., road cut slope.	32. Human improvement places user on notice of prohibited use, e.g., a sign.	32. Human improvement not a deterrent may provide point of access of prohibited use.	

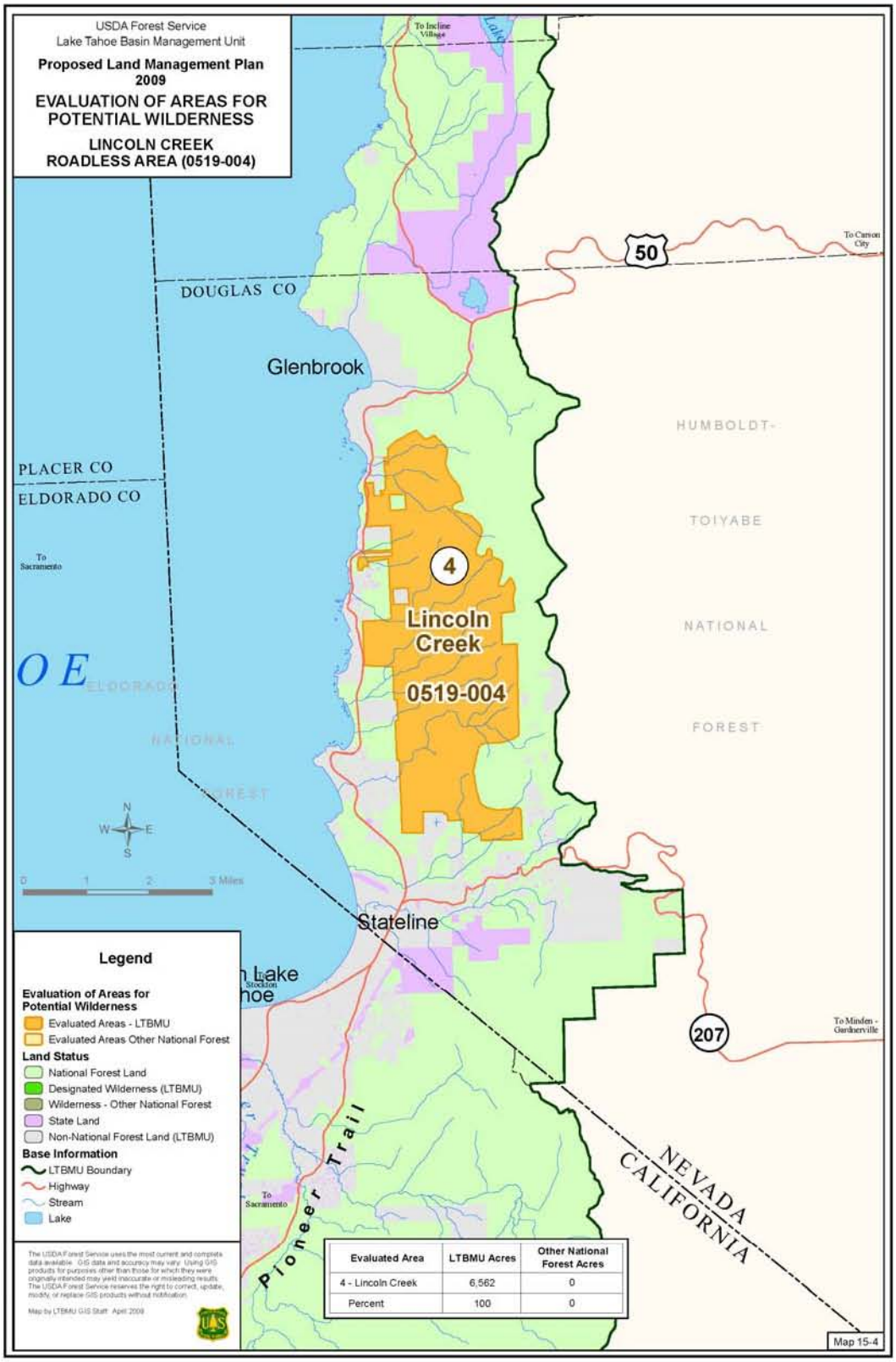

Figure C5. Lincoln Creek Roadless Area Map (0519-004)

Table B2. Wilderness Capability Ratings (Mt. Rose Wilderness and Roadless)

Mt. Rose Wilderness & Roadless Additions (0519-005)			
High	Moderate	Low	Rating
A. Naturalness of Area			
Variety and abundance of wildlife, presence of T&E, SOC			**M**
1. Diverse community of native mammals, birds, and fish.	**1. Moderate variety of native mammals, birds, and fish.**	1. Community of native mammals, birds, and fish is not diverse.	
2. Presence of threatened and endangered species.	2. Known moderate variety of threatened and endangered species.	**2. Low variety of threatened and endangered species.**	
3. Streams are critical to historic distribution of Lahontan cutthroat trout.	3. Streams are important to historic distribution of Lahontan cutthroat trout.	**3. Streams are not important to historic distribution of Lahontan cutthroat trout.**	
4. Provides critical linkage between wildlife areas or habitats.	**4. Provides linkage between wildlife areas or habitats.**	4. Does not provide linkage between wildlife areas or habitats.	
5. Non-native species, Noxious weeds are not evident.	5. Noxious weeds evident only along trails.	5. Noxious weeds common or scattered throughout the area.	
6. High water quality. Fully supports beneficial uses.	6. Good water quality. Partially supports beneficial uses.	6. Poor water quality. Does not support beneficial uses.	
B. Undeveloped			
Natural and free from Human disturbance			**M**
7. Area appears free of human disturbance. Disturbance appears to be natural, e.g., small wildfire.	**7. Area appears mostly free of human disturbance. Natural disturbance evident but does not dominate the landscape.**	7. Area shows signs of human disturbance.	
8. Area visible in surrounding foreground (outside the area) may show some human disturbance but does not dominate the view.	**8. Area visible in surrounding foreground has signs of human activities, e.g., road, farm house.**	8. Area visible in surrounding foreground shows obvious human activities, e.g., clearcuts, town.	
9. Only a minor improvement, e.g., trail.	9. Several minor improvements.	**9. Major improvements, e.g., power line, dam, road or structures.**	

Mt. Rose Wilderness & Roadless Additions (0519-005)			
High	Moderate	Low	Rating
C. Opportunities for Primitive Recreation			
Opportunity for solitude			**M**
10. Feeling of being alone or remote from civilization.	**10. Feeling of being alone is possible but signs of civilization are likely.**	10. Little opportunity of feeling alone.	
11. Recreation use by other parties is light. (encounters)	**11. Recreation use by other parties is moderate.**	11. Recreation use by other parties is high.	
Primitive Type Recreation Activities			
Hiking/backpacking opportunities			
12. Multiple system trails into area. 13. Several dispersed camping sites that are routinely used.	12. At least one system trail into area. 13. At least one dispersed camping site that is occasionally used.	**12. No system trails that are maintained.** **13. No dispersed camping sites that are used, but progressive camping may occur.**	
Fishing opportunities			
14. Good populations of native game fish.	14. Fair populations of native game fish.	**14. Low populations of native game fish.**	
Cross country Skiing and snowshoeing opportunities			
15. Terrain is gentle and vegetation open to allow easy cross country travel.	15. Terrain is gentle and vegetation open to allow easy cross country travel.	15. Terrain is gentle and vegetation open to allow easy cross country travel.	
Snowmobiling use			
16. Terrain is steep or vegetation too dense that cross country travel is difficult.	16. Terrain is moderate or vegetation brushy that impedes cross country travel.	**16. Terrain is gentle and vegetation open to allow easy cross country travel.**	
17. Snowmobile use prohibited, or if allowed, rarely used.	17. Snowmobile use restricted to two months or less, or on half or less of the area.	**17. Snowmobile use permitted.**	
D. Special Features and Values			
Scenic features			**L**
18. Area has peaks or rocky formations considered spectacular from the rest of the Forest and/or special vegetative features that are considered very scenic.	18. Area has a peak or formation that stands out from surrounding terrain and/or vegetative features considered scenic.	**18. Terrain is typical of the Forest or surrounding area and vegetation is common to the surrounding area.**	

Mt. Rose Wilderness & Roadless Additions (0519-005)			
High	Moderate	Low	Rating
19. Area has alpine lakes, creeks in alpine meadows, or waterfalls.	19. Area may have bodies of water that are typical for the Forest.	**19. Area has no permanent lakes but may have perennial creeks or ponds.**	
Other special features			
20. Area has at least one major other special feature, e.g., high mountain meadow, fen, etc.	20. Several minor other special features, e.g., flat creek bottom, small waterfall, etc.	**20. No major or very few minor other special features.**	
21. Contains a designated special area, e.g., wild and scenic river, research natural area, etc.	21. Contains a candidate or eligible special area, e.g., wild and scenic river, research natural area, etc.	**21. Does not contain an established, candidate, or eligible special area.**	
Scientific, educational, or historical values			
22. Several significant scientific, educational, or historical values have been identified in the area.	22. At least one significant or several minor scientific, educational, or historical values have been identified in the area.	**22. No scientific, educational, or historical value has been identified in the area.**	
23. Identified values are unique to the Sierra Nevada region.	23. Identified values are common in the Sierra Nevada region but uncommon on the Forest.	**23. Any identified values are common throughout the Forest and the Sierra Nevada region.**	
E. & F. Manageability			
Ability to Manage as Wilderness Manageable			**L**
24. Size and shape of area allows effective management.	24. Size or shape will affect manageability but can be mitigated by boundary changes.	**24. Size is small or has irregular shape that makes management difficult.**	
25. Minimum activity in surrounding area that affects manageability.	25. Activity is evident and ongoing in surrounding area but will not keep area from being managed.	**25. Activity in surrounding area will affect the manageability of the inventoried area.**	
26. Located adjacent to existing wilderness or other inventoried areas.	26. Located near existing wilderness or other inventoried areas. May be difficult to access.	26. Isolated, small parcel of land.	
Area boundaries are recognizable			
27. The vast majority of the boundary follows features that can be easily found and identified on the ground, e.g., dominant ridge, creek, road, or trail.	27. More than half the boundary follows a feature that can be easily found and identified on the ground.	**27. Boundary generally lies across the hillside and can rarely be located without equipment, e.g. GPS unit.**	

Mt. Rose Wilderness & Roadless Additions (0519-005)			
High	Moderate	Low	Rating
28. Boundary can be easily adjusted to follow locatable and identifiable features without significantly modifying the area boundaries.	28. Boundary can be adjusted to follow locatable and identifiable features but will modify the general size and shape of the area. Boundary may be identified with minimal signing.	**28. Boundary cannot be adjusted to follow locatable and identifiable, or requires extensive signing.**	
Area boundaries are manageable			
29. Area access by trail or closed and revegetated road, adjacent area has natural setting.	**29. May be accessed by narrow or two-track open road that is lightly traveled, minimal human presence evident.**	29. Boundary adjacent to heavily used road or along area showing high human presence, e.g., a number of farm houses with outbuilding, pasture land, etc.	
30. Boundary totally on national forest and not adjacent to private property.	30. Boundary follows property line forming irregular shape.	30. Boundary crosses private property so there are inholdings along the boundary.	
31. No inholdings.	31. Few small inholdings may be present.	31. Several small or one large inholding.	
Area boundaries constitute barrier to prohibited use			
32. Human improvement is significant to physically provide a barrier, e.g., road cut slope.	32. Human improvement places user on notice of prohibited use, e.g., a sign.	**32. Human improvement not a deterrent may provide point of access of prohibited use.**	

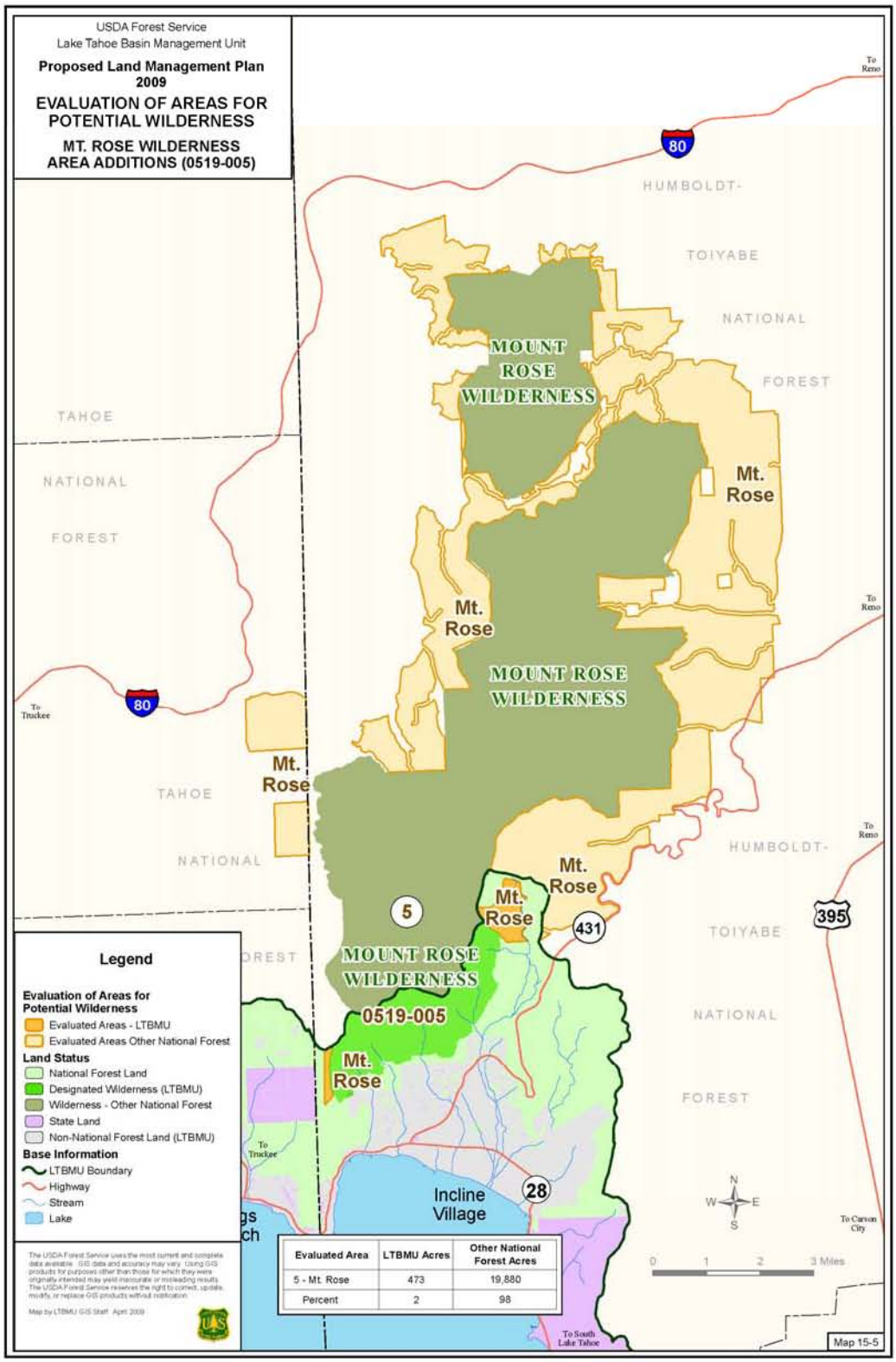

Figure C6. Mt. Rose Wilderness and Roadless Additions Area Map (0519-005)

Table B3. Wilderness Capability Ratings (The Granite Chief Wilderness and Roadless)

The Granite Chief Wilderness & Roadless Additions (0519-006)			
High	Moderate	Low	Rating
A. Naturalness of Area			
Variety and abundance of wildlife, presence of T&E, SOC			**M**
1. Diverse community of native mammals, birds, and fish.	**1. Moderate variety of native mammals, birds, and fish.**	1. Community of native mammals, birds, and fish is not diverse.	
2. Presence of threatened and endangered species.	2. Known moderate variety of threatened and endangered species.	**2. Low variety of threatened and endangered species.**	
3. Streams are critical to historic distribution of Lahontan cutthroat trout.	3. Streams are important to historic distribution of Lahontan cutthroat trout.	3. Streams are not important to historic distribution of Lahontan cutthroat trout.	
4. Provides critical linkage between wildlife areas or habitats.	**4. Provides linkage between wildlife areas or habitats.**	4. Does not provide linkage between wildlife areas or habitats.	
5. Non-native species, Noxious weeds are not evident.	5. Noxious weeds evident only along trails.	5. Noxious weeds common or scattered throughout the area.	
6. High water quality. Fully supports beneficial uses.	6. Good water quality. Partially supports beneficial uses.	6. Poor water quality. Does not support beneficial uses.	
B. Undeveloped			
Natural and free from Human disturbance			**M**
7. Area appears free of human disturbance. Disturbance appears to be natural, e.g., small wildfire.	**7. Area appears mostly free of human disturbance. Natural disturbance evident but does not dominate the landscape.**	7. Area shows signs of human disturbance.	
8. Area visible in surrounding foreground (outside the area) may show some human disturbance but does not dominate the view.	**8. Area visible in surrounding foreground has signs of human activities, e.g., road, farm house.**	8. Area visible in surrounding foreground shows obvious human activities, e.g., clearcuts, town.	
9. Only a minor improvement, e.g., trail.	**9. Several minor improvements.**	9. Major improvements, e.g., power line, dam, road or structures.	
C. Opportunities for Primitive Recreation			
Opportunity for solitude			**M**
10. Feeling of being alone or remote from civilization.	**10. Feeling of being alone is possible but signs of civilization are likely.**	10. Little opportunity of feeling alone.	
11. Recreation use by other parties is light. (encounters)	**11. Recreation use by other parties is moderate.**	11. Recreation use by other parties is high.	

The Granite Chief Wilderness & Roadless Additions (0519-006)			
High	Moderate	Low	Rating
Primitive Type Recreation Activities			
Hiking/backpacking opportunities			
12. Multiple system trails into area.	12. At least one system trail into area.	12. No system trails that are maintained.	
13. Several dispersed camping sites that are routinely used.	**13. At least one dispersed camping site that is occasionally used.**	13. No dispersed camping sites that are used, but progressive camping may occur.	
Fishing opportunities			
14. Good populations of native game fish.	14. Fair populations of native game fish.	**14. Low populations of native game fish.**	
Cross country Skiing and snowshoeing opportunities			
15. Easily accessible in winter by motorized wheeled vehicles.	15. Snow keeps wheeled vehicles several miles from area, but access is possible by snowmobile.	**15. Area is difficult or rarely accessed by snowmobile.**	
Snowmobiling use			
16. Terrain is steep or vegetation too dense that cross country travel is difficult.	16. Terrain is moderate or vegetation brushy that impedes cross country travel.	16. Terrain is gentle and vegetation open to allow easy cross country travel.	
17. Snowmobile use prohibited, or if allowed, rarely used.	17. Snowmobile use restricted to two months or less, or on half or less of the area.	17. Snowmobile use permitted.	
D. Special Features and Values			
Scenic features			**L**
18. Area has peaks or rocky formations considered spectacular from the rest of the Forest and/or special vegetative features that are considered very scenic.	18. Area has a peak or formation that stands out from surrounding terrain and/or vegetative features considered scenic.	**18. Terrain is typical of the Forest or surrounding area and vegetation is common to the surrounding area.**	
19. Area has alpine lakes, creeks in alpine meadows, or waterfalls.	19. Area may have bodies of water that are typical for the Forest.	**19. Area has no permanent lakes but may have perennial creeks or ponds.**	
Other special features			
20. Area has at least one major other special feature, e.g., high mountain meadow, fen, etc.	20. Several minor other special features, e.g., flat creek bottom, small waterfall, etc.	**20. No major or very few minor other special features.**	

The Granite Chief Wilderness & Roadless Additions (0519-006)			
High	Moderate	Low	Rating
21. Contains a designated special area, e.g., wild and scenic river, research natural area, etc.	21. Contains a candidate or eligible special area, e.g., wild and scenic river, research natural area, etc.	**21. Does not contain an established, candidate, or eligible special area.**	
Scientific, educational, or historical values			
22. Several significant scientific, educational, or historical values have been identified in the area.	22. At least one significant or several minor scientific, educational, or historical values have been identified in the area.	**22. No scientific, educational, or historical value has been identified in the area.**	
23. Identified values are unique to the Sierra Nevada region.	23. Identified values are common in the Sierra Nevada region but uncommon on the Forest.	**23. Any identified values are common throughout the Forest and the Sierra Nevada region.**	
E. & F. Manageability			
Ability to Manage as Wilderness Manageable			**L**
24. Size and shape of area allows effective management.	24. Size or shape will affect manageability but can be mitigated by boundary changes.	**24. Size is small or has irregular shape that makes management difficult.**	
25. Minimum activity in surrounding area that affects manageability.	**25. Activity is evident and ongoing in surrounding area but will not keep area from being managed.**	25. Activity in surrounding area will affect the manageability of the inventoried area.	
26. Located adjacent to existing wilderness or other inventoried areas.	26. Located near existing wilderness or other inventoried areas. May be difficult to access.	26. Isolated, small parcel of land.	
Area boundaries are recognizable			
27. The vast majority of the boundary follows features that can be easily found and identified on the ground, e.g., dominant ridge, creek, road, or trail.	27. More than half the boundary follows a feature that can be easily found and identified on the ground.	**27. Boundary generally lies across the hillside and can rarely be located without equipment, e.g. GPS unit.**	
28. Boundary can be easily adjusted to follow locatable and identifiable features without significantly modifying the area boundaries.	28. Boundary can be adjusted to follow locatable and identifiable features but will modify the general size and shape of the area. Boundary may be identified with minimal signing.	**28. Boundary cannot be adjusted to follow locatable and identifiable, or requires extensive signing.**	

The Granite Chief Wilderness & Roadless Additions (0519-006)			
High	Moderate	Low	Rating
Area boundaries are manageable			
29. Area access by trail or closed and revegetated road, adjacent area has natural setting.	29. May be accessed by narrow or two-track open road that is lightly traveled, minimal human presence evident.	29. Boundary adjacent to heavily used road or along area showing high human presence, e.g., a number of farm houses with outbuilding, pasture land, etc.	
30. Boundary totally on national forest and not adjacent to private property.	30. Boundary follows property line forming irregular shape.	**30. Boundary crosses private property so there are inholdings along the boundary.**	
31. No inholdings.	31. Few small inholdings may be present.	**31. Several small or one large inholding.**	
Area boundaries constitute barrier to prohibited use			
32. Human improvement is significant to physically provide a barrier, e.g., road cut slope.	32. Human improvement places user on notice of prohibited use, e.g., a sign.	**32. Human improvement not a deterrent may provide point of access of prohibited use.**	

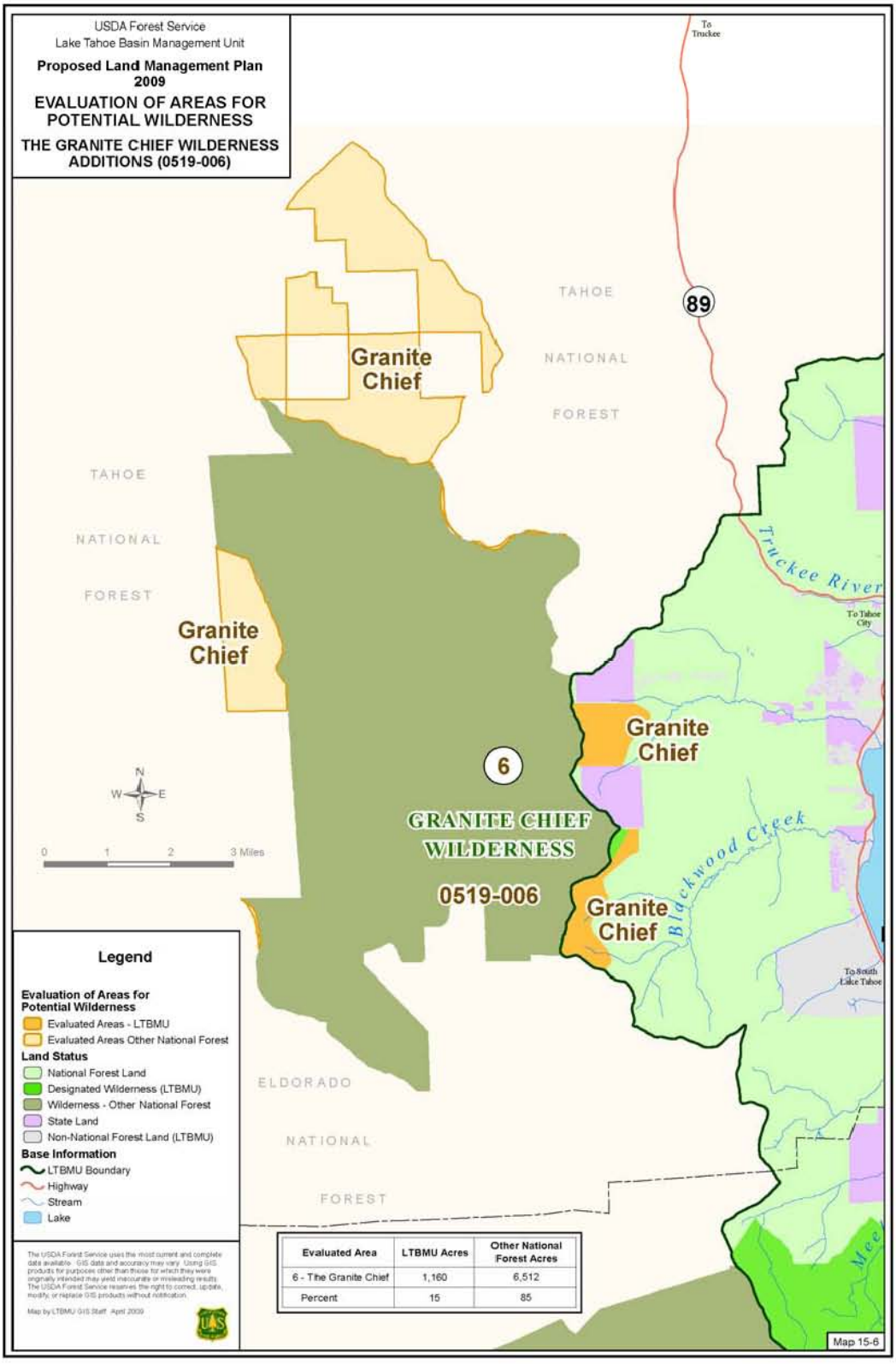

Figure C6. Granite Chief Wilderness Additions Map (0519-006)

C.4. Availability

Availability of the potential wilderness area is determined by describing *other* resource potentials and resource needs beyond the wilderness characterization addressed in the Capability process. Pertinent quantitative and qualitative information including current use, outputs, trends, and potential future use and/or outputs for the applicable resources in accordance with Forest Service Handbook 1909.12 Chapter 70, Section 72.2. Each area has been analyzed for the following criteria, as applicable:

Table C4. Area Availability Resource Criteria

Resources
1. Areas that are of high value for *communication sites* where installation and maintenance of improvements may be required
2. Areas with existing motorized or *mechanized access or use*. (winter summer).
3. Areas needing *active vegetative restoration* activity due to specific species survival, or identifiable fuels reduction activity to reduce the risk of wildfire, or known areas of severe insect infestation(s) that will lead to high tree mortality
4. Areas of high value *mineral deposits* of economic or strategic importance
5. Areas having such *unique characteristics or natural phenomena* that public access should be developed to facilitate public use and enjoyment including winter sports sites
6. *Lands* committed through contracts, permits, or agreements that would be in conflict with wilderness management (some minor permitted uses may still be allowed)
Ratings
High = areas having evidence of and high priority need the category addressed.
Moderate = areas having a need in the category addressed.
Low = areas having no to little need or management addressed.

Table C5. Details of the Availability Assessment for Areas Being Evaluated for Potential Wilderness on the Lake Tahoe Basin Management Unit

Criteria	Desolation Wilderness Additions Pyramid 0519-001	Dardanelles Roadless 0519-002	Freel/ Jobs Peek Roadless 0519-003	Lincoln Creek Roadless 0519-004	Mt. Rose Wild & Additions 0519-005	Granite Chief Wilderness Additions 0519-006
1. Areas that are of high value for communication sites where installation and maintenance of improvements may be required	L	L	L	L	L	L
2. Areas with existing motorized or mechanized access or use. (winter summer).	L	L	H	M	H	L
3. Areas needing active vegetative restoration activity due to specific species survival, or identifiable fuels reduction activity to reduce the risk of wildfire, or known areas of severe insect infestation(s) that will lead to high tree mortality	M	M	M	M	M	M
4. Areas of high value mineral deposits of economic or strategic importance	L	L	L	L	L	L
5. Areas having such unique characteristics or natural phenomena that public access should be developed to facilitate public use and enjoyment including winter sports sites	L	L	L	L	L	L
6. Lands committed through contracts, permits, or agreements that would be in conflict with wilderness management (some minor permitted uses may still be allowed)	L	L	L	L	L	L

C.5. Need for Wilderness

Determination if the area is needed as part of the National Wilderness Preservation System is the final step of the evaluation process. As outlined in Forest Service Handbook 1909.12 chapter 70, section 72(e), this section summarizes the factors considered and the process used in assessing the need for each potential wilderness area.

Desolation Wilderness Additions – Pyramid Roadless Area (0519-001)

1. The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers:

The Pyramid area lies along the eastern boundary and is contiguous to the Desolation Wilderness. Its boundary would interface with urbanized and semi-natural settings. Because of the proximity to urban areas, there are numerous informal trails in the Pyramid area, and several segments of system trails. Much of the Pyramid area is comprised of steep terrain, and forms a physical buffer to the Desolation Wilderness.

2. Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation:

Adjacent wilderness areas are all heavily used, owing to their relatively easy accessibility and proximity to urban centers in California and Nevada. Expected increases in population levels are expected to generate more pressure on existing wildernesses. The Pyramid area would accommodate some of that demand but the steep terrain would limit actual use.

3. The extent to which non-wilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences

Within the Lake Tahoe Basin, are several sizeable roadless areas (e.g. Freel, Dardanelles), that provide opportunities for many forms of outdoor recreation, such as hiking, horseback riding, mountain biking, along with winter recreation opportunities such as cross-country skiing and snowshoeing. The Pyramid area is largely a semi-primitive area, but its relative steep terrain constrains most recreation opportunities.

4. The need to provide a refuge for those species that may have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.

The Pyramid area provides some natural habitat for a variety of native wildlife and plants species. Throughout the Lake Tahoe Basin there are limited natural areas undisturbed by the extensive logging activities that took place in the late 1800's. Protection of available habitat for sensitive or protected species is a strategic goal for all National Forest lands within the Basin.

5. Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.

The Desolation Wilderness has been thoroughly evaluated as to its potential for increasing capacity from either a social or biological perspective and its current management conditions are being actively monitored. Sanctioned human use levels are unlikely to change. The Pyramid area complements the wilderness character and experience visitors receive in the Desolation, however increasing use needs to be evaluated to determine appropriate capacity levels for both social and biological limits.

6. An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Hammond's subdivision of landform types and the Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, sub-regional and regional needs.

Pyramid is predominately in a semi-primitive natural condition (ROS), and the area appears to have a stable ecosystem. However, its relatively narrow shape and length suggest that it does not have its own unique and distinctive ecosystem.

Dardanelles Roadless Area (0519-002)

1. The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers:

Located in the southernmost section of the Lake Tahoe Basin, the Dardanelles (Meiss) area has long served as an alternative destination for the heavily used Desolation Wilderness. It is also an alternative to the popular Mokelumne Wilderness to the south. The area is easily accessible from several trailheads off both Highway 89 and 88. While the Desolation offers visitors granite canyons, the Dardanelles area offers a large diversity of landscapes, from mountain meadows, scenic lakes to towering alpine peaks.

2. Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation:

Adjacent wilderness areas are all heavily used, owing to their relatively easy accessibility and proximity to urban centers in California and Nevada. Expected increases in population levels are expected to generate more pressure on existing wildernesses.

3. The extent to which non-wilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences

Within the Lake Tahoe Basin, are several sizeable roadless areas (e.g. Freel, Lincoln), that provide opportunities for many forms of outdoor recreation, such as hiking, horseback riding, mountain biking, along with winter recreation opportunities such as cross-country skiing and snowshoeing. The Dardanelles area has long-provided a wide variety of non-motorized recreational opportunities for visitors.

4. The need to provide a refuge for those species that may have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.

The Dardanelles area provides a diversity of natural habitat for a variety of native fish, wildlife and plants species. Throughout the Lake Tahoe Basin there are limited natural areas undisturbed by the extensive logging and grazing activities that took place in the late 1800's. Protection of available habitat for sensitive or protected species is a strategic goal for all National Forest lands within the Basin.

5. Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.

The Desolation Wilderness has been thoroughly evaluated as to its potential for increasing capacity from either a social or biological perspective and its current management conditions are being actively monitored. Sanctioned human use levels are unlikely to change. The Dardanelles area complements the wilderness character and experience visitors receive in the Desolation, however increasing use needs to be evaluated to determine appropriate capacity levels for both social and biological limits.

6.. An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Hammond's subdivision of landform types and the Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, sub-regional and regional needs.

Dardanelles is predominately in a semi-primitive natural condition (ROS), and despite past human influences from grazing and logging, and the establishment of several small dams for fisheries, the area has a stable ecosystem.

Freel Roadless Area (0519-003)

1. The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers:

The Freel area lies along the southern slopes of the Lake Tahoe Basin, across the lake from Desolation Wilderness, and with an hours drive of Mt. Rose Wilderness and Mokelumne Wilderness. The Freel area is adjacent to a number of roads and trails on its northern and southern boundary and urbanized areas along the western and southern boundary. While much of the Freel area is comprised of steep terrain, many areas are easily accessible from the urban fringe.

2. Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation:

Adjacent wilderness areas are all heavily used, owing to their relatively easy accessibility and proximity to urban centers in California and Nevada. Expected increases in population levels are expected to generate more pressure on existing wildernesses. The Freel area could accommodate some of that demand as it is predominately undeveloped forest land with some scenic peaks and water sources.

3. The extent to which non-wilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences

Within the Lake Tahoe Basin, are several sizeable roadless areas (e.g. Lincoln, Dardanelles), that provide opportunities for many forms of outdoor recreation, such as hiking, horseback riding, mountain biking,

along with winter recreation opportunities such as cross-country skiing and snowshoeing. The Freel area is largely a semi-primitive area, with steep terrain and can accommodate most recreation opportunities. Portions are popular with snowmobiles and mountain bikers.

4. The need to provide a refuge for those species that may have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.

The Freel area provides some natural habitat for a variety of native wildlife and plants species. Throughout the Lake Tahoe Basin there are limited natural areas undisturbed by the extensive logging activities that took place in the late 1800's. Protection of available habitat for sensitive or protected species is a strategic goal for all National Forest lands within the Basin.

5. Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.

The Desolation Wilderness has been thoroughly evaluated as to its potential for increasing capacity from either a social or biological perspective and its current management conditions are being actively monitored. Sanctioned human use levels are unlikely to change. The Freel area complements the wilderness character and experience visitors receive in the Desolation, however increasing use needs to be evaluated to determine appropriate capacity levels for both social and biological limits.

6. An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Hammond's subdivision of landform types and the Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, sub-regional and regional needs.

Freel is predominately in a semi-primitive natural condition (ROS), and the area appears to have a high degree of natural integrity and an apparent stable ecosystem

Lincoln Creek Roadless Area (0519-004)

1. The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers:

The Lincoln Creek area lies along the eastern slopes of the Lake Tahoe Basin, across the lake from Desolation Wilderness, and south of Mt. Rose Wilderness. The Lincoln Creek area, is adjacent to a number of roads and trails on its eastern boundary and urbanized areas along the western and southern boundary. While much of the Lincoln Creek area is comprised of steep terrain, many areas are easily accessible from the urban fringe

2. Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation:

Adjacent wilderness areas are all heavily used, owing to their relatively easy accessibility and proximity to urban centers in California and Nevada. Expected increases in population levels are expected to generate more pressure on existing wildernesses. The Lincoln Creek area would accommodate some of that demand but the steep terrain, limited unique scenic character and lack of water sources would limit actual use.

3. The extent to which non-wilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences

Within the Lake Tahoe Basin, are several sizeable roadless areas (e.g. Freel, Dardanelles), that provide opportunities for many forms of outdoor recreation, such as hiking, horseback riding, mountain biking, along with winter recreation opportunities such as cross-country skiing and snowshoeing. The Lincoln Creek area is largely a semi-primitive area, but its relative steep terrain and constrains most recreation opportunities.

4. The need to provide a refuge for those species that may have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.

The Lincoln Creek area provides some natural habitat for a variety of native wildlife and plants species. Throughout the Lake Tahoe Basin there are limited natural areas undisturbed by the extensive logging activities that took place in the late 1800's. Protection of available habitat for sensitive or protected species is a strategic goal for all National Forest lands within the Basin.

5. Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.

The Desolation Wilderness has been thoroughly evaluated as to its potential for increasing capacity from either a social or biological perspective and its current management conditions are being actively monitored. Sanctioned human use levels are unlikely to change. The Lincoln Creek area complements the wilderness character and experience visitors receive in the Desolation, however increasing use needs to be evaluated to determine appropriate capacity levels for both social and biological limits.

6. An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Hammond's subdivision of landform types and the Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, sub-regional and regional needs.

Lincoln Creek is predominately in a semi-primitive natural condition (ROS), and the area appears to have a stable ecosystem. However, its relatively narrow shape and length suggest that it does not have its own unique and distinctive ecosystem.

Mt. Rose Wilderness Additions (0519-007)

1. The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers:

Located in the northeast section of the Lake Tahoe Basin, the Mt. Rose area is contiguous to the Mt. Rose Wilderness, on both the eastern and western boundary. The area is easily accessible from the Tahoe Meadows trailhead Highway 431. The area is also within several short hours drive of Reno and Carson City. During the winter months this area is extremely popular with cross-country skiers and the eastern parcel is also very popular with snowmobiles.

2. Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation:

The Mt. Rose Wilderness receives strong demand for access to such destinations as the summit of Mt. Rose itself, and in several internal areas along with demand for access of the Tahoe Rim Trail, along its southern boundary. It does not have a permit system in place and is in general managed under the broad guidelines of the National Wilderness Preservation Act. Trends in population suggest a growing demand from adjacent populations centers (Reno, Carson and Tahoe). Additional pressure on trail uses are also predicted in and around the Mt. Rose area as new development from the Rim Trail and the neighboring Humboldt-Toiyabe NF create additional trail opportunities that will only increase over time._

3. The extent to which non-wilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences

Much of the non-wilderness land area to the south provides recreational opportunities through the Tahoe Rim Trail system which extends around the Basin. Odd-Even mountain-biking opportunities are available on the Rim Trail segment from Hwy 431 to Tunnel Creek. Non-limited equestrian opportunities are also available. During the winter months, both sides of the Tahoe Meadows area (including the Mt. Rose Study area) are widely used by winter recreationists. The study area is very popular with snowmobilers (area south of Hwy 431 is closed to this activity).

4. The need to provide a refuge for those species that may have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.

The Mt. Rose study area provides a limited diversity of natural habitat because of its steep topography and terrain for a variety of native fish, wildlife and plants species. The area was extensively logged in the later 1800's. Later grazing activities took place in the early 1900's that have modified the original landscape. Protection of available habitat for sensitive or protected species is a strategic goal for all National Forest lands within the Basin.

5. Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.

The Mt. Rose Wilderness, through the Limits of Acceptable Change (LAC) process, has been evaluated as to its potential for increasing capacity from either a social or biological perspective and its current management conditions are being actively monitored. Sanctioned human use levels are unlikely to change. By providing additional buffer, the Mt. Rose study area does complement the wilderness character and experience visitors receive in the Mt. Rose Wilderness, however increasing use needs to be evaluated to determine appropriate capacity levels for both social and biological limits.

6.. An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Hammond's subdivision of landform types and the Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, sub-regional and regional needs. The Mt. Rose is predominately in a semi-primitive non-motorized ROS setting. Its relatively small size is insufficient to stand alone as a designated wilderness and so would need to be added to the existing Mt. Rose Wilderness. Also, its small acreage also suggest the area does not have its own unique and distinctive ecosystem.

The Granite Chief Wilderness Additions (0519-010)

1. The location, size, and type of other wildernesses in the general vicinity and their distance from the proposed area. Consider accessibility of areas to population centers and user groups. Public demand for wilderness may increase with proximity to growing population centers:

The Granite Chief Roadless Area lies along the western boundary of the Lake Tahoe Basin, adjacent to the Granite Chief Wilderness, and within an hours journey to the Desolation Wilderness and within two hours drive of the Mt. Rose Wilderness area. Through portions of the Granite Chief run sections of the Pacific Crest/Tahoe Rim Trail. It has a high degree of natural integrity and apparent naturalness. Its small acreage and inholdings makes the land area dependent upon the adjacent Granite Chief Wilderness to provide a full wilderness character.

2. Present visitor pressure on other wildernesses, the trends in use, changing patterns of use, population expansion factors, and trends and changes in transportation:

Adjacent wilderness areas are all heavily used, owing to their relatively easy accessibility and proximity to urban centers in California and Nevada. Expected increases in population levels are expected to generate more pressure on existing wildernesses. The Granite Chief area could accommodate some of that demand as it is predominately undeveloped forest land adjacent to some scenic peaks.

3. The extent to which non-wilderness lands on the NFS unit or other Federal lands are likely to provide opportunities for unconfined outdoor recreation experiences

Within the Lake Tahoe Basin, are several sizeable roadless areas (e.g. Lincoln, Dardanelles), that provide opportunities for many forms of outdoor recreation, such as hiking, horseback riding, mountain biking, along with winter recreation opportunities such as cross-country skiing and snowshoeing. The Granite Chief area is largely a semi-primitive area, with predominately steep terrain; however, it can accommodate some recreation opportunities.

4. The need to provide a refuge for those species that may have demonstrated an inability to survive in less than primitive surroundings or the need for a protected area for other unique scientific values or phenomena.

The Granite Chief area provides some natural habitat for a variety of native wildlife and plants species. Throughout the Lake Tahoe Basin, there are limited natural areas undisturbed by the extensive logging activities that took place in the late 1800s. Protection of available habitat for sensitive or protected species is a strategic goal for all National Forest lands within the Basin

5. Within social and biological limits, management may increase the capacity of established wildernesses to support human use without unacceptable depreciation of the wilderness resource.

The Granite Chief Wilderness has been evaluated as to its potential for increasing capacity from either a social or biological perspective, and its current management conditions are being actively monitored according to the guidance of the 1964 Wilderness Act. Sanctioned human use levels are likely to change. The Granite Chief Roadless Area complements the wilderness character and experience visitors receive in the Granite Chief Wilderness, however increasing use needs to be evaluated to determine appropriate capacity levels for both social and biological limits.

6. An area's ability to provide for preservation of identifiable landform types and ecosystems. Consideration of this factor may include utilization of Hammond's subdivision of landform types and the

Bailey-Kuchler ecosystem classification. This approach is helpful from the standpoint of rounding out the National Wilderness Preservation System and may be further subdivided to suit local, sub-regional and regional needs.

Granite Chief is predominately in a semi-primitive natural condition (ROS), and the area appears to have a high degree of natural integrity, however its small size, unless added to the adjacent Granite Chief Wilderness area, precludes any ability to provide for preservation of identifiable landform types and ecosystems.

C.6. Agency Recommendation

The agency recommendation varies by Alternative.

Effect of Recommendations

The following is a discussion of the impact on the area if it were designated as wilderness and the impact on the area if it were managed as non-wilderness.

Desolation Wilderness Additions - Pyramid Roadless Area

If wilderness:

Effects on wilderness characteristics and values: Pyramid Roadless Area could not be a stand alone wilderness. It would need to be designated as "wilderness," adjacent to the existing Desolation Wilderness. The area could not be managed as wilderness without this linkage. It is not anticipated the Pyramid area would significantly receive more use because of a wilderness designation because of the steep terrain. Most of the eastern boundary of the Pyramid Roadless Area interfaces with urban development that would facilitate intrusions into the area that would make "manageability" challenging. The greatest impact would be on the Desolation Wilderness as it presently exists, by creating a "buffer," of undeveloped land. Wilderness designation of the Pyramid area would ensure its long-term integrity as a relatively naturally appearing area providing benefits for protection of wildlife habitat.

Effects on non-wilderness resources and uses: Some conflicts would become significant generated by a predicted conflict with adjacent urban developments and activities because of the proximity of the Pyramid area to multiple developments such as subdivisions, summer-home residences, established highways and trails. That proximity would likely generate management conflicts such as intrusions by mechanized or motorized recreationists, noise and congestion from such areas as Echo, Angora, Fallen Leaf and Cascade Lakes.

Economic and social effects: Addition of the Pyramid Roadless Area into the National Wilderness Preservation System would generate limited economic effects as the land area would remain largely unmodified and visitation would remain stable as most of the Pyramid area has been accessible and open. Because of its proximity to the long-established Desolation Wilderness (which has been a designated primitive area since 1931, and wilderness since 1969), the Pyramid area is generally viewed as a natural scenic boundary to the Desolation and that remains its strongest value.

If non-wilderness:

Effects on wilderness characteristics and values: Little of the Pyramid Roadless Area is expected to change if it is not added to the Desolation Wilderness. The status of the Pyramid Roadless Area as such is the critical determinant for that stability in the areas natural characteristics and future value. Its steep terrain has provided an "unofficial" buffer on the eastern boundary of the Desolation .

Mitigation, if any. No special mitigation is necessary.

Effects on non-wilderness resources and uses: Should the Pyramid Roadless Area remain in its current status, existing resources and uses would stay in their present condition unless the Roadless designation was modified to allow greater development or a change in resource or vegetation treatment prescriptions.

Economic and social effects: Similar to the alternative option of wilderness, should the Pyramid area remain in its present management status, there are no anticipated noteworthy changes in either the economic or social outputs of conditions.

Dardanelles Roadless Area

If wilderness:

Effects on wilderness characteristics and values: The Dardanelles Roadless Area is a substantially natural area offering a diversity of landscapes, and scenic opportunities. The Dardanelles has been used as an alternative destination to the Desolation Wilderness because of its easy accessibility and semi-primitive natural condition. Its boundary offers a relatively well defined and manageable land area should it become wilderness. The area offers opportunities for solitude and is relatively free of human developments or modifications with the exception of a historic cabin and barn located in the southern portion of the area. Rock dams were installed 50-years ago for fisheries management at several of the major lakes within Dardanelles. If designated as a wilderness, the Dardanelles area would retain wilderness attributes for wildlife habitat but would require a vegetation management prescription appropriate to a wilderness area; though to date there have not been any treatments. For well over a century, grazing was permitted in the Dardanelles area, but this activity was eliminated several years ago (note that grazing is allowed in wilderness areas).

Effects on non-wilderness resources and uses: There are no motorized uses within the Dardanelles area. In recent years, there have been an increasing number of mountain bikers accessing the Dardanelles Roadless Area; however this activity has been restricted to portions of the existing trail system, and prohibited on the Pacific Crest Trail segment that traverses the southern and western portions of the Dardanelles. Should this area become designated as a wilderness, this mechanized activity would need to be variously modified and regulated to preserve the overall wilderness character of the Dardanelles, and allow users an outstanding opportunity for solitude or primitive and unconfined recreation. Alternatives would include eliminating that mechanized use as per the guidance of the National Wilderness Preservation Act, or the boundary of the Dardanelles modified to accommodate that activity outside of designated wilderness.

Designation could lead to adverse effects to the Meiss Cabin and Barn and historic dams at Showers, Dardanelles, and Round lakes if the designation did not include enabling legislation to allow for preservation of these structures.

Economic and social effects: The Dardanelles is already well established as a “wilderness-like” natural area within the Tahoe Basin, and provides a diversity of semi-primitive recreation opportunities. Its multiple lakes and meadows offer scenic opportunities as well as opportunities for wildflower viewing and non-motorized winter recreation and horseback riding. Accordingly, the marginal increase in the economic contribution if the area was to be designated as a wilderness would be modest (estimated currently to be in excess of $100,000), annually largely generated through camping equipment rentals and purchases, and also, there is a single outfitter guide permit at this time, authorized during the winter months to utilize the cabin).

If non-wilderness:

Effects on wilderness characteristics and values: If maintained as a roadless area, the Dardanelles would likely retain its natural character and integrity. Vegetative prescriptions however may alter the present natural appearance of portions of the area. The area would maintain its overall character and capability to support a diverse community of native plants and wildlife.

Mitigation, if any. None required.

Effects on non-wilderness resources and uses: Mechanized recreational activities would continue, and the Dardanelles area would continue to experience a potential increase in visitation as an alternative to the quota-limited Desolation Wilderness. That unregulated use would eventually generate user impacts around popular lakes and destination within the Dardanelles that would require management attention. Permitted use of the "Meiss" cabin & barn would continue under special use authorization and potentially expand to include summer outfitter guiding activities.

Economic and social effects: If the Dardanelles area is not converted to formal wilderness status, but its status remains unchanged, it will continue to experience growing visitation as an alternative to other roadless areas within the area, as it is meeting the public's demand for a "wilderness-like" setting that accommodates most popular semi-primitive activities as hiking, backpacking, camping, fishing, skiing and saddle stock opportunities. Because a non-wilderness designation for the Dardanelles area does not substantially alter the present economic values respective to the current values respective to the status of the Dardanelles area, the projected economic contribution would be similar to its wilderness status outputs.

Freel/Jobs Peak Roadless Area

If wilderness:

Effects on wilderness characteristics and values: This prescription for the Freel Roadless Area would support the distinctive natural attributes of this moderately to severely steep land area (80% of the Freel area has slopes in excess of 30%). Along with other south shore area roadless areas, the Freel area has provided an alternative destination to the Desolation Wilderness, with relatively easy accessibility and wilderness character. The higher elevations of the Freel area offer panoramic views of the Tahoe Basin and across the lake and of the Desolation Wilderness, and shaded urban views. Along some portions of the Freel area are some moderate improvements such as roads, powerlines and structures. Some vegetation management prescriptions would be affected. Maintaining the area as "roadless," would also ensure its long-term integrity as a relatively natural appearing land area. A cushion plant community at the top of Freel Peak would be protected.

Effects on non-wilderness resources and uses: Approximately half of the Freel Roadless Area is presently accessible by snowmobiles and contains designated OHV routes and system roads and trails. These routes are also popular with mountain bikers, especially sections around Tucker Flat (known as "Mr. Toad's Wild Ride.") and a Tahoe Rim Trail segment above Star Lake. These popular activities would be prohibited or would need to be otherwise regulated. Other effects besides vegetation management prescription changes, may involve flight patterns for aircraft approaching the South Tahoe Airport, and maintenance of power lines.

Designation could lead to adverse effects to the historic dam at Star Lake if the designation did not include enabling legislation to allow for preservation of this structure.

Economic and social effects: Projections done in the 1988 Forest Plan indicated that a wilderness designation for the Freel area would generate up to 3 person years of annual employment and that would generate $36,000 of annual income. Any income stimulated by a wilderness designation of the area would come from such actions as backcountry equipment sales and rentals, related supplies and clothing, along with map sales, and potentially income from outfitter-guiding permitting. Adjusted for inflation and the presence of outfitter-guides, that estimated annual income is estimated to be around $100,000 annually. Most anticipated social effects will be positive with the significant exception of those nonconforming recreational uses such as mountain biking and snowmobiling, as designation of the Freel area as a formal wilderness would create substantial obstacles to the continuation of those uses which have been established in large portions of the Freel area for several decades. Accordingly, from an economic perspective of wilderness designation, there would be a loss of income if there was an elimination of access and recreational uses from mountain bikers and snowmobilers (equipment rental, maintenance, operations) of $50,000 or more annually (note at present, there are no outfitter-guide permitted operations in the Freel area).

If non-wilderness:

Effects on wilderness characteristics and values: The Freel Roadless Area would continue to provide a substantially natural setting that largely provides wilderness-like characteristics and opportunities for solitude and primitive recreation. Designated areas within the Freel would accommodate the demand for mechanized and motorized recreation.

Mitigation, if any: None

Effects on non-wilderness resources and uses: Non-wilderness designation would essentially allow the present mixed uses to continue, while allowing management of the area to continue to provide a diverse habitat for wildlife, and also opportunities for primitive recreation along with opportunities for solitude.

Economic and social effects: To maintain the Freel Roadless Area in its present non-wilderness status would accommodate a significant mixture of mechanized and motorized access opportunities along with allowing the Freel area to maintain most of its wilderness attributes and values. The natural integrity and solitude of the area would be maintained, and the effect on the economy would be relatively inconsequential. That combination of effects reflects Freel is a scenic and habitat resource that also is valued by the community for its accessibility along with its natural and scenic character. Economically, the approximate value for non-wilderness use would be similar to wilderness use.

Lincoln Creek Roadless Area

If wilderness:

Effects on wilderness characteristics and values: The Lincoln Creek Roadless Area is a relatively steep (over 80% of the lands have slopes greater than 30%), moderately natural area that still provides important habitat to wildlife. With a complex boundary that interfaces with urban areas on the western and southern portions, there is moderate opportunity for solitude or primitive recreation opportunities.

With few trails and limited water sources, the Lincoln Creek area is not easily accessible internally nor has any unique destinations. It greatest value is as a substantially naturally appearing forested area overlooking the east shore of the Lake Tahoe Basin.

Effects on non-wilderness resources and uses: Areas of Lincoln Creek are located adjacent to urban zones, and wilderness designation would have substantial impacts on the present recreational uses (primarily mountain biking and snowmobile uses).

Economic and social effects: Because the Lincoln Roadless Area has not attracted significant recreational use respective to its potential as a wilderness, there are mixed effects probable if it was designated. Since opportunities for solitude are moderate and the Lincoln Creek area has relatively low unique or scenic features, the social values would be moderate. Respective to the Forest LMP, the projected economic benefits of Lincoln Creek as a wilderness would also be relatively low (estimated at $17,000 in 1988, projected to $75,000 in 2009 if outfitter guiding services are permitted in this area).

If non-wilderness:

Effects on wilderness characteristics and values: If the Lincoln Creek Roadless Area is maintained as such, the area should retain its attributes of natural integrity, solitude and primitive recreation opportunities.

Mitigation, if any: None

Effects on non-wilderness resources and uses: The Lincoln Creek area would continue to accommodate nonconforming wilderness recreational activities such as mountain biking and snowmobiling uses, and the extensive urban interface areas would remain accessible for users. The area would accommodate vegetative management prescriptions.

Economic and social effects: Maintaining the present natural condition would allow continued opportunities for solitude and maintain available scenic attributes. Non-wilderness economic effects would derive from the continuation of activities such as snowmobiling and mountain biking. There is some associated use by the permitted Zephyr Cove Resort Snowmobiling operations on small portions of the Lincoln Creek Roadless Area.

Mt. Rose Wilderness Additions

If wilderness:

Effects on wilderness characteristics and values: The proposed additions to the present Mt. Rose Wilderness would further increase the contiguous area of protected land and would greater buffer the core wilderness area. Larger areas of land not only provide for greater opportunities for solitude but allow for a primitive experience away from roads and development. Ecosystem attributes are also further protected and buffered against human development and intrusion. The Mt. Rose additions would bolster wilderness character and add greater value to this wilderness unit as a whole.

Effects on non-wilderness resource and users: In particular, the Relay Addition, (northeasterly addition) would directly conflict with winter motorized use. Currently the area identified for potential wilderness designation is heavily used during the winter as a snowmobile playground. Wilderness designation would eliminate this user group, who mostly travel from the metropolitan areas of Reno and Sparks to recreate

off Highway 431. During the summer months, mechanized use is generally restricted to the road that access's the Relay Communication station and doesn't travel through the Relay addition.

Economic and social effects: Wilderness designation would benefit those seeking solitude and a primitive experience. Eliminating snowmobiles would expand more area for non-motorized use during the winter. Conversely wilderness designation for the Relay addition would create a cherry-stem of non designated land between the proposed addition and another "non-motorized" segment on the Humboldt-Toiyabe National Forest that lies further to the east further complicating an already difficult and contentious area to manage.

If non-wilderness:

Effects on wilderness characteristics and values: Without wilderness designation this proposed addition will continue to see intense winter motorized use. Therefore many aspects of wilderness character such as solitude and non-motorized recreation will not be available. There is little value for wilderness recreation under current conditions. The land still does provide for an overall natural setting, although small in scope.

Mitigation, if any: None

Effects on non-wilderness resources and uses: The Mt. Rose addition would continue to provide a natural setting that allows for mixed use. Ever increasing motorized use could potentially lead to point source pollution of Incline Lake and the water resources of Lake Tahoe.

Economic and social effects: Maintaining non-wilderness status of this segment will continue to support local businesses that sell and service snow machines. It will also continue to provide for the whole spectrum of recreation opportunity classes. Economically, the approximate value for non-wilderness use would be similar to wilderness use.

Granite Chief Wilderness Additions

If wilderness:

Effects on wilderness characteristics and value: The proposed additions to the present Granite Chief wilderness would further increase the contiguous area of protected land and would provide more buffer to the core wilderness area. While its small size constrains its potential as a "stand-alone" wilderness, formal wilderness designation would permanently ensure protection of an area where the Pacific Crest Trail traverses and would allow for the wilderness attributes that the PCT tries to achieve. Inclusion into the NWPS would protect the headwaters of Blackwood Creek, increase the size of the present wilderness, buffer the core Granite Chief Wilderness and further provide true wilderness designation for another segment of the PCT. These all together increase the value and overall goals sought for wilderness designation.

Effects on non-wilderness resources and uses: Currently these two additions allow winter motorized use by snowmobiles. Although the terrain and vegetation is not conducive to snowmobiles, wilderness designation would eliminate this use. There are also several 4WD roads and trails nearby that facilitate motorized and mechanical use (mountain bikes) which could cause management difficulties if the areas were wilderness. Vegetative prescriptions would also be eliminated if the land were wilderness.

Economic and social effects: Most anticipated effects would be positive, but not drastically different than present conditions present. The largest effect socially would be to eliminate snowmobile use from where it's already allowed.

If non-wilderness:

Effects on wilderness characteristics and value: Any potential roadless area that remains undesignated is potentially subject to non-conforming wilderness uses. Vegetative prescriptions and further user-created motorized trail development are the main concerns. Also degradation of undisturbed wildlife habitat by snowmobile intrusion and increasingly motorized recreational uses could reduce wilderness character and value.

Mitigation, if any: None

Effects on non-wilderness resources and uses: Use would remain the same, unchanged under a non-wilderness status. Mixed use would be allowed to continue.

Economic and social effects: To maintain the Granite Chief additions in non-wilderness status would accommodate the mixed use regime that is established today. Economic effects pertaining to this area would remain the same.

Table C6. Summary of Assessments (by Area)

Area Name	Capability [1]	Availability [2]	Need [3]
Desolation Wilderness additions - Pyramid 0519-001	0 High	0 High	L
	2 Moderate	1 Moderate	
	3 Low	5 Low	
Dardanelles Roadless 0519-002	4 High	0 High	H
	1 Moderate	1 Moderate	
	0 Low	5 Low	
Freel/ Jobs Peek Roadless 0519-003	0 High	1 High	M
	5 Moderate	1 Moderate	
	0 Low	4 Low	
Lincoln Creek Roadless 0519-004	0 High	0 High	L
	3 Moderate	2 Moderate	
	2 Low	4 Low	
Mt. Rose Wilderness Additions 0519-005	0 High	1 High	L
	3 Moderate	1 Moderate	
	2 Low	4 Low	
The Granite Chief Wilderness Additions 0519-006	0 High	0 High	L
	3 Moderate	1 Moderate	
	2 Low	5 Low	

Key [1] – Areas capability for wilderness designation

- Desirable ratings are High and Moderate
- Variety and Abundance of wildlife Natural and Free from Disturbance
- Outstanding opt for Solitude & Unconfined Rec. Special Feature and Values
- Manageability

Key [2] – Potential for other resource potentials beyond wilderness

- Desirable ratings are Low or Moderate
- Areas with high value for comm. Sites Areas with existing OHV or mechanized use Areas needing active vegetation restoration
- Areas having high mineral value
- Areas with unique character
- Lands committed thru contracts-wild conflicts

Key [3] – Determination of need for an area to be designated as wilderness

- Desirable rating is High
- Analysis narrative describes the degree to which it contributes to the overall National Wilderness Preservation System.

Stated Rating is a summary average based upon narrative of the six stated criteria.

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Appendix D – LTBMU Climate Change Trend Assessment

A summary of current trends and probable future trends in climate and climate- driven processes in the Lake Tahoe Basin and the neighboring Sierra Nevada

Hugh Safford, Regional Ecologist, USDA Forest Service, Pacific Southwest Region. hughsafford@fs.fed.us; 707-562-8934

Contents:

D.1. Local trends in climate over the past century

The data presented in this section are derived from the 98-year weather station record from Tahoe City, California, on the north shore of Lake Tahoe (WRCC 2008), and the annual State of the Lake Report published by the UC-Davis Tahoe Environmental Research Center (TERC 2008). Spatial data are also presented from the PRISM climate dataset, which extrapolates weather station records to the landscape for all years beginning in the late 19th century (Daly et al. 1994, PRISM 2010).

Temperature

Over the last century, mean annual temperature in the Lake Tahoe Basin (LTB) has risen by about two degrees Fahrenheit (Fig. D1). This trend is driven by a highly significant increase in mean minimum (i.e., nighttime) temperatures, which have risen by four degrees F since 1910. For the first time on record, the annual average of the monthly mean minima is now above the freezing point (Fig. D1). At the beginning of the last century, seven to eight months in a year could be expected to have average nighttime temperatures that fell below freezing. Today the average is closer to six months, and the trend is strongly downward. The average number of days in a year on which the average air temperature remains below freezing has dropped by 27 days since 1910 (78 to 51; TERC 2008). The LTB rise in nighttime temperatures is higher than in most California locations and may be linked to the thermal mass of Lake Tahoe, whose surface waters have increased in temperature by one degree F in only the last 25 years (TERC 2008).

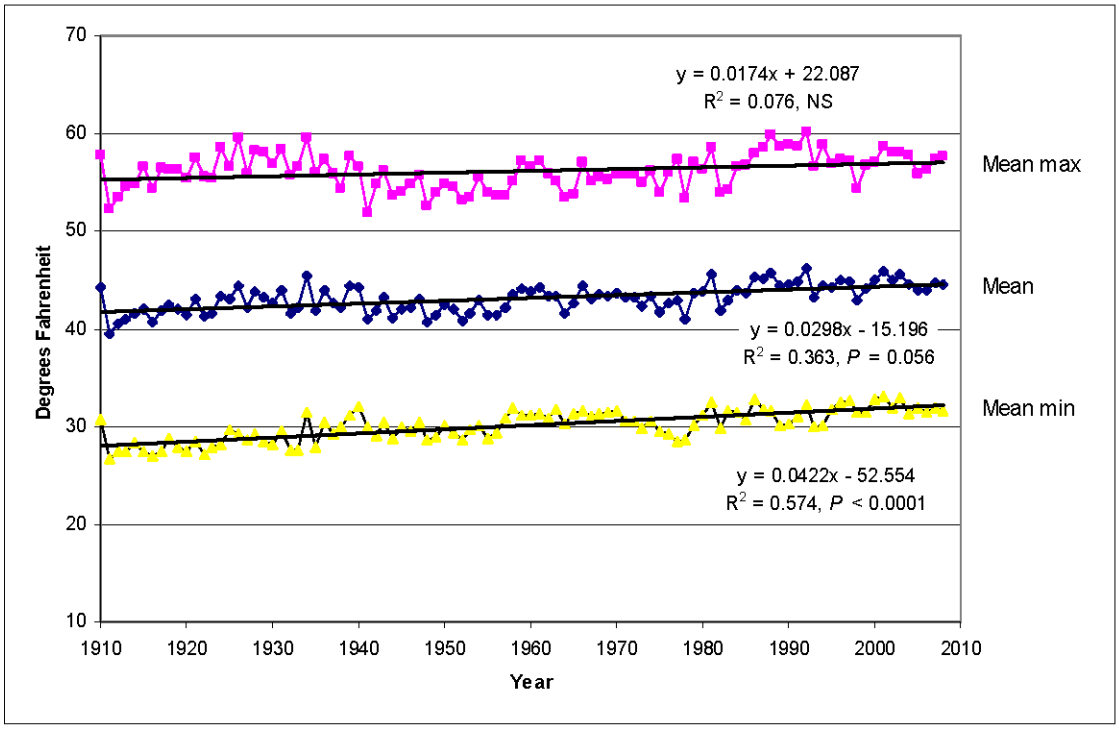

Figure D1. Annual mean, mean maximum, and mean minimum temperatures at Tahoe City, California, 1910-2008.
Trend lines fit with simple linear regression, no transformations employed. Data from WRCC 2008.

Precipitation

The 98-year trend in LTB precipitation is shown in Fig. D2. Average annual precipitation has risen by almost 7 inches per year over the period, but there is very high interannual variability, such that the value predicted by the regression line in Fig. 2 is rarely representative of the actual annual mean. Of the months of the year, only August showed an even marginally significant increase in precipitation over the period of record (R2 = 0.034, P = 0.067), with the average August precipitation rising from about 0.2 to about 0.4 inches (1% of annual precipitation). There were no significant increases in precipitation by season, and the distribution of precipitation across the year has remained similar through the record (WRCC 2008). The 5-yr coefficient of variation in annual precipitation is rising over time (Fig. D3), which demonstrates that year-to-year variability in precipitation has increased over the course of the last century. Further evidence of high variability in recent annual precipitation sums can be seen in the last quarter-century of records: nine of the 20 wettest years have occurred since 1980, and two of the top three since 1995, but 2007 and 2008 are among the ten driest years on record. Mean annual snowfall has not changed significantly over the last century (TERC 2008), but when combined with the precipitation trend, it is obvious that the proportion of

precipitation falling as snow (vs. rain) is dropping. At the beginning of the last century, about 54% of precipitation fell as snow, today the average is about 34%. Streamflow data show that peak snowmelt in the LTB is occurring 2½ weeks earlier today than at the beginning of the 1960's, when the record began (TERC 2008).

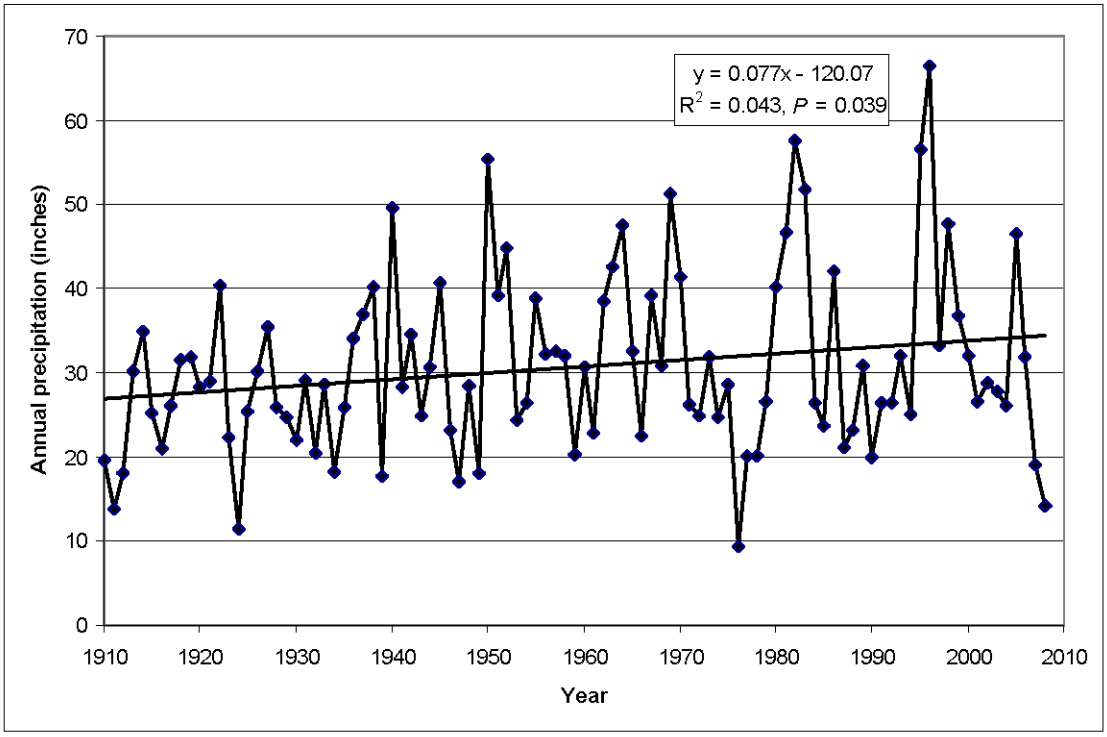

Figure D2. Mean annual precipitation at Tahoe City, California, 1910-2008. Data from WRCC 2008.

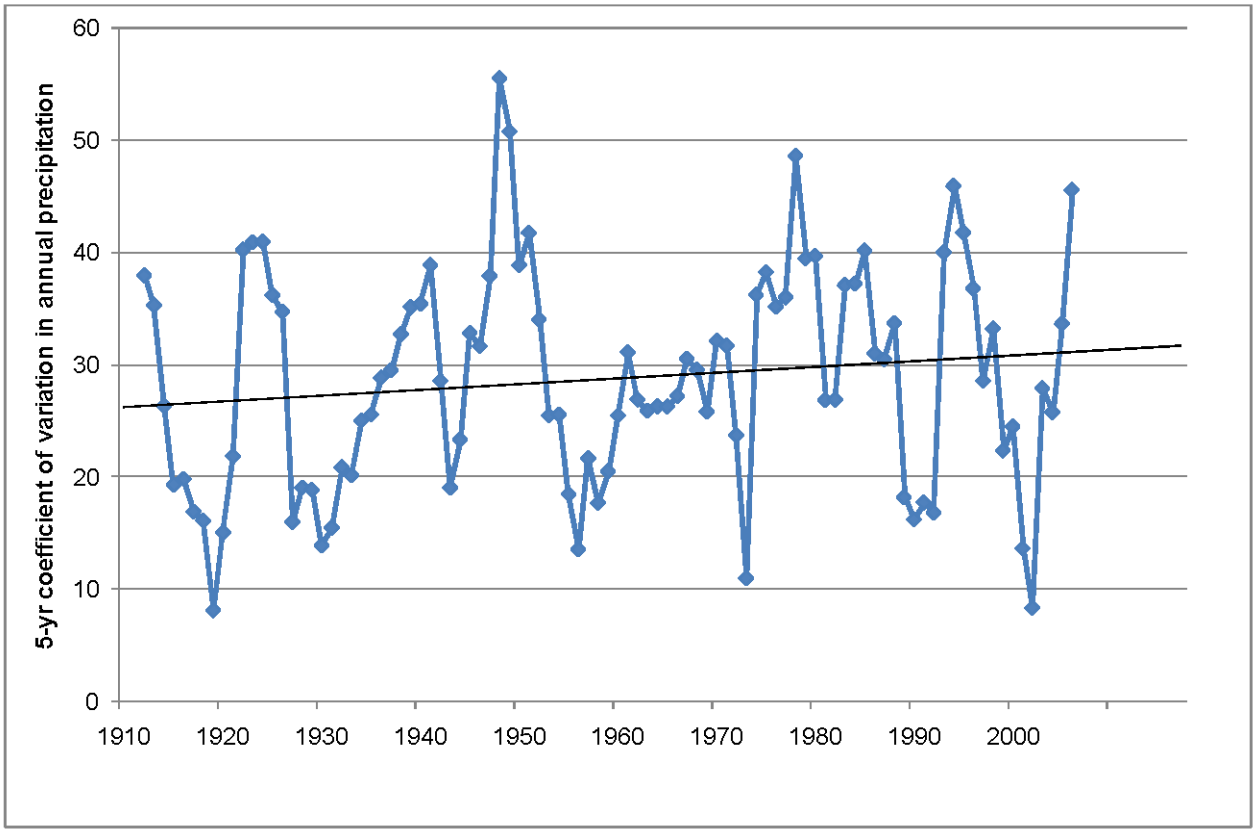

Figure D3. Five-year coefficients of variation in annual precipitation at Tahoe City, California, 1910-2008.
Data from WRCC 2008.

Snowpack measurements show a strong downward trend across northern California over the last ½ century, with the Sierra Nevada near Lake Tahoe experiencing decreases of >70% in snow water equivalent in many places (Fig. D4).

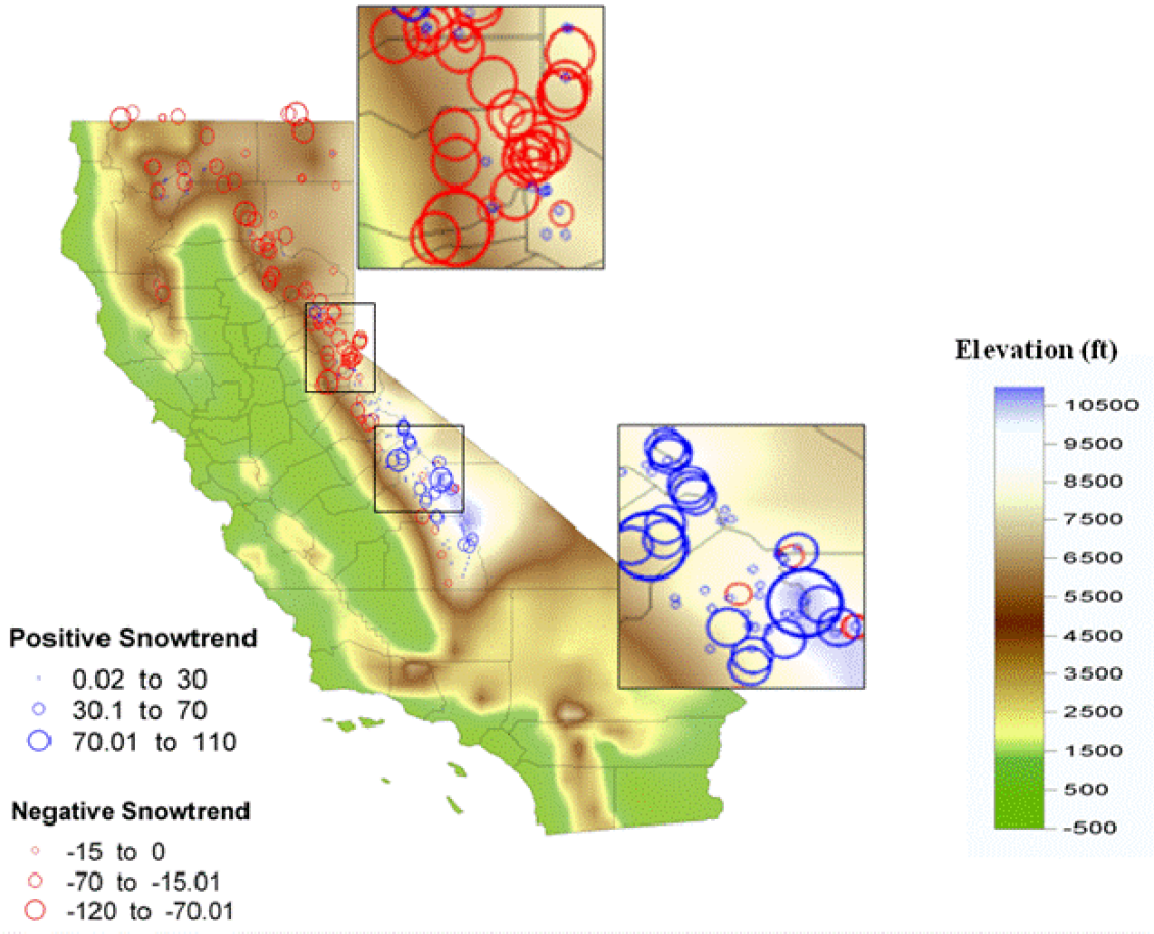

Figure D4. Trends in the amount of water contained in the snowpack ("snow water equivalent") on April 1, for the period 1950-1997.
Red circles indicate percent decrease in snow water, blue circles indicate increase in snow water. From Moser et al. (2009).

The PRISM dataset shows that the area of the Sierra Nevada adjoining Lake Tahoe has experienced substantial increases in both temperature and precipitation over the last ¾ century (Fig. D5). This agrees with the trends from the Tahoe City station, but hides substantial variation among specific weather station sites.

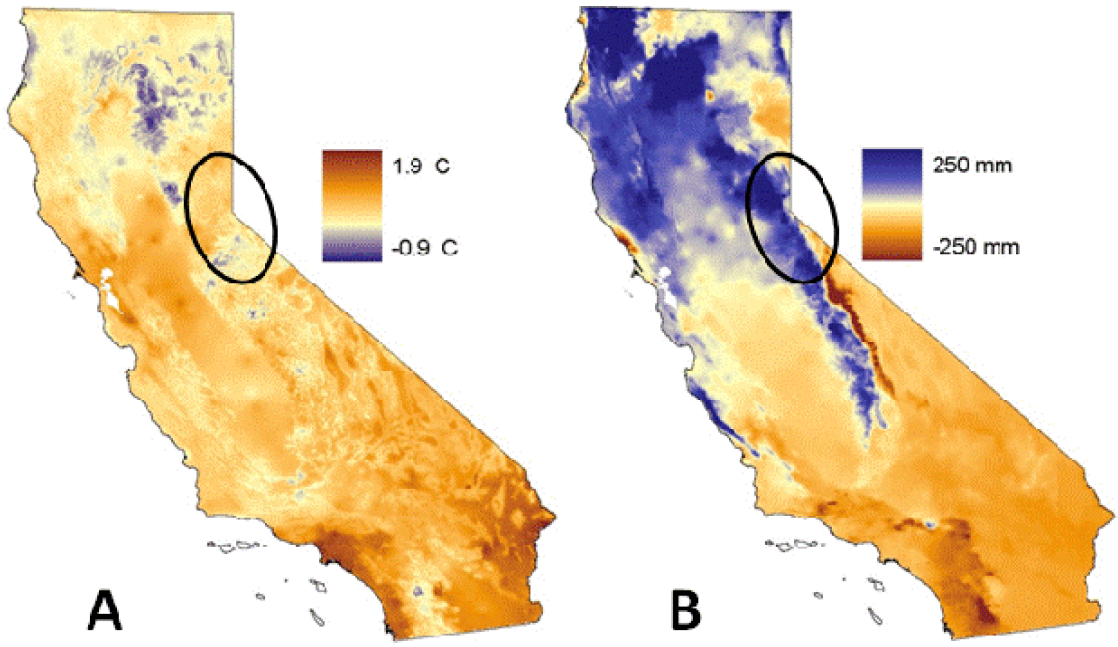

Figure D5. Spatial differences in mean annual temperature (A), and mean annual precipitation (B) between the 1930's and 2000's, as derived by the PRISM climate model.
The LTBMU is found in the middle of the circled area. Both temperatures and precipitation have risen across most of the circled area, although precipitation has generally dropped east of the Sierra Nevada crest. Graphic courtesy of S. Dobrowksi, Univ. of Montana.

D.2. Regional trends over the last century linked to climate change

Hydrology

Stewart et al. (2005) showed that the onset of spring thaw in most major streams in the central Sierra Nevada occurred 5-30 days earlier in 2002 than in 1948, and peak streamflow (measured as the center of mass annual flow) occurred 5-15 days earlier. During the same period, March flows in the studied streams were mostly higher by 5-20%, but June flows were mostly lower by the same amount; overall spring and early summer streamflow was down in most studied streams. Rising winter and spring temperatures appear to be the primary driver of these patterns (Stewart et al. 2005). Coats (2010) examined the shift in snowmelt timing in the Lake Tahoe Basin between 1972 and 2007 and found that the timing of the spring snowmelt peak occurred about two weeks earlier in 2007 than in 1972.

Forest fires

Data on forest fire frequency, size, total area burned, and severity all show strong increases in the Sierra Nevada over the last two to three decades. Westerling et al. (2006) showed that increasing frequencies of large fires (>1000 acres) across the western United States since the 1980's were strongly linked to increasing temperatures and earlier spring snowmelt. The Sierra Nevada was one of two geographic areas of especially increased fire activity, which Westerling et al. (2006) ascribed to an interaction between climate and increased fuels due to fire suppression. Westerling et al. (2006) also identified the Sierra Nevada has being one of the geographic regions most likely to see further increases in fire activity due to future increases in temperature. Miller et al. (2009) showed that mean and maximum fire size, and total burned area in the Sierra Nevada have increased strongly between the early 1980's and 2007. Climatic variables explain very little of the pattern in fire size and area in the early 20th century, but 35-50% of the pattern in the last 25 years. The mean size of escaped fires in the Sierra Nevada was about 750 acres until the late 1970's, but the most recent ten-year average has climbed to about 1100 acres. Miller et al. (2009) also showed that forest fire severity (a measure of the effect of fire on vegetation) rose strongly during the period 1984-2007, with the pattern centered in middle elevation conifer forests. Fires at the beginning of the record burned at an average of about 17% high (stand-replacing) severity, while the average for the last ten-year period was 30%. Miller et al. (2009) found that both climate change and increasing forest fuels were necessary to explain the patterns they analyzed.

Forest Structure

Fire suppression has been practiced as a federal policy since 1935. Pre-Euroamerican fire frequencies in high elevation forests such as red fir (>50 years in most places) and subalpine forest (>100 years) were long enough that fire suppression has had little or no impact on ecological patterns or processes (Miller et al. 2009). Higher elevation forests are also much more remote, less likely to have economic uses, and are often protected in Wilderness Areas and National Parks, so impacts by logging or recreation use are minimal. Subalpine tree growth has been shown to be strongly influenced by higher precipitation and warm summers (Graumlich 1991). Long-term changes in stand structure in higher elevation forests are thus more likely to represent responses to changes in exogenous factors like climate.

In the early 1930's, the Forest Service mapped vegetation in the Lake Tahoe Basin and neighboring National Forests, and sampled thousands of vegetation plots (Wieslander 1935). Bouldin (1999) compared the Wieslander plots with the modern FIA inventory and described changes in forest structure. In red fir forest, Bouldin (1999) found that densities of young trees had increased by about 40% between 1935 and 1992, but densities of large trees had decreased by 50% during the same period. In old-growth stands, overall densities and basal areas were higher, and the number of plots in the red fir zone dominated by shade-tolerant species increased at the expense of species like Jeffrey pine and western white pine. In old-growth subalpine forests, Bouldin (1999) found that young mountain hemlock was increasing in density and basal area while larger western white pine was decreasing. In whitebark pine stands, overall density was increasing due to increased recruitment of young trees, but species composition had not changed. Lodgepole pine appears to be responding favorably to increased warming and/or increased precipitation throughout the subalpine forest.

Bouldin (1999) also studied mortality patterns in the 1935 and 1992 datasets. He found that mortality rates had increased in red fir, with the greatest increases in the smaller size-classes. At the same time, in subalpine forests, lodgepole pine, western white pine, and mountain hemlock all showed decreases in mortality. The subalpine zone was the only forest type Bouldin (1999) studied where mortality had not greatly increased since the 1935 inventory. This suggests that climate change (warming, plus steady or higher precipitation) is actually making conditions better for some tree species in this stressful environment. Dolanc et al. (2010) recently completed a study that resampled Wieslander plots in the subalpine zone between Yosemite National Park and the Lake Tahoe Basin. Corroborating Boulding (1999), they found that growing conditions in the subalpine zone were probably better today than in the 1930's, as the density of small trees of almost all species had increased greatly in the 75 year period. Dolanc et al.'s (2010) direct plot-to-plot comparison also found that mortality of large trees had decreased density of the subalpine forest canopy, but the overall trend was for denser forests with no apparent change in relative tree species abundances.

Van Mantgem et al. (2009) recently documented widespread increases in tree mortality in old- growth forests across the west, including in the Sierra Nevada. Their plots had not experienced increases in density or basal area during the 15-40 year period between first and last census. The highest mortality rates were documented in the Sierra Nevada, and in middle elevation forests (3300-6700 feet). Higher elevation forests (>6700 feet) showed the lowest mortality rates, corroborating the Bouldin (1999) findings. Van Mantgem et al. (2009) ascribed the mortality patterns they analyzed to regional climate warming and associated drought stress. Comparisons of the 1930's Wieslander vegetation inventories and map with modern vegetation maps and inventories show large changes in the distribution of many Sierra Nevada vegetation types over the last 70-80 years (Fig. D6a, D6b; Bouldin 1999, Moser et al. 2009, Thorne and Safford, unpub. data). The principal trends are (1) loss of yellow pine dominated forest, (2) increase in the area of forest dominated by shade-tolerant conifers (especially fir species), (3) loss of blue oak woodland, (4) increase in hardwood dominated forests, (5) loss of subalpine and alpine vegetation, and (6) expansion of subalpine trees into previous permanent snowfields. Trends (4) through (6) appear to have a strong connection to climate warming, while trends (1) through (3) are mostly the product of human management choices, including logging, fire suppression, and urban expansion.

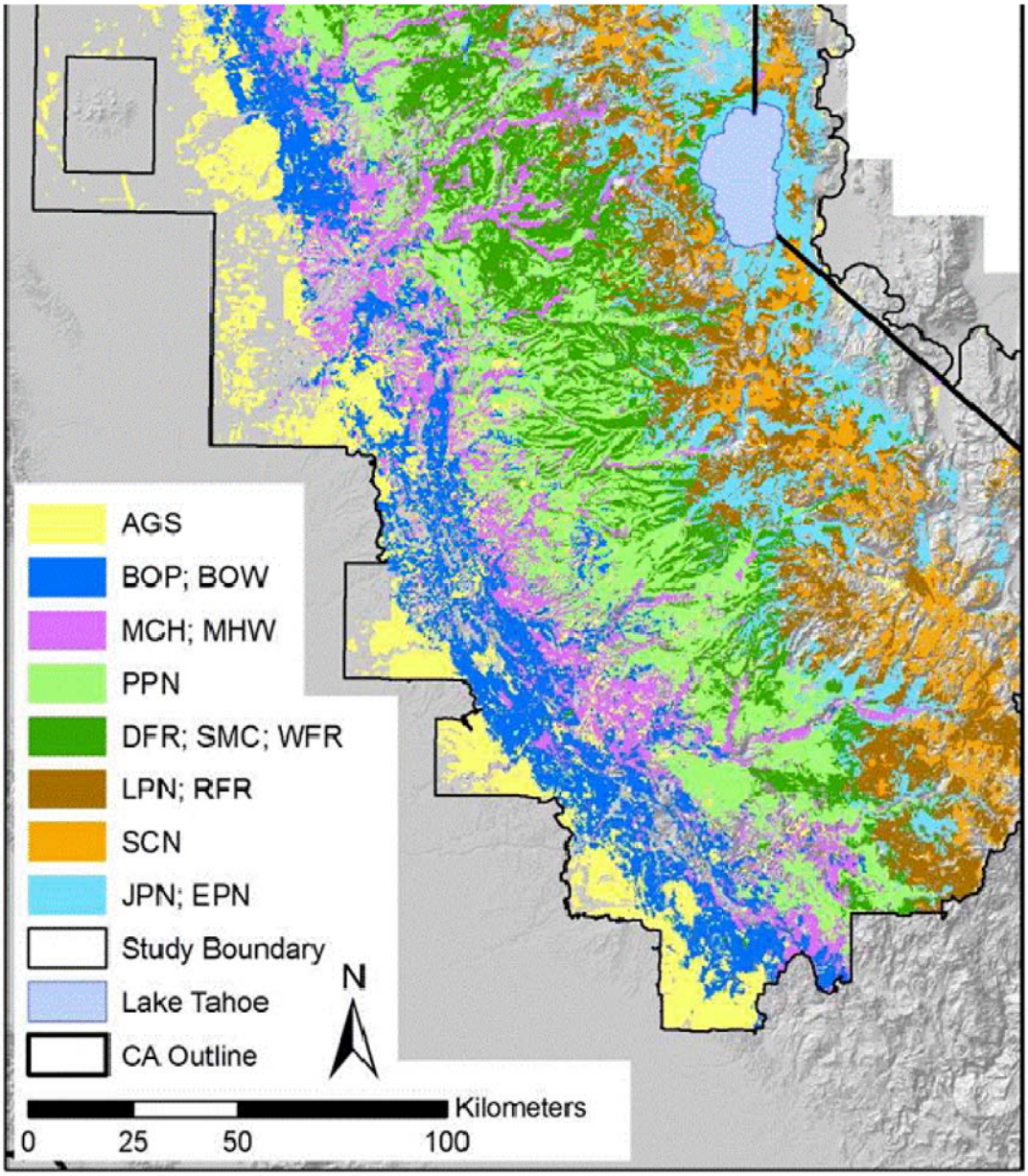

Figure D6a. Distribution of major vegetation types in the central and northern Sierra Nevada in the period 1932-1936.
Mapped by the US Forest Service "Wieslander" mapping project. Maps digitized and vegetation types cross-walked to CWHR type by UC-Davis Information Center for the Environment. AGS = agriculture; BOP = blue oak/foothill pine; BOW = blue oak woodland; MCH = mixed conifer hardwood; MHW = mixed hardwood; PPN = ponderosa pine; DFR = Douglas-fir; SMC = Sierra mixed conifer; WFR = white fir; LPN = lodgepole pine; RFR = red fir; SCN = Subalpine conifer; JPN = Jeffrey pine; EPN = eastside pine.

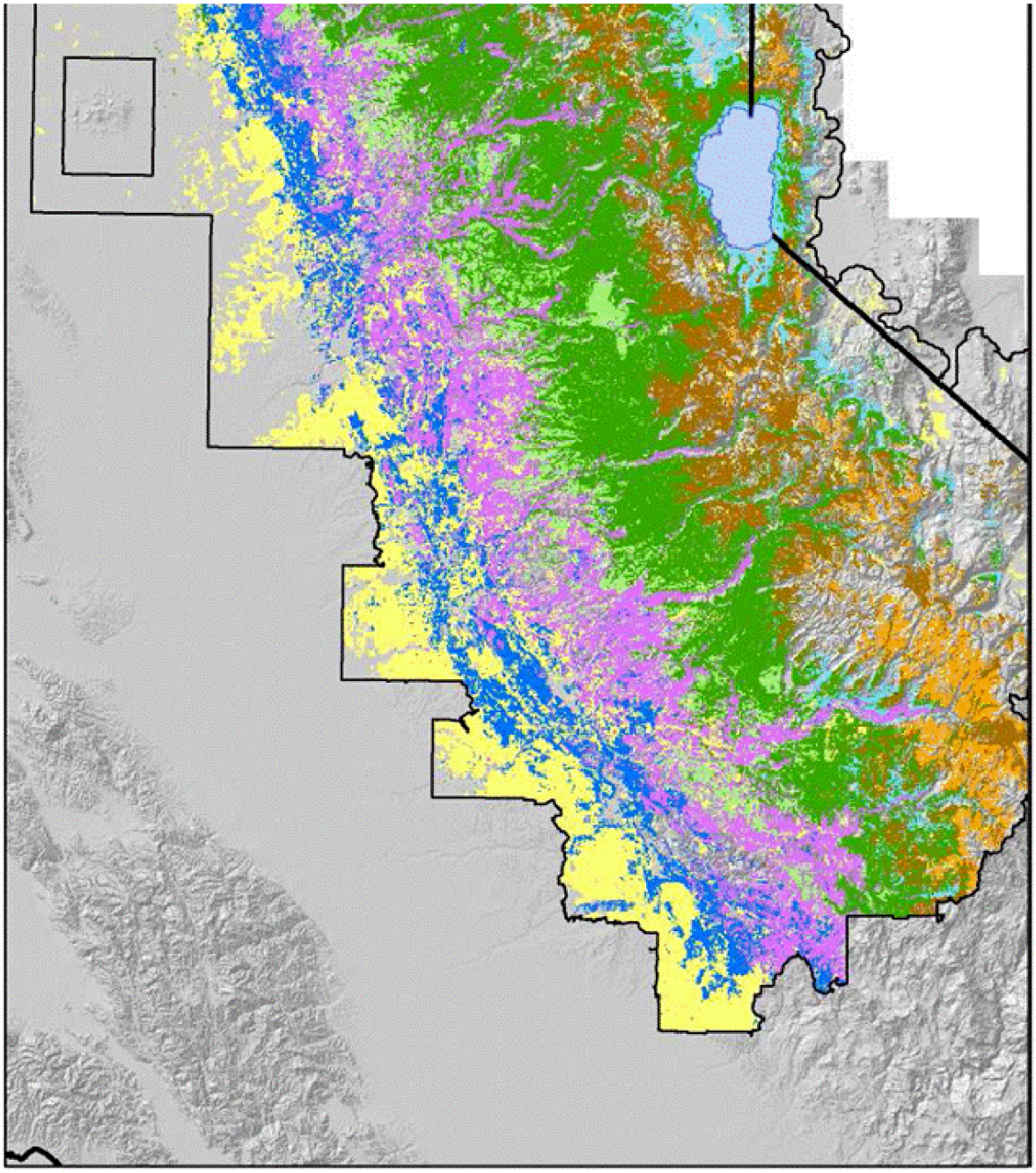

Figure D6b. Distribution of major vegetation types in the central and northern Sierra Nevada in 2000. *Mapped by the US Forest Service Pacific Southwest Region Remote Sensing Laboratory. See Fig. 6 (A) for key and scale. The major patterns of change between 1934 and 2000 are: (1) loss of yellow pine (ponderosa and Jeffrey pine) dominated forest; (2) expansion of shade tolerant conifers (DFR, WFR, SMC); (3) loss of blue oak woodland; (4) increase in hardwood dominated forests; (5) loss of subalpine and alpine vegetation.*

Wildlife

Between 1914 and 1920, the Museum of Vertebrate Zoology (MVZ) at the University of California Berkeley surveyed the terrestrial vertebrate fauna at 41 sites along a transect that extended from the western slope of Yosemite National Park to an area near Mono Lake (Grinnell and Storer 1924). In the past decade, MVZ resurveyed the Yosemite transect to evaluate the near century-long changes in Yosemite's vertebrate fauna across this elevation gradient, stretching across numerous vegetation types (Mortiz 2007, Moritz et al. 2008). By comparing earlier and recent MVZ small mammal surveys, Moritz et al. (2008) came to several conclusions: (1) the elevation limits of geographic ranges shifted primarily upward, (2) several high-elevation species (e.g., alpine chipmunk; Tamias alpinus) exhibited range contraction (shifted their lower range limit upslope), while several low-elevation species expanded their range upslope, (3) many species showed no change in their elevational range, (4) elevational range shifts resulted in minor changes in species richness and composition at varying spatial scales, (5) closely-related species responded idiosyncratically to changes in climate and vegetation, and (6) most upwards range shifts for high-elevation species is consistent with predicted climate warming, but changes in most lower- to mid-elevation species' ranges are likely the result of landscape-level vegetation dynamics related primarily to fire history.

Similar distribution patterns have been observed for other faunal taxa throughout the Sierra Nevada. Forister et al. (2010) tracked 159 species of butterflies over 35 years in the central Sierra Nevada and observed upwards shifts in the elevational range of species, a pattern consistent with a warming climate. Tingley et al. (2009) resurveyed bird distributions along the Grinnell transects in the entire Sierra Nevada and concluded that 91% of species tracked changes in temperature or precipitation over time and 26% of species tracked both temperature and precipitation. This suggests that birds move in response to changing climates in order to maintain environmental associations to which they are adapted. The authors also suggest that combining climate and niche models may be useful for predicting future changes in regional bird distributions (Tingley et al. 2009). In contrast with other faunal studies, Drost and Fellers (1996) found that most frog and toad species in Yosemite exhibited widespread decline over the past several decades, regardless of elevation. Primary factors contributing to this faunal collapse throughout the Sierra Nevada include introduced predators, a fungal pathogen, pesticides, and climate change (Wake and Vredenburg 2008).

D.3. Future predictions

Climate

Statewidemodels

Relatively few future-climate modeling efforts have treated areas as restricted as the State of California. The principal limiting factor is the spatial scale of the General Circulation Models (GCMs) that are used to simulate future climate scenarios. Most GCMs produce raster outputs with pixels that are 10,000's of km2 in area. To be used at finer scales, these outputs must be downscaled using a series of algorithms and assumptions – these finer-scale secondary products currently provide the most credible sources we have for estimating potential outcomes of long- term climate change for California. Another complication is the extent to which GCMs disagree with respect to the probable outcomes of climate change. For example, a recent comparison of 21 published GCM outputs that included California found that estimates of future precipitation ranged from a 26% increase per 1º C increase in temperature to an 8% decrease (Gutowski et al. 2000, Hakkarinen and Smith 2003). That said, there was some broad consensus: all of the reviewed GCMs predicted warming temperatures for California, and 13 of 21 predicted higher precipitation (three showed no change and five predicted decreases). According to Dettinger (2005), the most common prediction among the most recent models (which are considerably more complex and, ideally, more credible) is temperature warming by about 9° F by 2100, with precipitation remaining similar or slightly reduced compared to today. Most models agreed that summers will be drier than they are currently, regardless of levels of annual precipitation.

The most widely cited of the recent California-wide modeling efforts is probably Hayhoe et al. (2005). Hayhoe et al. (2005) used two contrasting GCMs (much warmer and wetter, vs. somewhat warmer and drier) under low and high greenhouse gas emissions scenarios to make projections of climate change impact for California over the next century. By 2100, under all GCM x emissions scenarios, April 1 snowpack was down by -22% to -93% in the 6,700-10,000 feet elevation belt, and the date of peak snowmelt was projected to occur from 3 to 24 days earlier in the season. Average temperatures were projected to increase by 2 to 4 degrees F in the winter, and 4-8 degrees in the summer. Finally, three of the four GCM x emissions scenarios employed by Hayhoe et al. (2005) predicted strong decreases in annual precipitation by 2100, ranging from -91 to -157%; the remaining scenario predicted a 38% increase.

Localmodels

Until recently, no studies had projected future climates specifically for the area of the Lake Tahoe Basin. Coats et al. (2010) downscaled the GFDL and PCM General Circulation Models (GCMs) from the original 100 x 100 km output grid to a 12 x 12 km grid and provided 21st century projections of future climate and hydrology trends for the LTB based on the IPCC A2 (strong increase in Greenhouse gases [GHGs]) and B1 (moderate increase in GHGs) emissions scenarios. Coats et al.'s (2010) results project strong upward trends in maximum and minimum emperatures, with an increase of up to 9°F by 2100 under the A2 emissions scenario (the equivalent of dropping the elevation of the LTB by over 2500 feet), but no strong trends in annual precipitation amount, except for a slight drying trend projected by the GFDL-A2 scenario toward the end of the century. Coats et al. (2010) also project a continuing shift from snowfall to rain (from about 35% snowfall currently to 10-18% by 2100).

Hydrology

SierraNevada

Miller et al. (2003) modeled future hydrological changes in California as a function of two contrasting GCMs (the same GCMs used in Hayhoe et al. [2005] and Lenihan et al. [2003; see below]) and a variety of scenarios intermediate to the GCMs. Miller et al. (2003) found that annual streamflow volumes were strongly dependent on the precipitation scenario, but changes in seasonal runoff were more complex. Predicted spring and summer runoff was lower in all of the California river basins they modeled, except where precipitation was greatly increased, in which case runoff was unchanged from today (Miller et al. 2003). Runoff in the winter and early spring was predicted to be higher under most of the climate scenarios because higher temperatures cause snow to melt earlier. Flood potential in California rivers that are fed principally by snowmelt (e.g., streams in and around Lake Tahoe) was predicted to increase under all scenarios of climate change, principally due to earlier dates of peak daily flows and the increase in the proportion of precipitation falling as rain. These increases in peak daily flows are predicted under all climate change scenarios, including those assuming reduced precipitation (Miller et al. 2003). The predicted increase in peak flow was most pronounced in higher elevation river basins, due to the greater reliance on snowmelt. If precipitation does increase, streamflow volumes during peak runoff could greatly increase. Under the wettest climate scenario modeled by Miller et al. (2003), by 2100 the volume of flow during the highest flow days could more than double in many Sierra Nevada rivers. This would result in a substantial increase in flood risk in flood-prone areas like Sacramento or Reno. According to Miller et al. (2003), increased flood risk is a high probability outcome of the continuation of current climate change trends, because temperature, not precipitation, is the main driver of higher peak runoff. If scales, these outputs must be downscaled using a series of algorithms and assumptions – these finer-scale secondary products currently provide the most credible sources we have for climate

change leads not only to an increase in average precipitation but also a shift to more extreme precipitation, then peak flows would be expected to increase even more.

LakeTahoeBasin

In their recent assessment of potential climate change and hydrology trends in the Lake Tahoe Basin, Coats et al. (2010) project a continuing trend toward earlier snowmelt and runoff during the water year; increases in drought severity, especially toward the end of the century; and dramatic increases in flood magnitude in the middle third of the century, especially under the B1 emissions scenario. Current snowpack duration in the LTB is between 240 and 250 days. Under the most extreme future climate x emissions scenario (GFDL-A2), Coats et al. (2010) project a mean snowpack duration of only 184 days by the last third of the 21st century. The same scenario projects a loss in stream inflow into Lake Tahoe of 20-40% of baseline (average of 1967-1999) by 2100.

Vegetation

Lenihan et al. (2003, 2008) used a dynamic ecosystem model ("MC1") which estimates the distribution and the productivity of terrestrial ecosystems such as forests, grasslands, and deserts across a grid of 100 km2 cells. To this date, this is the highest resolution at which a model of this kind has been applied in California, but it is not of high enough resolution to be applied to the Lake Tahoe Basin as a unit. Based on their modeling results, Lenihan et al. (2003, 2008) projected that forest types and other vegetation dominated by woody plants in California would migrate to higher elevations as warmer temperatures make those areas suitable for colonization and survival. For example, with higher temperatures and a longer growing season, the area occupied by subalpine and alpine vegetation was predicted to decrease as evergreen conifer forests and shrublands migrate to higher altitudes (Fig. 7). Under their "wet future" scenarios, Lenihan et al. (2003, 2008) projected a general expansion of forests in northern California. With higher rainfall and higher nighttime minimum temperatures, broadleaf trees (especially oak species) were predicted to expand their distribution in many parts of the Sierra Nevada, and conifer-dominated forests were predicted to decrease in extent in the same areas. Under their "dry future" scenarios, Lenihan et al. (2003, 2008) predicted that grasslands would expand throughout the state, and that increases in the extent of tree-dominated vegetation would be minimal (Fig. 7). An expansion of shrublands into conifer types was also predicted, due to drought and increases in fire frequency and severity (see below). Hayhoe et al. (2005) also used the MC1 ecosystem model to predict vegetation and ecosystem changes under a number of different future greenhouse gas emissions scenarios. Their results were qualitatively similar to the Lenihan et al. (2003, 2008) results.

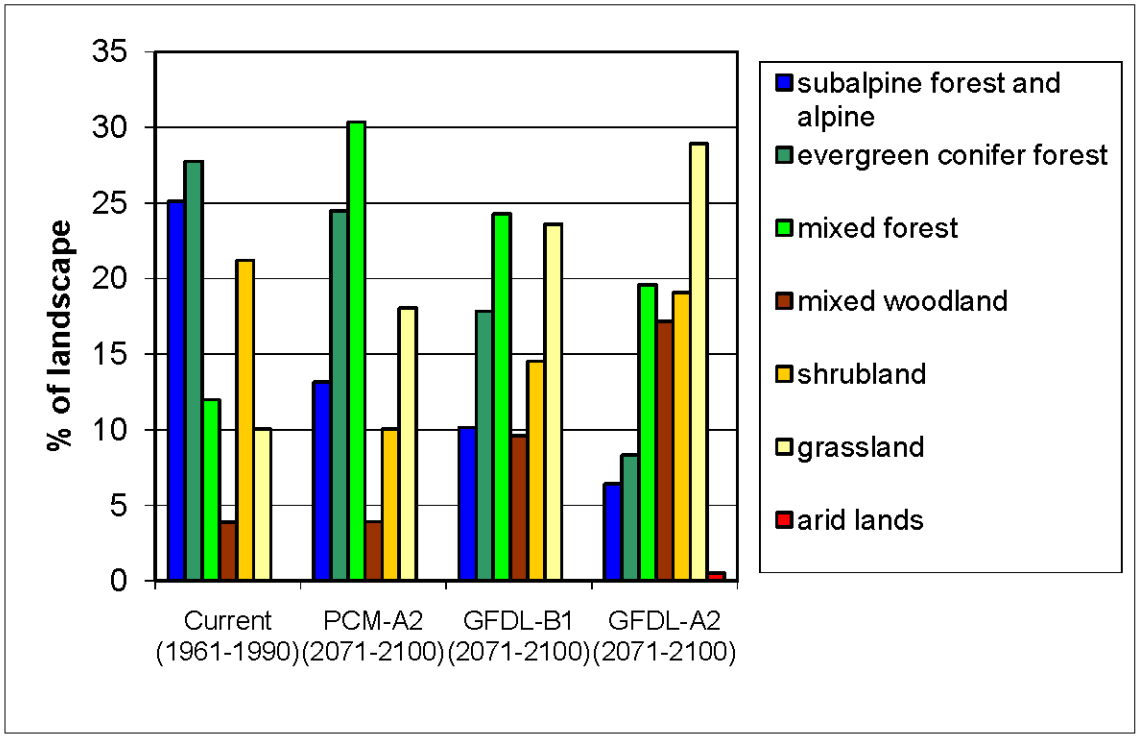

Figure D7. MC1 outputs for the Sierra Nevada Ecological Section, current vs. future projections of vegetation extent.
The LTBMU is found within this Ecological Section. The GFDL-B1 scenario = moderately drier than today, with a moderate temperature increase (<5.5° F); PCM-A2 = similar ppt. to today, with <5.5° temp. increase; GFDL-A2 = much drier than today and much warmer (>7.2° higher) All scenarios project significant loss of subalpine and alpine vegetation. Most scenarios project lower cover of shrubland (including west side chaparral and east side sagebrush), due principally to increasing frequencies and extent of fire. Large increases in the hardwood component of forests are projected in all scenarios. Large increases in cover of grassland are projected for the Section, principally at lower elevations. Conifer forest decreases in cover under all scenarios. From Lenihan et al. (2008).

Fire

The combination of warmer climate with higher CO2 fertilization will likely cause more frequent and more extensive fires throughout western North America (Price and Rind 1994, Flannigan et al. 2000); fire responds rapidly to changes in climate and will likely overshadow the direct effects of climate change on tree species distributions and migrations (Flannigan et al. 2000, Dale et al. 2001). A temporal pattern of climate-driven increases in fire activity is already apparent in the western United States (Westerling et al. 2006), and modeling studies specific to California expect increased fire activity to persist and possibly accelerate under most future climate scenarios, due to increased growth of fuels under higher CO2 (and in some cases precipitation), decreased fuel moistures from warmer dry season temperatures, and possibly increased thundercell activity (Price and Rind 1994, Miller and Urban 1999, Lenihan et al. 2003,2008; Westerling and Bryant 2006). By 2100, Lenihan et al.'s (2003, 2008) simulations suggest a c. 5% to 8% increase in annual burned area across California, depending on the climate scenario (Fig. 8). Increased frequencies and/or intensities of fire in coniferous forest in California will almost certainly drive changes in tree species compositions (Lenihan et al. 2003, 2008), and will likely reduce the size and extent of late-successional refugia (USFS and BLM 1994, McKenzie et al. 2004). Thus, if fire becomes more active under future climates, there may be significant repercussions for old growth forest and old growth-dependent flora and fauna.

A key question is to what extent future fire regimes in montane California will be characterized by either more or less severe fire than is currently (or was historically) the case. Fire regimes are driven principally by the effects of weather/climate and fuel type and availability (Bond and van Wilgen 1996). 70 years of effective fire suppression in the American West have led to fuel-rich conditions that are conducive to intense forest fires that remove significant amounts of biomass (McKelvey et al. 1996, Arno and Fiedler 2005, Miller et al. 2009), and most future climate modeling predicts climatic conditions that will likely exacerbate these conditions. Basing their analysis on two GCMs under the conditions of doubled atmospheric CO2 and increased annual precipitation, Flannigan et al. (2000) predicted that mean fire severity in California (measured by difficulty of control) would increase by about 10% averaged across the state. Vegetation growth models that incorporate rising atmospheric CO2 show an expansion of woody vegetation on many western landscapes (Lenihan et al. 2003, Hayhoe et al. 2005), which could feedback into increased fuel biomass and connectivity and more intense (and thus more severe) fires. Use of paleoecological analogies also suggests that parts of the Pacific Northwest (including northern California) could experience more severe fire conditions under warmer, more CO2-rich climates (Whitlock et al., 2003). Fire frequency and severity (or size) are usually assumed to be inversely related (Pickett and White 1985), and a number of researchers have demonstrated this relationship for Sierra Nevada forests (e.g. Swetnam 1993, Miller and Urban 1999), but if fuels grow more rapidly and dry more rapidly – as is predicted under many future climate scenarios – then both severity and frequency may increase. In this scenario, profound vegetation type conversion is all but inevitable. Lenihan et al.'s (2003, 2008) results for fire intensity predict that large proportions of the Sierra Nevada landscape may see mean fire intensities increase over

current conditions by the end of the century, with the actual change in intensity depending on future precipitation patterns.

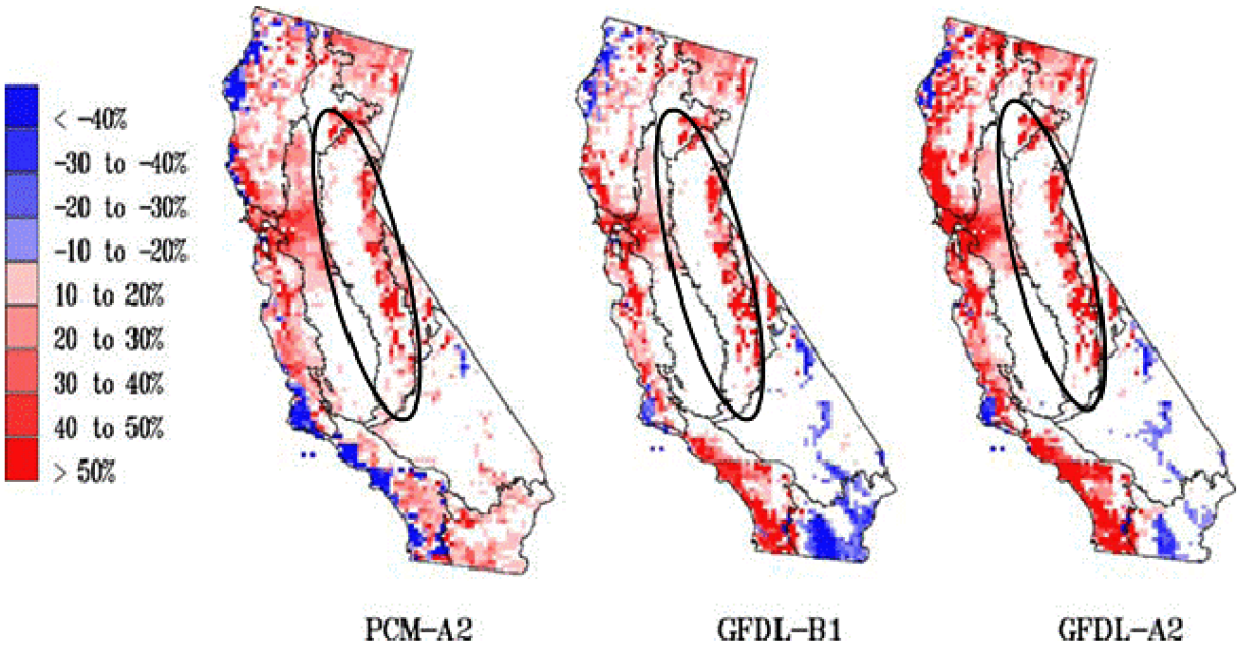

Figure D8. Percent change in projected mean annual area burned for the 2050-2099 period relative to the mean annual area burned for the historical period (1895-2003). *Sierra Nevada is circled. Figure from Lenihan et al. (2008). See Fig. 7 for description of the climate and emissions scenarios (PCM-A2, GFDL- B1, GFDL-A2).*

Appendix E – LTMBU Species Diversity

E.1 Forest-wide Biological Concepts

E.1.1 Biological Integrity

The biological integrity of aquatic or terrestrial ecosystems is defined as "the ability to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat of the region" (SNEP 1996). Further discussions of biological integrity are presented for the Lake Tahoe basin in the LTWA (2000) and for the Sierra Nevada Mountains in the SNEP (1996). Individual species are adapted to conditions within the natural range of variability and are presumed to derive the greatest benefits (e.g., increased fitness and reproductive success) from environmental conditions within this range.

E.1.2 Biological Diversity

The law (The Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA) (88 Stat. 476, et seq.), as amended by the National Forest Management Act of 1976 (NFMA) (90 Stat. 2949, et seq.; 16 U.S.C. 1601-1614)), set standards for land and resource management planning across the National Forest System, including a requirement related to diversity of plant and animal communities. Specifically, NFMA states that plans must:

> "(B) Provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives…"

The 1982 planning rule that implements this law requires the following be in forest plans:

- Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native species in the planning area (219.19)
- Each alternative shall establish objectives for the maintenance & improvement of habitat for MIS (219.19(a))
- Habitat determined to be critical for threatened and endangered species shall be identified, and measures shall be prescribed to prevent the destruction or adverse modification of such habitat. Objectives shall be determined for threatened and endangered species that shall provide for, where possible, their removal from listing as threatened and endangered species through appropriate conservation measures, including the designation of special areas to meet the protection and management needs of such species. (219.19(a) (7)).

E.1.3 Connectivity and Insularity

The connectivity of suitable habitats is a bio geographical concept often used to describe the probability that a suitable habitat may be utilized based on its spatial relationship to other suitable

habitats. The basic concept is founded on the idea that the probability of either of two suitable habitats having been, currently, or becoming occupied by a species increases with increases in the degree of connectivity between the suitable habitats. The mechanism of connectivity depends upon the species in question. Birds and fish obviously require different forms of habitat connectivity.

Insularity is a bio geographical concept that describes the inter-relationships of the conditions and processes between two or more habitats. For example, if a predator is known to forage along the boundary of two habitats (e.g., the edge of a meadow and a forest stand) then its prey species may require habitats located away from the habitat boundary (e.g., toward the interior of the forested stand) to survive and reproduce. The apparent suitability of habitats is, in this case, affected by the predator-prey relationship. Insularity may be described in relative degrees and may be either beneficial or detrimental depending on the ecological application (i.e., whether a given species is adapted to a high degree of insularity, as is often the case in island endemic species, or to a low degree of insularity, as is often the case in edge-adapted species).

Habitat fragmentation is a concept often used to describe how connectivity and insularity have changed over time at varying spatial scales (e.g., fragmentation at the stand versus landscape scale). Fragmentation can be defined as "loss of stand area, loss of stand interior area, changes in relative or absolute amounts of stand edge, and changes in insularity" (Turner 1989 in Buskirk and Ruggiero 1994).

E.1.4 Role of Fire

Fire plays a significant ecological role in Lake Tahoe Basin ecosystems. In many of the basin's vegetation types, fire is the primary disturbance agent setting the compositional and structural characteristics of the stand. The role that fire plays in a system is described by the system's fire regime, which is characterized by a number of attributes including fire return interval, fire intensity and severity, fuel consumption and spread patterns, seasonality etc. Different ecosystems and vegetation types have differing fire regimes inherent with the fuels, topography and climatic conditions associated with the system.

E.2 Species Lists

Biological documents (i.e. Biological Evaluation and Biological Assessment) have been prepared for the Draft EIS and Forest Plan and are available upon request. This section briefly highlights the purpose of those documents and the species considered for the Draft EIS and the Biological Evaluation and Biological Assessment.

The purpose of a **Biological Assessment** (BA) is to present an analysis of effects for the proposed project on federally listed endangered, threatened, candidate, and proposed species and their habitats. These federally listed species are managed under the authority of the Endangered Species Act (ESA) and the National Forest Management Act (NFMA; PL 94-588). The ESA requires federal agencies to ensure that all actions are not likely to jeopardize the continued existence of any federally listed species. The ESA requires that a BA be written and that the analysis conducted determine whether formal consultation or conference is required on the preferred alternative with the United States Department of Interior (USDI) Fish and Wildlife Service. For the Lake Tahoe Basin Management Unit (LTBMU), consultation has been agreed to

occur with both the Sacramento and Reno field offices (per the USDI 2004 coordination agreement). The BA is also prepared in compliance with the requirements of the ESA, Forest Service Manual 2670, and provides for compliance with Code of Federal Regulations (CFR) 50-402.12.

The purpose of a **Biological Evaluation** (BE) is to document Forest Service programs or activities in sufficient detail to determine how an action or proposed action may affect any threatened, endangered, proposed, candidate, or sensitive species and their habitats (FSM 2670.5). FSM 2672.4 directs us to complete the biological evaluation for all Forest Service planned, funded, executed, or permitted programs and activities for possible effects on Federally listed threatened, endangered, proposed, candidate, or species listed as sensitive by the Pacific Southwest Regional Forester (i.e. sensitive species). The BE, therefore, provides a process through which potential effects of the proposed action on sensitive species are evaluated and considered during the planning and review process. Part of the BE is completed to determine whether a proposed action or any of the alternatives will result in a trend toward the sensitive species becoming federally listed.

E.2.1. FWS List of Critical Habitat and Endangered, Threatened, Proposed, and Candidate Species for the LTBMU

The USDI Fish and Wildlife Service (FWS) species list is based on the most recent list of critical habitat designations, federally threatened, endangered, proposed, and candidate species for the Lake Tahoe Basin Management Unit (LTBMU). This list is periodically updated by the FWS as species become listed or delisted for the LTBMU. The most recent list for the LTBMU can be found on the FWS website at: http://www.fws.gov/sacramento/ES_Species/Lists/es_species_lists_NF-form-page.htm .

Currently there are no endangered species or critical habitat listed for the LTBMU.

Currently there are three threatened species for the LTBMU:

- **Lahontan cutthroat trout** (*Oncorhuynchus clarki henshawi*)
- **Delta smelt** (*Hypomesus transpacificus*)
- **Central Valley steelhead** (*Oncorhynchus mykiss*)

Currently there are no proposed species for listing for the LTBMU.

Currently there are five candidate species for the LTBMU:

- **Yosemite toad** (*Bufo canorus*)
- **Fisher** (*Martes pennanti*)
- **Sierra Nevada (mountain) yellow-legged frog** (*Rana muscosa*)
- **Tahoe yellow-cress** (*Rorippa subumbellata*)
- **White bark Pine** (*Pinus albicaulis)*

E.2.2. USFS List of Sensitive Species for the LTBMU

The list of Region 5 sensitive species is maintained by the Pacific Southwest Region - Regional Office and is periodically updated. The most recent list can be found on the USFS website at: http://www.fs.fed.us/r5/projects/sensitive-species/. The species listed in the table in this section are those that are currently listed as Forest Service Sensitive (FSS) for the LTBMU.

Table E1. Forest Service Sensitive (FSS) List for the LTBMU.

FSS - Group	Common Name	Scientific Name
Amphibians	**Northern leopard frog**	(*Rana pipiens*)
	Sierra Nevada yellow-legged frog	*(Rana sierrae)*
Birds	**Bald Eagle**	(*Haliaeetus leucocephalus*)
	California Spotted Owl	(*Strix occidentalis occidentalis*)
	Northern Goshawk	(*Accipiter gentiles*)
	Willow Flycatcher	(*Empidonax traillii adastus*)
Fish	**Lahontan cutthroat trout**	(*Oncorhynchus clarkii henshawi)*
	Lahontan Lake tui chub	(*Gila bicolor pectinifer)*
Invertebrate	**Great Basin rams-horn**	*(Helisoma newberryi newberryi*)

FSS - Group	Common Name	Scientific Name
Mammals	**American marten**	(*Martes americana*)
Mammals	**California wolverine**	(*Gulo gulo luteus*)
	Sierra Nevada red fox	(*Vulpes vulpes necator*)
	Townsend's big-eared bat	(*Corynorhinus townsendii*)
Plants	**Blandow's bog moss**	*Helodium blandowii*
	Bolander's candle moss	*Bruchia bolanderi*
	Branched collybia	*Dendrocollybia racemosa*
	Broad-nerved hump-moss	*Meesia uliginosa*
	Common moonwort	*Botrychium lunaria*
	Cup Lake draba	*Draba asterophora var macrocarpa*
	Galena Creek rock cress	*Arabis rigidissima var demota*
	Kellogg's lewisia	*Lewisia kelloggii ssp.hutchisonii*
	Kellogg's lewisia	*Lewisia kelloggii ssp kelloggii*
	Long-petaled lewisia	*Lewisia longipetala*
	Mingan moonwort	*Botrychium minganense*
	Scalloped moonwort	*Botrychium crenulatum*
	Short-leaved hulsea	*Hulsea brevifolia*

FSS - Group	Common Name	Scientific Name
Plants	**Slender moonwort**	*Botrychium lineare*
	Starved daisy	*Erigeron miser*
	Subalpine fireweed	*Epilobium howellii*
	Tahoe draba	*Draba asterophora var asterophora*
	Tahoe yellow cress	*Rorippa subumbellata*
	Three-ranked hump-moss	*Meesia triquetra*
	Tiehm's rock cress	*Arabis tiehmii*
	Torrey's or Donner Pass buckwheat	*Eriogonum umbellatum var. torreyanum*
	Upswept moonwort	*Botrychium ascendens*
	Veined water lichen	*Peltigera hydrothyria*
	Western goblin	*Botrychium montanum*
	White bark Pine	*Pinus albicaulis*
FSS – Forest Service Sensitive		

E.2.3. TRPA Threshold Species

In order to help maintain and protect natural resources in the Lake Tahoe Basin, the Tahoe Regional Planning Compact formed the Tahoe Regional Planning Agency (TRPA) Regional Plan which created and adopted environmental threshold carrying capacities ("thresholds" or "threshold standards") in two documents for fisheries and wildlife resources. These documents, the Goals and Policies (TRPA 1986) and the Code of Ordinances and Rules of Procedure (TRPA 1987), provide guidelines for threshold standards (TRPA 2002).

The Forest Service analyzes environmental consequences for the TRPA threshold species (listed in Table E2) to support attainment of the TRPA environmental threshold carrying capacities for fisheries and wildlife.

Additional information and updates to this list can be found at the TRPA website: http://www.trpa.org/ .

Table E2. TRPA Threshold Species List

TRPA Threshold Species	Population Sites	Disturbance Zone (mi.)
Northern goshawk (*Accipter gentiles*)	12	0.50
Osprey (*Pandion haliaetus*)	4	0.25
Bald eagle (winter) (*Haliaeetus leucocephalus*)	2	Mapped
Bald eagle (nesting)	1	0.50
Golden eagle (*Aquila chrysaetos*)	4	0.25
Peregrine falcon (*Falco peregrinus anatum*)	2	0.25
Waterfowl	18	Mapped
Mule deer (*Odocoileus hemionus*)	Critical fawning habitat	Meadows-Critical fawning habitat is mapped

E.2.4. Invasive Species

The LTBMU has identified and mapped areas on the Forest that include species identified as invasive by California Invasive Plant Council, Lake Tahoe Basin Weed Coordinating Group, Nevada Department of Agriculture (NDA) noxious weed list, Sierra Nevada Forest Plan Amendment, The California Department of Food and Agriculture's (CDFA) noxious weed list, and from the Lake Tahoe Aquatic Invasive Species Management Plan.

Invasive species rankings incorporates ecological impacts, invasive potential, and potential for effective management and control. High priority species are species that have likelihood for high ecological impacts, a high probability for invasion, and potential for effective management and control. The LTBMU works with interagency working groups to identify high, medium and low ranks for invasive species.

E.2.4.1. Terrestrial Invasive Plant Species

Lake Tahoe Basin Weed Coordinating Group (LTBWCG) prioritizes invasive weeds of concern for all of Lake Tahoe including the LTBMU. Rankings are shown in various groupings by agencies (e.g. Group 1: watch for, report, and eradicate immediately. Group 2: manage infestations with the goal of eradication), or can be determined using the ranking classification guidelines displayed at the end of this Appendix.

The California Department of Food and Agriculture's (CDFA) noxious weed list (http://www.cdfa.ca.gov/phpps/ipc/) divides noxious weeds into categories A, B, and C. A-listed weeds are those for which eradication or containment is required at the state or county level. With B-listed weeds, eradication or containment is at the discretion of the County Agricultural Commissioner. C-listed weeds require eradication or containment only when found in a nursery or at the discretion of the County Agricultural Commissioner. Q-listed weeds require temporary "A" action pending determination of a permanent rating.

Nevada Department of Agriculture (NDA) noxious weed list (http://agri.nv.gov/nwac/PLANT_NoxWeedList.htm divides) divides noxious weeds into categories A, B, and C. Category "A": Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations. Category "B": Weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur. Category "C": Weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer.

Sierra Nevada Forest Plan Amendment (SNFPA) part 3.6 defines noxious weeds as: those plant species designated as noxious weeds by Federal or State law. Noxious weeds generally possess one or more of the following characteristics: aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and generally non-native.

California Invasive Plant Council (Cal-IPC) invasive plant inventory (http://www.cal-ipc.org/ip/inventory/weedlist.php) categorizes non-native invasive plants by the ecological impacts of each plant on wildlands into three categories high, moderate, & limited as well as an alert. An "alert" is assigned for species with significant potential for invading new ecosystems. High: these species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Moderate: these species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Limited: these species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score.

Alien species: A species (including its seeds, eggs, spores, or other biological material capable of propagating that species) that is not native to a particular ecosystem. Executive Order 13112

Integrated Weed Management: An interdisciplinary pest management approach for selecting methods for preventing, containing, and controlling noxious weeds in coordination with other resource management activities to achieve optimum management goals and objectives. Methods include: education, preventive measures, herbicide, cultural, physical or mechanical methods, biological control agents, and general land management practices, such as manipulation of livestock or wildlife grazing strategies, which accomplish vegetation management objectives. USFS FSM 2900 Noxious Weed Management

Invasive Species: An alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Executive Order 13112

Native plant species: A plant species which occurs naturally in a particular region, state, ecosystem and habitat without direct or indirect human actions. FSM, 2070 Vegetation Ecology

Noxious Weed: A plant species designated as a noxious weed by the Secretary of Agriculture pursuant to the Plant Protection Act of 2000 or by the responsible State official. Noxious weeds generally possess one or more of the following characteristics: aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and being non-native or new to or not common to the United States or parts thereof. FSM, 2070 Vegetation Ecology

Plant materials: Seeds, spores, parts of plants or whole plants. FSM, 2070 Vegetation Ecology

Rehabilitation: Reparation of ecosystem processes, productivity and services based on functioning pre-existing or existing ecosystems, but allowing for adaptation of sites to specific current or future uses. FSM, 2070 Vegetation Ecology

Restoration: Assisting the recovery of an ecosystem that has been degraded, damaged or destroyed including the re-establishment of the pre-existing biotic integrity in terms of species composition and community structure. FSM, 2070 Vegetation Ecology

Revegetation: Re-establishment of plants on a site. FSM, 2070 Vegetation Ecology

Undesirable Plants: Plant species that are classified as undesirable, noxious, harmful, exotic, injurious, or poisonous pursuant to State or Federal laws. Species listed as threatened or endangered by the Secretary of the Interior according to the Endangered Species Act of 1973 are not classified as undesirable plants. USFS FSM 2900 Noxious Weed Management

The table presented in this section shows the full list of current weeds and invasive plants that are considered by the various groups in the Lake Tahoe area. The following order of prioritization in management of invasive plant species are: First Priority: Prevent the introduction of new invaders; Second Priority: Conduct early treatment of new infestations; and Third Priority: Contain and control established infestations.

Table E3. Terrestrial Invasive Plant Species (Noxious Weed) List

Common Name	Scientific Name	Weed Code	SNFPA	NDA	CDFA	Cal-IPC	LTBWCG	LTBMU
Russian knapweed	*Acroptilon repens*	ACRE3	NW	B	B	Moderate	Group 1	Medium
Tree of heaven	*Ailanthus altissima*	AIAL	NW		C	Moderate	Group 1	N/A
Cheat grass	*Bromus tectorum*	BRTE	NW			High		Low
Heart-podded hoarycress/whitetop	*Cardaria draba*	CADR	NW	C	B	Moderate	Group 1	Medium
Globe-podded hoarycress/hairy whitetop	*Cardaria pubescens*	CAPU6	NW		B	Limited	Group 1	Medium
Musk thistle	*Carduus nutans*	CANU4	NW	B	A	Moderate	Group 1	High
Purple starthistle/red starthistle	*Centaurea calcitrapa*	CECA2	NW	A	B	Moderate	Group 1	N/A
Diffuse knapweed	*Centaurea diffusa*	CEDI3	NW	B	A	Moderate	Group 1	Medium
Spotted knapweed	*Centaurea maculosa*	CEMA4	NW	A	A	High	Group 2	Medium
Yellow starthistle	*Centaurea solstitialis*	CESO3	NW	A	C	High	Group 1	Medium*
Squarrose knapweed	*Centaurea virgata ssp. squarrosa*	CESQ	NW	A	A	Moderate		Medium
Rush skeletonweed	*Chondrilla juncea*	CHJU	NW	A	A	Moderate	Group 1	High
Canada thistle	*Cirsium arvense*	CIAR4	NW	C	B	Moderate	Group 1	Medium
Bull thistle	*Cirsium vulgare*	CIVU	NW		C	Moderate	Group 2	High
Poison hemlock	*Conium maculatum*	COMA2		C		Moderate		Medium
Scotchbroom	*Cytisus scoparius*	CYSC4	NW		C	High	Group 2	Medium
Teasel/Fuller's teasel	*Dipsacus fullonum*	DIFU2				Moderate	Group 1	N/A
Stinkwort	*Dittrichia graveolens*	DIGR3				Moderate	Group 1	N/A
Quackgrass	*Elytrigia repense*	ELRE3	NW		B			N/A
Hydrilla/Waterthyme	*Hydrilla verticillata*	HYVE3	NW	A	A	High Alert		N/A
St. John's wort / Klamath weed	*Hypericum perforatum*	HYPE	NW	A	C	Moderate	Group 2	Medium
Dyer's woad	*Isatis tinctoria*	ISTI	NW	A	B	Moderate	Group 1	Medium
Tall whitetop / Perennial pepperweed/ broadleaved pepperweed	*Lepidium latifolium*	LELA2	NW	C	B	High	Group 2	Medium
Oxeye daisy	*Leucanthemum vulgare*	LEVU	NW			Moderate	Group 2	Medium
Dalmatian toadflax	*Linaria genistifolia spp. dalmatica*	LIDAD	NW	A	A	Moderate	Group 2	High
Yellow toadflax/butter & eggs	*Linaria vulgaris*	LIVU2		A		Moderate	Group 2	Medium
Purple loosestrife	*Lythrum salicaria*	LYSA2	NW	A	B	High	Group 1	Medium*

Common Name	Scientific Name	Weed Code	SNFPA	NDA	CDFA	Cal-IPC	LTBWCG	LTBMU
Eurasian watermilfoil	*Myriophyllum spicatum*	MYSP2	NW	A		High		N/A
Scotch thistle	*Onorpordum acanthium ssp. acanthium*	ONAC	NW	B	A	High	Group 1	High
Curlyleaf pondweed/curly pondweed	*Potamogeton crispus*	POCR3				Moderate		N/A
Sulfur cinquefoil	*Potentilla recta*	PORE5		A	A		Group 1	Low
Himalaya blackberry	*Rubus armeniacus (*formerly *R. discolor)*	RUAR9	NW			High		Low
Medusahead	*Taeniatherum caput-medusae*	TACA8	NW	B	C	High	Group 1	High*
Tamarisk/saltcedar	*Tamarix chinensis, T. ramosissima, & T. parvifolia*	TACH2 TARA TAPA4	NW	C	B	High	Group 1	High*
Woolly mullein/common mullein	*Verbascum thapsus*	VETH	NW			Limited		N/A

Table Notes:

NOT ALL LISTED CA/NV NOXIOUS WEEDS ARE LISTED. AS CONDITIONS CHANGE, NEW OCCURRENCE OF SPECIES MAY BE FOUND. THIS LIST WILL BE UPDATED CONTINUOUSLY AS NEW SPECIES ARE FOUND.

Sierra Nevada Forest Plan Amendment (SNFPA) part 3.6 defines noxious weeds as: those plant species designated as noxious weeds by Federal or State law. Noxious weeds generally possess one or more of the following characteristics: aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and generally non-native.

Nevada Department of Agriculture (NDA) noxious weed list (http://agri.nv.gov/nwac/PLANT_NoxWeedList.htm divides) divides noxious weeds into categories A, B, and C. Category A: Weeds not found or limited in distribution throughout the state; actively excluded from the state and actively eradicated wherever found; actively eradicated from nursery stock dealer premises; control required by the state in all infestations. Category B: Weeds established in scattered populations in some counties of the state; actively excluded where possible, actively eradicated from nursery stock dealer premises; control required by the state in areas where populations are not well established or previously unknown to occur. Category C: Weeds currently established and generally widespread in many counties of the state; actively eradicated from nursery stock dealer premises; abatement at the discretion of the state quarantine officer.

The California Department of Food and Agriculture's (CDFA) noxious weed list (http://www.cdfa.ca.gov/phpps/ipc/) divides noxious weeds into categories A, B, and C. A-listed weeds are those for which eradication or containment is required at the state or county level. With B-listed weeds, eradication or containment is at the discretion of the County Agricultural Commissioner. C-listed weeds require eradication or containment only when found in a nursery or at the discretion of the County Agricultural Commissioner. Q-listed weeds require temporary "A" action pending determination of a permanent rating.

California Invasive Plant Council (Cal-IPC) invasive plant inventory (http://www.cal-ipc.org/ip/inventory/weedlist.php) categorizes non-native invasive plants by the ecological impacts of each plant on wildlands into three categories high, moderate, & limited as well as an alert. An "alert" is assigned for species with significant potential for invading new ecosystems. High: these species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Moderate: these species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Limited: these species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score.

Lake Tahoe Basin Weed Coordinating Group (LTBWCG) prioritizes invasive weeds of concern by management group. Group 1: watch for, report, and eradicate immediately. Group 2: manage infestations with the goal of eradication (2010).

The Lake Tahoe Basin Management Unit (LTBMU) prioritizes noxious weeds based on their ecological impact and invasive potential and on the potential for effective management and control given the tools available to the LTBMU. A noxious weed can fall in to one of three categories: high, medium, or low. High: species that have a large ecological impact and/or invasive potential and that are easily controlled. Medium: species that have a medium ecological impact and/or invasive potential and medium ability to be controlled. Low: species that have a low ecological impact and/or invasive potential and are not easily controlled. The weighted ranking was used in this table except on those species where a weighted ranking was not given due to no current known occurrences on the LTBMU; those species are indicated with an asterisk (*). Species with an N/A were not evaluated. Evaluation of species can be done using the Development of Management Ranking System for Terrestrial Noxious Weeds/Invasive Plant Species, USDA Forest Service, Lake Tahoe Basin Management Unit, 2011, Gross & Olin.

E.2.4.2. Aquatic Invasive Species

The Lake Tahoe Region AIS Program is governed by existing Federal, State and local laws. Those relevant to water quality and/or to aquatic invasive species include but are not limited to:

Federal

- Nonindigenous Aquatic Nuisance Prevention and Control Act (NANPCA) of 1990, 16 USC 4721
- Endangered Species Act (ESA) of 1973
- Lacey Act of 1990 as amended in 1998
- National Environmental Policy Act of 1970
- National Invasive Species Act of 1996 (NISA)
- Clean Water Act of 1972
- Safe Drinking Water Act of 1974

State

- California-Nevada Compact for Jurisdiction on Interstate Waters
- California Environmental Quality Act (CEQA)
- California Fish and Game Code 2301
- Nevada Revised Statutes (NRS 503.597; NRS 488)

Regional

- Tahoe Regional Planning Compact (Public Law 96-551)
- Tahoe Regional Planning Agency Code of Ordinances (Chapter 79.3)

Further information on authorities and the parameters and abilities of the Lake Tahoe Region AIS program is provided in the *Lake Tahoe Region Aquatic Invasive Species Management Plan* which is available at http://www.trpa.org/documents/docdwnlds/AIS/LTAIS_Magmt_Plan_Final_11-2009.pdf.

AIS program in the Lake Tahoe Basin, including the LTBMU, is managed by the AIS Coordinating Committee. Members include representatives from the following government agencies and entities:

Federal

- USDOI, US Fish and Wildlife Service
- USDA, Agricultural Research Service
- USDA, US Forest Service, Lake Tahoe Basin Management Unit

State

- California Department of Fish & Game
- California Department of Parks and Recreation
- California Regional Water Quality Control Board (Lahontan)
- California State Lands Commission
- California Tahoe Conservancy
- Nevada Department of Conservation and Natural Resources
- Nevada Department of Wildlife

Regional

- Tahoe Regional Planning Agency
- Tahoe Resource Conservation District
- Tahoe Science Consortium (ex-officio)

The information for aquatic invasive species are continually updated and modified annually as new invasive species are identified, new sites are identified, and as management actions eradicate invasive. The list of aquatic invasive species presented in this section are the current aquatic invasive species that are considered of concern for the LTBMU.

Table E4. Aquatic Invasive Species List

Group	Common	Scientific
Aquatic	**Corbicula (Asian Clam)**	*Corbicula fluminea*
	Zebra Mussel	*Dreissena polymorpha*
	Quagga Mussel	*Dreissena rostriformis bugensis*
	New Zealand Mudsnail	*Potamopyrgus antipodarum*
	Bullhead Catfish	*Ameiurus spp.*
	Bluegill	*Lepomis macrochirus*
	Largemouth Bass	*Micropterus salmoides*
	Crappie	*Pomoxis spp.*
	Bullfrog	*Rana catesbeiana*

E.2.5. Species Specific Limited Operating Periods

This section notes the current expected limited operating periods for specific species that can be updated as new information becomes available and or as new species become listed or delisted. The following limited operating periods have been established to conform to the LTBMU site conditions.

E.2.5.1. Sierra Nevada (mountain) yellow-legged frog

Maintain a Sierra Nevada yellow-legged frog (Rana sierrae) LOP April 15 through August 15 within a minimum of 25 feet of known breeding sites. Prohibit habitat manipulation or other activity that could create bank disturbance unless surveys confirm that egg masses are not present.

E.2.5.2. Cliff Nesting Raptors

Do not construct roads and trails within ¼ mile of the top or base of known cliff nesting raptor sites. Within ¼ mile of occupied nest sites or habitat, prohibit activities such as rock climbing that may disrupt breeding during the raptor nesting season (April 1-July 31).

E.2.5.3. Marten

Maintain a marten LOP (May 1 through July 31) within ¼ mile of known den sites. Prohibit vegetation treatments and other activities that may disrupt breeding (e.g. timber thinning, prescribed fire, restoration, construction, road or trail building) within this area during the breeding season.

E.2.5.4. Willow flycatcher

Maintain a willow flycatcher LOP during the breeding season for activities that are likely to disrupt breeding within ¼ mile of occupied nest sites or habitat during the period of June 1 through August 31 (including no timber thinning, prescribed fire, restoration activities, grazing, utilities work, road or trail building).

E.2.5.5. Townsend's big-eared Bat

Maintain a Townsend's big-eared bat LOP May 1 through August 31 within a minimum of 300 feet of roost sites. Prohibit habitat manipulation or other activity that could create a noise disturbance unless surveys confirm that bats are not present; Prohibit burning near a roost site unless surveys confirm bats are not present or smoke will not enter the roost. Exceptions may be permitted when surveys confirm bats are not present.

E.2.5.6. California Spotted Owl and Northern Goshawk - Breeding

Maintain a California spotted owl and /or northern goshawk LOP during the breeding season for activities that may disrupt breeding within a minimum of ¼ mile of the nest site or activity center, unless surveys confirm that spotted owls are not nesting. When the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location prior to implementing activities.

E.2.5.7. California Spotted Owl and Northern Goshawk – Vegetation Treatments Waiver

The spotted owl and/or northern goshawk LOP may be waived for vegetation treatments when a biological review determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location. The LOP buffer distance may be modified when a biological review concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance.

E.2.5.8. California Spotted Owl and Northern Goshawk – Prescribed Fire Waiver

The spotted owl and/or northern goshawk LOP restrictions may be waived, where necessary, to allow for use of early season prescribed fire in PACs when surveys for the target species (per current protocol standards by Region 5) demonstrate that reproduction has not occurred within the PAC in at least the previous three years and the PAC was not occupied during the previous breeding season.

E.2.6. Full List of Species Considered for the Draft EIS

The table presented in this section displays the full list of FWS, LTBMU Sensitive, and other species considered for inclusion in the Draft EIS as of August 2011.

Species Considered - "N/A" indicates that a species was considered, but not included in the Draft EIS for analysis based on what is described in the "comments / rationale" column.

Status Definitions (NatureServe Rankings) - : G = Global Conservation Status - full species, range-wide; T = Global Conservation Status - subspecies, varieties, and population range-wide; N = National Conservation Status; S = State / Province Status; 1 = Critically Imperiled; 2 = Imperiled; 3 = Vulnerable; 4 = Apparently Secure; 5 = Secure.

Detailed information for all species can be found at: **http://www.natureserve.org/explorer/index.htm**. Just enter the species common or scientific name in the species quick search box and follow the on-line instructions. In cases where additional reference information was needed (beyond Nature Serve) to determine if the species would be carried forward for further consideration, the reference link is added into the "comments / rationale" column of the species table.

Table E5. Complete List of Species Considered within the LTBMU Draft EIS.

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Amphibians	**Western Toad**	*Bufo boreas*	G4, S5 (CA) S4 (NV)	meadow, riparian	Yes	Aquatic Ecosystem Management
Amphibians	**Yosemite Toad**	*Bufo canorus*	G2 Candidate Species	meadow, riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Amphibians	**Mount Lyell Salamander**	*Hydromantes platycephalus*	G3, SSC S3 (CA)	riparian, logs, woody debris	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Amphibians	**Foothill Yellow-legged Frog**	*Rana boylii*	G3, SSC	Rivers, Riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Amphibians	**California Red-legged Frog**	*Rana draytonii*	G2G3 Federally Threatened, SSC	riparian, ponds	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed; also not on FWS list
Amphibians	**Northern Leopard Frog**	*Rana pipiens*	G5, S2 (CA) S2S3 (NV), FSS	rivers, wetlands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Amphibians	**Sierra Nevada Yellow-legged Frog**	*Rana sierrae*	G1 Candidate Species, FSS	small lakes and wetlands	Yes	Species Specific Management
Amphibians	**Western Spadefoot**	*Spea hammondii*	G3, SSC, S3	intermittent pools, grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Arachnids	**A Cave Obligate Harvestman**	*Banksula galilei*	G1	only found in caves in Placer County	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed
Birds	**Cooper's Hawk**	*Accipiter cooperii*	G5 S3	riparian, general forest	N/A	uncommon in LTBMU
Birds	**Northern Goshawk**	*Accipiter gentilis*	G5, S2S3, FSS, SSC, CDF:S, TRPA-SI	riparian, general forest, late seral closed canopy	Yes	Species Specific Management
Birds	**Sharp-shinned Hawk**	*Accipiter striatus*	G5 S3	riparian, general forest	N/A	uncommon in LTBMU
Birds	**Tricolored Blackbird**	*Agelaius tricolor*	G2G3, S1(NV) S2 (CA), GB, SN, SSC	grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Grasshopper Sparrow**	*Ammodramus savannarum*	G5, SSC, S2 (CA, SU (NV)	grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Sage Sparrow**	*Amphispiza belli*	G5, SNRB,SNRN (CA) S4B,S4N (NV), GB	desert, shrubland	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Golden Eagle**	*Aquila chrysaetos*	G5, FP, TRPA-SI CDF:S, S3 (CA) , S4 (NV)	Alpine, Cliffs	Yes	Cliffs, Caves, and Cave Surrogates Management
Birds	**Great Egret**	*Ardea alba*	G5, S4 (CA) S4B (NV)	Riparian	N/A	local population considered secure

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Birds	**Great Blue Heron**	*Ardea herodias*	G5, S4 (CA) S5 (NV)	Riparian	N/A	local population considered secure
Birds	**Burrowing Owl**	*Athene cunicularia*	G4, SSC S2 (CA), S3B (NV) GB	Grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Ferruginous Hawk**	*Buteo regalis*	G4, S3S4 (CA) S2 (NV) GB	Desert, grassland, riparian, cliffs	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to accidental occurrence within the LTBMU
Birds	**Swainson's Hawk**	*Buteo swainsoni*	G5, S2 (CA) S2B (NV) GB, ST	Desert, grassland, riparian, woodlands	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to accidental occurrence within the LTBMU
Birds	**Sanderling**	*Calidris alba*	G5, SNRN (CA) SNA (NV), GB	Riparian, sand dunes	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to accidental occurrence within the LTBMU
Birds	**Greater Sage Grouse**	*Centrocercus urophasianus*	GB, SSC, S3 (CA) S3S4 (NV)	desert, grassland, shrubs	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Western Snowy Plover**	*Charadrius alexandrinus nivosus*	G4,T3, SSC S2 (CA) S3B (NV) GB	Riparian, sand dunes	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Birds	**Mountain Plover**	*Charadrius montanus*	G2	desert, grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Yellow-billed Cuckoo**	*Coccyzus americanus*	G5,SNRB (CA) S1B (NV)	Riparian, General Forest	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Western Yellow-billed Cuckoo**	*Coccyzus americanus occidentalis*	G5T3Q Candidate, SE S! (CA) S1B (NV)	Riparian, Wetlands, General Forest	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Olive-sided Flycatcher**	*Contopus cooperi*	G4, SSC S4 (CA) S2B (NV) SN	Riparian, Wetlands, General Forest	Yes per habitat but not in detail	General Forest Management
Birds	**Yellow Rail**	*Coturnicops noveboracensis*	G4, SSC S1S2 (CA) GB	riparian, grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Black Swift**	*Cypseloides niger*	G4, SSC S2 (CA) GB, SN	Aerial, Bare rock/talus/scree, Cliff	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to rare occurrence within the LTBMU
Birds	**A Yellow Warbler**	*Dendroica petechia brewsteri*	G5T3?, SSC S2 (CA) , MIS	riparian	Yes per habitat but not in detail	Aquatic Ecosystem Management
Birds	**White-tailed Kite**	*Elanus leucurus*	G5, FP S3 (CA)	croplands, riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Birds	**A Willow Flycatcher**	*Empidonax traillii adastus*	G5T5, SE S1S2, S3B (NV), FSS	wet meadow	Yes	Species Specific Management
Birds	**Prairie Falcon**	*Falco mexicanus*	S3 (CA) S4 (NV) GB	Alpine, Cliffs	Yes per habitat but not in detail	Cliffs, Caves, and Cave Surrogates Management
Birds	**Peregrine falcon**	*Falco peregrinus*	G4, SCD FP S2B,SNRN (CA) S2 (NV) GB, SN, TRPA-SI	Aerial, Cliffs, General Forest	Yes	Cliffs, Caves, and Cave Surrogates Management
Birds	**Bald Eagle**	*Haliaeetus leucocephalus*	G5, SE FP CDF:S S2 (CA) S1B,S3N (NV), TRPA-SI	Snags, Cliffs, Riparian, General Forest	Yes	General Habitat Management
Birds	**Harlequin Duck**	*Histrionicus histrionicus*	G4, S2 (CA)	Rivers, Riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Loggerhead Shrike**	*Lanius ludovicianus*	G4, SSC S4 (CA) , S4 (NV) GB	grasslands	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to rare occurrence within the LTBMU
Birds	**Black Rail**	*Laterallus jamaicensis coturniculus*	G4, S1 (CA)	wetlands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Birds	**California Black Rail**	*Laterallus jamaicensis coturniculus*	G4T1, ST FP, S1 (CA)	wetlands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Marbled Godwit**	*Limosa fedoa*	SNRN (CA) S3M (NV) GB	grasslands, sand dunes	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to rare occurrence within the LTBMU
Birds	**Lewis's Woodpecker**	*Melanerpes lewis*	G4, SNR (CA) S3 (NV) GB, SN	riparian, general forest	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to occasional occurrence within the LTBMU
Birds	**Long-billed Curlew**	*Numenius americanus*	G5, S2 (CA) S2S3B (NV) GB	grassland, riparian	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to rare occurrence within the LTBMU
Birds	**Whimbrel**	*Numenius phaeopus*	G5, SNRN (CA) SNA (NV), GB	grassland, riparian	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to accidental occurrence within the LTBMU
Birds	**Flammulated Owl**	*Otus flammeolus*	G4, S2S4 GB, SN	snags, general forest	Yes per habitat but not in detail	General Forest Management

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Birds	**Osprey**	*Pandion haliaetus*	G5, CDF:S S3 (CA) S1B, S3M (NV), TRPA-SI	Snags, Cliffs, Riparian, Shorelines	Yes	Aquatic Ecosystem Management; General Forest Management
Birds	**White-Faced Ibis**	*Pegadis chihi*	G5, S1 (CA) S3B (NV)	riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**American White Pelican**	*Pelecanus erythrorhynchos*	G3, SSC S1 (CA), S2B NV	riparian	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to occasional occurrence within the LTBMU
Birds	**Wilson's Phalarope**	*Phalaropus tricolor*	G5, SNRB,SNRN (CA) S2S3B,S4M (NV) GB	grassland, riparian	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to rare occurrence within the LTBMU
Birds	**White-headed Woodpecker**	*Picoides albolarvatus*	G4, SNR (CA) S2 (NV), GB, SN	snags, conifer forests	Yes	General Forest Management
Birds	**Black-backed Woodpecker**	*Picoides arcticus*	G5, S3 (CA) S1 (NV) , MIS	snags, conifer forests	Yes per habitat but not in detail	General Forest Management
Birds	**American Golden Plover**	*Pluvialis dominica*	G5, SNA (CA) SNA (NV), GB	riparian, grasslands, sand dunes	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Birds	**American Avocet**	*Recurvirostra americana*	G5, SNRB,SNRN (CA) S4B (NV), GB	riparian, marshes	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to rare occurrence within the LTBMU
Birds	**Bank Swallow**	*Riparia riparia*	G5, ST S2S3 (CA) S3B (NV)	riparian, grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Rufous Hummingbird**	*Selasphorus rufus*	G5, S1S2 (CA) S3M (NV), SN	riparian, alpine, conifer forest	Yes per habitat but not in detail	Aquatic Ecosystem Management
Birds	**Williamson's Sapsucker**	*Sphyrapicus thyroideus*	G5, S3 (CA) S2 (NV) GB, SN	snags, general forest	Yes per habitat but not in detail	General Forest Management
Birds	**Brewer's Sparrow**	*Spizella breweri*	G5, S3 (CA) S4B (NV) GB	desert, shrublands	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to rare occurrence within the LTBMU
Birds	**Great Gray Owl**	*Strix nebulosa*	G5, SE CDF:S, S1 (CA), FSS	riparian, general forest	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**California Spotted Owl**	*Strix occidentalis occidentalis*	G3T3, SSC S3 (CA), S1N (NV) GB, SN, FSS, TRPA-SI	snags, general forest	Yes	Species Specific Management

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Birds	**Solitary Sandpiper**	*Tringa solitaria*	G5, SNA (CA) S4N (NV), GB	wetlands, grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Virginia's warbler**	*Vermivora virginiae*	S2S3 (CA) S4B (NV), GB	riparian, general forest	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Gray Vireo**	*Vireo vicinior*	G4, SSC S2 (CA), S3B (NV) GB	riparian, general forest	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Birds	**Yellow-headed Blackbird**	*Xanthocephalus xanthocephalus*	G5, SSC S3S4 (CA), S4B (NV)	wetlands, grasslands	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to occasional occurrence within the LTBMU
Crustaceans	**Vernal Pool Fairy Shrimp**	*Branchinecta lynchi*	G3 Federally Threatened	vernal pools	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed; also not on FWS list
Crustaceans	**Vernal Pool Tadpole Shrimp**	*Lepidurus packardi*	G4 Federally Endangered	vernal pools	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed
Crustaceans	**California Fairy Shrimp**	*Linderiella occidentalis*	G3G4	vernal pools	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed
Fish	**Wall Canyon Sucker**	*Catastomus sp. 1*	G1	lakes and streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

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Fish	**Warner Sucker**	*Catastomus warnerensis*	G1 Federally Threatened	lakes and streams	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed; also not on FWS list
Fish	**Mountain Sucker**	*Catostomus platyrhynchus*	G5, S2S3	streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Tahoe Sucker**	*Catostomus tahoensis*	G5	streams	Yes	Aquatic Ecosystem Management, concern for local population
Fish	**Cui-ui**	*Chasmistes cujus*	G1 Federally Endangered	streams	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed; also not on FWS list
Fish	**Piute Sculpin**	*Cottus beldingi*	G5, S4	streams	Yes	Aquatic Ecosystem Management, concern for local population
Fish	**Sheldon Tui Chub**	*Gila bicolor eurysoma*	G4T1	streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Lahontan Lake Tui Chub**	*Gila bicolor pectinifer*	G4T3, S1S2, FSS	large lakes, lakezone	Yes	Large Lake Management
Fish	**High Rock Spring Tui Chub**	*Gila bicolor ssp. 11*	G4TX	streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Cowhead Lake Tui Chub**	*Gila bicolor vaccaceps*	G4T1	Cowhead slough	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

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Fish	**Delta smelt**	*Hypomesus transpacificus*	G1, S1, Federally threatened	California delta	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Lahontan Cutthroat Trout**	*Oncorhynchus clarkii henshawi*	G4T3 Fedrally Threatened	large lakes and streams	Yes	Species Specific Management
Fish	**Paiute Cutthroat Trout**	*Oncorhynchus clarkii seleniris*	G4T1T2	large lakes and streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Rainbow Trout**	*Oncorhynchus mykiss*	G5	lakes and streams	Yes	Recreational fisheries, Aquatic Ecosystem Management
Fish	**Central Valley steelhead**	*Oncorhynchus mykiss pop. 11*	G5T2Q, Federally Threatened	lakes and streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Redband Trout - Warner Valley**	*Oncorhynchus mykiss pop. 4*	G5T2Q	lakes and streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fish	**Kokanee Salmon**	*Oncorhynchus nerka*	G5	lakes and streams	Yes	Recreational fisheries, Aquatic Ecosystem Management
Fish	**Mountain Whitefish**	*Prosopium williamsoni*	G5, SNR (NV)	lakes and streams	Yes	Aquatic Ecosystem Management; concern for local population
Fish	**Lahontan Redside Shiner**	*Richardsonius egregius*	G5	rivers, lakezone	Yes	Aquatic Ecosystem Management; concern for local population

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Fish	**Brown Trout**	*Salmo trutta*	G5	lakes and streams	Yes	Recreational fisheries, Aquatic Ecosystem Management
Fish	**Brook Trout**	*Salvelinus fontinalis*	G5	lakes and streams	Yes	Recreational fisheries, Aquatic Ecosystem Management
Fish	**Lake Trout**	*Salvelinus namaycush*	G5	lakes	Yes	Recreational fisheries, Aquatic Ecosystem Management
Insects	**A Vernal Pool Andrenid Bee**	*Andrena blennospermatis*	G2	vernal pools	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed
	An Andrenid Bee	*Andrena subapasta*	G1G3	grassland forbs	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed - reference link: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/invert/Insects_-_Hymenoptera/Andrena_subapasta.pdf
	Tahoe Benthic Stonefly	*Capnia lacustra*	G1	deep water habitats (> 100feet) of Lake Tahoe	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components
	Carson Valley Wood Nymph	*Cercyonis pegala carsonensis*	G5T2 S1S2 (CA) / S2 (NV)	Great Basin valleys on Nevada	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed - reference link: http://www.flmnh.ufl.edu/butterflies/research/allyn_pdfs/AME135small.pdf

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Insects	**Cosumnes Stripetail**	*Cosumnoperla hypocrena*	G1	intermittent streams of the American and Cosumnes Rivers	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed
	Kings Canyon Cryptochian Caddisfly	*Cryptochia excella*	G1G2	benthic, springs & brooks in specific locations in CA / NV	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed - reference link: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/invert/Insects_-_Trichoptera/Cryptochia_excella.pdf
	A Longhorned Beetle	*Desmocerus californicus*	G3	riparian forests of the Central Valley of CA	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Valley Elderberry Longhorn Beetle	*Desmocerus californicus dimorphus*	G3T2 Federally Threatened	riparian forests of the Central Valley of CA	N/A	species occurs outside the LTBMU - Lake Tahoe Watershed - also not on LTBMU FWS list - reference link: http://essig.berkeley.edu/endins/desmocer.htm
	Amphibious Caddisfly	*Desmona bethula*	G2	high elevation, first order streams	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Dotted Blue	*Euphilotes enoptes aridorum*	G5T1	urban areas	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

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Insects	**Mono Lake Checkerspot**	*Euphydryas editha monoensis*	G5T2T3	Grasslands, herbaceous, Woodland, Conifer	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	A Montane Ant (Northern Sierra Endemic Ant)	*Formica microphthalma*	G2?	Conifer Forests	N/A	not confirmed to be on LTBMU; not considered in detail since they will not be affected by LTBMU management or potential plan components
	Ricksecker's Water Scavenger Beetle	*Hydrochara rickseckeri*	G1G2	Shallow water, creeks, springs, brooks	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Nevada Viceroy	*Limenitis archippus lahontani*	G5T1T2	riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Sierra Needlefly	*Megaleuctra sierra*	G2Q	benthic, springs & brook	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Dune Honey Ant	*Myrmecocystus snellingi (=arenarius)*	G2?	Sand dunes	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	South Forks Ground Beetle	*Nebria darlingtoni*	G1	oak woodlands, South Fork American River	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.dot.ca.gov/dist3/projects/shingle/pdfs/vol1/5-07-Biological-Resources.pdf

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Insects	**Gold Rush Hanging Fly**	*Orobittacus obscurus*	S1 (CA)	Western slopes of Sierra Nevada, forest to aok woodlands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/invert/Insects_-_Misc/Orobittacus_obscurus.pdf
	An Aquatic Moth	*Petrophila confusalis*	S1 (NV)	unknown	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Alkaline Sandhill Skipper	*Polites sabuleti alkaliensis*	G5T3T4	alkaline lakes	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.flmnh.ufl.edu/butterflies/research/allyn_pdfs/AME109small.pdf
	Carson Valley Sandhill Skipper	*Polites sabuleti genoa*	G5T3T4	Carson River Valley	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.flmnh.ufl.edu/butterflies/research/allyn_pdfs/AME109small.pdf
	Alkali Skipper	*Pseudocopaeodes eunus*	G3	Riparian, Alkali flats in arid areas	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.nearctica.com/butter/plate27/Peunus.htm

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Insects	**Carson Wandering Skipper**	*Pseudocopaeodes eunus obscurus*	G3G4T1 Federally Endangered	grassland	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - also not on FWS list - reference link: http://xerces.org/wp-content/uploads/2008/09/pseudocopaeodes_eunus_obscurus.pdf
	Spiny Rhyacophilan Caddisfly	*Rhyacophila spinata*	G1G2	benthic, creeks, rivers	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Nokomis Fritillary	*Speyeria nokomis*	G3	wet places in arid areas	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Apache Fritillary	*Speyeria nokomis apacheana*	G3T2	unknown	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Carson Valley Silverspot	*Speyeria nokomis carsonensis*	G3T1	Carson River Valley	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.nature.org/wherewework/northamerica/states/nevada/science/art11296.html
	An Endemic Ant	*Stenamma wheelerorum*	G1?	Conifer Forests	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

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Mammals	**Pallid Bat**	*Antrozous pallidus*	G5, SSC, S3 (CA) S3 (NV)	Graslands, deserts, woodlands, confir forests	N/A	species considered secure locally
	Sewellel	*Aplodontia rufa*	G5, S3 (CA) S1 (NV)	riparian, conifer forests	N/A	drop in lieu of specific subspecies: *Aplodontia rufa californica*
	Sierra Nevada Mountain Beaver (Mono Basin Mountain Beaver, Nevad Natural Heritage Program)	*Aplodontia rufa californica*	G5T3T4, SSC NV State-Protected Species S2S3 (CA) S1 (NV)	riparian, conifer forests	Yes	Aquatic Ecosystem Management; General Management
	American Beaver	*Castor canadensis*	G5	riparian	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components
Mammals	**Townsend's Big-eared Bat**	*Corynorhinus townsendii*	G4, SSC S2S3 (CA) S2 (NV), FSS	cliffs, conifer forests, deserts, prairies, riparian, caves, mines, cave surrogates	Yes	Cliffs, Caves, and Cave Surrogates Management
	Big Brown Bat	*Eptesicus fuscus*	G5, S5 (CA) S4 (NV)	conifer forests, urban environments	N/A	Species considered secure
	Spotted Bat	*Euderma maculatum*	G4, SSC S2S3 (CA) , S2 (NV)	deserts, forests, prominnent rock features	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

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Mammals	**Northern Flying Squirrel**	*Glaucomys sabrinus*	G5, S5 (CA) S3 (NV), MIS	snags, general forest	N/A	Species considered secure
	Wolverine	*Gulo gulo*	G4, ST FP, S2 (CA) , SH (NV), FSS	alpine, conifer forests	Yes (subspecies only: (*Gulo Gulo luteus*))	Potential for subspecies to occur in Plan area during the life of the Plan
	Silver-haired Bat	*Lasionycteris noctivagans*	G5, S3S4 (CA) S3 (NV)	general forest	N/A	Species considered secure
	Western Red Bat	*Lasiurus blossevillii*	SSC S3? CA) S1 (NV)	riparian, general forest	N/A	Low probability to be found in the Plan area – not expected that management will affect species
	Hoary Bat	*Lasiurus cinereus*	G5	general forest	N/A	Species considered secure
	Sierra Nevada Snowshoe Hare	*Lepus americanus tahoensis*	G5T3T4Q	general forest	N/A	General Forest Management - reference link: http://wildlife1.wildlifeinformation.org/S/0MLagomorph/Leporidae/lepus/Lepus_americanus.html
	American Marten	*Martes americana*	G5, S3S4 (CA) S2S3 (NV), FSS	snags, woody debris, general forest	Yes	General Forest Management; General Management
	Fisher - West Coast Distinct Population Segment	*Martes pennanti pop. 1*	G5T2T3Q Candidate Species, SSC S2S3 (CA)	snags, woody debris, general forest, riparian	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

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Mammals	**California myotis**	*Myotis californicus*	G5, S5 (CA) S4 (NV)	cliffs, general forest, riparian,	N/A	Species considered secure
	Western Small-footed Myotis	*Myotis ciliolabrum*	G5, S2S3 (CA) S3 (NV)	cliffs, general forest, riparian, snags	Yes per habitat but not in detail	Cliffs, Caves, and Cave Surrogates Management
	Long-eared Myotis	*Myotis evotis*	G5, S4? (CA) S4 (NV)	cliffs, general forest, riparian,	N/A	Species considered secure
	Little Brown Myotis	*Myotis lucifugus*	S2S3 (CA) S3 (NV)	general forest, riparian, caves, buildings,	N/A	Species considered secure
	Fringed Myotis	*Myotis thysanodes*	G4G5, S4 (CA) S2 (NV)	cliffs, general forest, riparian,	Yes per habitat but not in detail	Cliffs, Caves, and Cave Surrogates Management
	Long-legged Myotis	*Myotis volans*	G5	cliffs, caves, general forest,	N/A	Species considered secure
	Yuma Myotis	*Myotis yumanensis*	G5, S4 (CA)	cliffs, general forest, riparian,	N/A	Species considered secure
	Lodgepole Chipmunk	*Neotamias speciosus*	G4	cliffs, general forest, riparian,	N/A	Species considered secure

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Mammals	**American Pika**	*Ochotona princeps*	G5, S3S4 (CA) S2 (NV)	alpine, rocky talus slopes	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components
	Mule Deer	*Odocoileus hemionus*	G5, TRPA-SI	general forest	Yes	Species considered secure
	Western Pipistrelle	*Pipistrellus hesperus*	G5	rocky canyons, deserts	N/A	Species considered secure
	Preble's Shrew	*Sorex preblei*	G4, SNR (CA) S1S2 (NV)	riparian, desert, grasslands	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Trowbridge's Shrew	*Sorex trowbridgii*	G5, S4S5 (CA) S2 (NV)	general forest, riparian, woody debris	Yes per habitat but not in detail	General Forest Management
	Brazilian Free-tailed Bat	*Tadarida brasiliensis*	G5	Uban environments, general forest, riparian,	N/A	Species considered secure
	American Black Bear	*Ursus americanus*	G5	general forest	N/A	Species considered secure
	Red Fox	*Vulpes vulpes*	G5, S1 (CA), S2 (NV)	general forest	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - considered extremely rare or extinct on LTBMU

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	Sierra Nevada Red Fox	*Vulpes vulpes necator*	G5T3, ST S1 (CA), S3 (NV), FSS	general forest	Yes	considered extremely rare or extinct on LTBMU
Mollusks	**Tight Coin (snail)**	*Ammonitella yatesii*	G1	terrestrial	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	California Floater	*Anodonta californiensis*	G3Q	Shallow water, creeks, springs, brooks	N/A	species occurs outside the LTBMU - Lake Tahoe watershed - reference link: http://www.xerces.org/california-floater/
	Pyramid Lake Pebblesnail	*Fluminicola dalli*	G1	Pyramid Lake	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Virginia Mountains Pebblesnail	*Fluminicola virginius*	G1	Pyramid Lake	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Great Basin Rams-horn	*Helisoma newberryi newberryi*	G1Q / FSS	Freshwater	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to burrowing in soft mud species maybe invisible even when abundant
	Smooth Juga	*Juga interioris*	G1	Freshwater	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

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Mollusks	**Oasis Juga**	*Juga laurae*	G1	Freshwater	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Western Pearshell	*Margaritifera falcata*	G4G5 / SNR (CA / NV)	Rivers	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Sierra Sideband (snail)	*Monadenia mormonum*	G2	terrestrial	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Button's Sierra Sideband (snail)	*Monadenia mormonum buttoni*	G2T1	terrestrial	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Fly Ranch Pyrg	*Pyrgulopsis bruesi*	G1	thermal spring in Northwestern NV	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Western Lahontan Pyrg	*Pyrgulopsis longiglans*	G2G3	Freshwater	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Wong's Springsnail	*Pyrgulopsis wongi*	G2	Freshwater	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Mountain Bentgrass**	*Agrostis humilis*	G4, S1.3 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Jepson's Onion	*Allium jepsonii*	G1		N/A	species occurs outside the LTBMU - Lake Tahoe watershed

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Plants	**Bristly-leaf Rockcress**	*Arabis rectissima var simulans*	G4G5T1Q, S1(NV), LSI,	General forest	Yes	Known to occur within the Lake Tahoe watershed
	Galena Creek Rockcress	*Arabis rigidissima var. dermota*	G3T2Q, S1.2 (CA) S2 (NV), FSS	Rocky habitat, general forest, aspen	Yes	Known to occur within the Lake Tahoe watershed
	Tiehm's Rockcress	*Arabis tiehmii*	G2 S1(NV), FSS	rocky habitats	Yes	Suspected to occur within the Lake Tahoe watershed
	Nissenan Manzanita	*Arctostaphylos nisseniana*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Margaret's Rushy Milkvetch	*Astragalus convallarius var. margaretiae*	G5T2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Lemmon's Milkvetch	*Astragalus lemmonii*	G3?		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Lavin's Egg Milkvetch	*Astragalus oophorus var. lavinii*	G4T2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Lahontan Milkvetch	*Astragalus porrectus*	G3?		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Pulsifer's Milkvetch	*Astragalus pulsiferae*	G4, S2S3 (NV)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed

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Plants	**Pulsifer's Milkvetch**	*Astragalus pulsiferae var. coronensis*	G4T3, S3.2 (CA), S1 (NV)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Pulsifer's Milkvetch	*Astragalus pulsiferae var. pulsiferae*	G4T2, S2.2 (CA), S1 (NV)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Tiehm's Milkvetch	*Astragalus tiehmii*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Balsamroot	*Balsamorhiza macrolepis*	G3G4		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	California Balsamroot	*Balsamorhiza macrolepis var. macrolepis*	G3G4T2, S2.2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	trianglelobe moonwort	*Botrychium ascendens*	G2G3, S1.3? (CA) S1 (NV), FSS	Meadow, shrublands, seeps, fens, streams	Yes	Known to occur within the Lake Tahoe watershed
	scalloped moonwort	*Botrychium crenulatum*	G3, S2.2 (CA) S1? (NV), FSS	Seeps, streams, wet roadside ditches and drainage ways	Yes	Known to occur within the Lake Tahoe watershed
	narrowleaf grapefern	*Botrychium lineare*	G2?, S1.3(CA), FSS		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	common moonwort	*Botrychium lunaria*	G5, S2 (CA), FSS	Meadows	Yes	Suspected to occur within the Lake Tahoe watershed

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Plants	**Mingan's Moonwort**	*Botrychium minganense*	G4, FSS		Yes	Known to occur within the Lake Tahoe watershed
	mountain moonwort	*Botrychium montanum*	G3, S1.1 (CA), FSS		Yes	Known to occur within the Lake Tahoe watershed
	Bolander's bruchia moss	*Bruchia bolanderi*	G3, S2.2(CA), FSS		Yes	Known to occur within the Lake Tahoe watershed
	Pleasant Valley Mariposa Lily	*Calochortus clavatus var. avius*	G4T3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Stebbin's Morning-glory	*Calystegia stebbinsii*	G1, FE		N/A	species occurs outside the LTBMU - Lake Tahoe watershed - also not on FWS list for LTBMU
	Pine Creek Evening-primrose	*Camissonia boothii ssp. Alyssoides*	G5T4		N/A	Species considered secure
	Nevada Evening-primrose	*Camissonia nevadensis*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	claspbract sedge	*Carex amplectens*	G2? CBR		N/A	Not recognized as a separate species at this time.
	Mud Sedge	*Carex limosa*	G5, S2.2 (CA)	Fens, meadows	Yes	Known to occur within the Lake Tahoe watershed, semi common within the LTBMU

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Plants	**Sheldon's Sedge**	*Carex sheldonii*	G4, S2.2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Valley Sedge	*Carex vallicola*	G5, S2.3 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Pine Hill Ceanothus	*Ceanothus roderickii*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Alpine Pincushion	*Chaenactis douglassi var. alpina*	G5T5		N/A	Known to occur within the Lake Tahoe watershed, but does not currently have a rare rank, will monitor
	Red Hills Soaproot	*Chlorogalum grandiflorum*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Oval-leaf Viburnum	*Ciburnum ellipticum*	G5		N/A	Species considered secure
	Two-lobed Clarkia	*Clarkia biloba ssp. barndegeeae*	G4G5T2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Alpine Springbeauty	*Claytonia megarhiza*	G4G5, S2.3 (ca)	Rocky habitats	Yes	Known to occur within the Lake Tahoe watershed
	Great Basin Springbeauty	*Claytonia umbellata*	G5?		N/A	Species considered secure
	Hispid Bird's-beak	*Cordylanthus mollis ssp. Hispidus*	G2T2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
	Subalpine Cryptantha	*Cryptantha crymophila*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Alkali False Whitlow-grass	*Cusickiella douglasii*	G4G5		N/A	Species considered secure
	Bodie Hills Cusickiella	*Cusickiella quadricostata*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Fungi	**branched collybia**	*Dendrocollybia racemosa*	G2G3, FSS	General Forest - older	Yes	Historical record - known to occur within the Lake Tahoe watershed
Plants	**Doublet**	*Dimeresia howellii*	G4?		N/A	Species considered secure
	Dwaft Downingia	*Downingia pusilla*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Lake Tahoe Draba	*Draba asterophora var. asterophora*	G4T2, S1.2(CA), FSS	Rocky habitats – tallus, scree	Yes	Known to occur within the Lake Tahoe watershed
	Cup Lake Draba	*Draba asterophora var. macrocarpa*	G4T1, S1.1(CA), FSS	Rocky habitats – tallus, scree	Yes	Known to occur within the Lake Tahoe watershed
	Carson Range Draba	*Draba stenoloba var. ramosa*	G5T2T3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Yuba Pass willowherb	*Epilobium howellii*	G2, S2.3 (CA), FSS	Meadow edges, seeps, streams	Yes	Known to occur within the Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
	Oregon Willowherb	*Epilobium oreganum*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Marsh willowherb	*Epilobium palustre*	G5, S1.3 (CA)	Fens, Meadow, seeps	Yes	Historic - Known to occur within the Lake Tahoe watershed
	Nevada Fleabane	*Erigeron eatonii var. nevadincola*	G5T4, S2.3(CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Starved Daisy	*Erigeron miser*	G2, S2.3 (CA), FSS	Rocky habitats - cliffs	Yes	Suspected to occur within the Lake Tahoe watershed
	Crosby's Buckwheat	*Eriogonum crosbyae*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Lemmon's Buckwheat	*Eriogonum lemmonii*	G3?		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Steamboat Buckwheat	*Eriogonum ovalifolium var. williamsiae*	G5T1 Federally Endangered		N/A	species occurs outside the LTBMU - Lake Tahoe watershed - also not on FWS list for LTBMU
	Prostrate Buckwheat	*Eriogonum prociduum*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Altered Andesite Buckwheat	*Eriogonum robustum*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
	Donner Pass Wild Buckwheat	*Eriogonum umbellatum var. torreyanum*	G5T2, FSS	Ridge tops, steep slopes, dry	Yes	Suspected to occur within the Lake Tahoe watershed
	Pine Hill Flannelbush	*Fremontodendron decumbens*	G1		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Butte County Fritillary	*Fritillaria eastwoodiae*	G3Q		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	El Dorado Bedstraw	*Galium californicum ssp. Sierrae*	G5T1		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Nevada Greasebush	*Glossopetalon spinescens var. aridum*	G5T5?		N/A	Species considered secure
	American mannagrass	*Glyceria grandis*	G5, S1.3 (CA)	Fen, meadow, seep, marsh, swamp	Yes	Suspected to occur within the Lake Tahoe watershed
	Boggs Lake Hedge-hyssop	*Gratiola heterosepala*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Cusick's Stickseed	*Hackelia cusickii*	G5		N/A	Species considered secure
	Blandow's helodium moss	*Helodium blandowii*	G5, S1.3 (CA), FSS	Meadowsee p, fens	Yes	Known to occur within the Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
	Parry's Horkelia	*Horkelia parryi*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	shortleaf alpinegold	*Hulsea brevifolia*	G3, S3.2(CA), FSS		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Sierra Valley Ivesia	*Ivesia aperta var. aperta*	G2T2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Pine Nut Ivesia	*Ivesia pityocharis*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Grimy Ivesia	*Ivesia rhypara var. rhypara*	G2T1		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Plumas Ivesia	*Ivesia sericoleuca*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Webber Ivesia	*Ivesia webberi*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Red Bluff Rush	*Juncus leiospermus*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Ahart Rush	*Juncus leiospermus var. ahartii*	G2T1, S1.2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
	Red Bluff Rush	*Juncus leiospermus var. leiospermus*	G2T2, S2.2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Legenere	*Legenere limosa*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Kellogg's lewisia	*Lewisia kelloggii ssp. hutchisonii*	G4T2T3, S2S3.3 (CA), FSS	Flat open forest	Yes	Suspected to occur within the Lake Tahoe watershed
	Kellogg's lewisia	*Lewisia kelloggii ssp. kelloggii*	G4T4?, FSS	Flat open forest	Yes	Suspected to occur within the Lake Tahoe watershed
	Long-petaled Lewisia	*Lewisia longipetala*	G2, S2.2 (CA), FSS	Rocky habitats – granitic slabs	Yes	Known to occur within the Lake Tahoe watershed
	Saw-toothed Lewisia	*Lewisia serrata*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Sage-like Loeflingia	*Loeflingia squarrosa ssp. artemisiarum*	G5T2T3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Packard's Desert-parsley	*Lomatium packardiae*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Raven's Lomatium	*Lomatium ravenii*	G4		N/A	Species considered secure

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
	Rose-flower Desert-parsley	*Lomatium roseanum*	G2G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Mount Rose Lupine	*Lupinus caudatus ssp. Montigenus*	G5T4		N/A	Species considered secure
	Jaw-leaf Lupine	*Lupinus malacophyllus*	G3?		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Meesia Moss	*Meesia longiseta*	G4?, LSI	Stream banks, fens, meadows	Yes	Suspected to occur within the Lake Tahoe watershed, not yet known from FS land in CA but included as LTBMU special interest to confirm presence in CA prior to listing as R5 sensitive
	Three-ranked Hump Moss	*Meesia triquetra*	G5, S3S4.2 (CA), FSS	Fens, wetland sites	Yes	Known to occur within the Lake Tahoe watershed, common in the LTB but is still a R5 sensitive
	Broad-nerved Hump Moss	*Meesia uliginosa*	G4, S2.2 (CA), FSS	fens	Yes	Known to occur within the Lake Tahoe watershed
		Mielichhoferia mielichhoferiana var. elongata	G4?T4?, S2.2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Mount Rose Monkeyflower	*Mimulus angustifolius*	G1?Q, S1 (NV)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
	Effleaf Monkeyflower	*Mimulus ovatus*	G1G2Q		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Myurella Moss	*Myurella julacea*	G5, S1.3 (CA), LSI		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Pincushion Navarretia	*Navarretia myersii ssp. Myersii*	G1T1		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Northern Adder's-tongue	*Ophioglossum pusillum*	G5		N/A	Species considered secure
	Sand Cholla	*Opuntia pulchella*	G4		N/A	Species considered secure
	Orthotrichum moss	*Orthotrichum praemorsum*	G2, LSI	Rocky habitat	Yes	Known to occur within the Lake Tahoe watershed
	Shevock's bristle moss	*Orthotrichum shevockii*	G1, S1.3 (CA), LSI	rocky habitats – rock outcrops	Yes	Known to occur within the Lake Tahoe watershed
	Spjut's bristle moss	*Orthotrichum spjutii*	G1, S1.3 (CA), LSI	rocky habitats – volcanic rock walls	Yes	Suspected to occur within the Lake Tahoe watershed
	Nevada Oryctes	*Oryctes nevadensis*	G2G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Plants	**Layne's Butterweed**	*Packera layneae*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Lichens	**Veined water lichen**	*Peltigera hydrothyria*	G3G5, FSS	Streams	Yes	Known to occur within the Lake Tahoe watershed
Plants	**Wassuk Beardtongue**	*Penstemon rubicundus*	G2G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Susanville Beardtongue	*Penstemon sudans*	G2G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Playa Phacelia	*Phacelia inundata*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Stebbins Phacelia	*Phacelia stebbinsii*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Washoe Pine	*Pinus washoensis*	G3Q		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Clustered Popcorn-flower	*Plagiobothrys glomeratus*	G2G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Tundra Pohlia Moss	*Pohlia tundrae*	G2G3, S2.3 (CA), LSI	Rocky habitats – alpine boulder and rock fields	Yes	Known to occur within the Lake Tahoe watershed, not sure if populations occur on LTBMU land
	Nuttall's Pondweed	*Potamogeton epihydrus ssp. Nuttallii*	G2G3, S2.3 (CA)	Marshes, swamps	Yes	Known to occur within the Lake Tahoe watershed, not sure if populations occur on LTBMU land

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
Plants	**Slender Pondweed**	*Potamogeton filiformis*	G5, S1S2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Flatleaf Pondweed	*Potamogeton robbinsii*	G5, S2.3 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Hartweg's Golden Sunburst	*Pseudobahia bahifolia*	G2, FE		N/A	species occurs outside the LTBMU - Lake Tahoe watershed - also not on FWS list for LTBMU
	Alder-leaved Buckthorn	*Rhamnus alnifolia*	G5, S2.2 (CA)	Wet meadow, lodgepole forest	Yes	Known to occur within the Lake Tahoe watershed, not sure if populations occur on LTBMU land
	Tahoe Yellowcress	*Rorippa subumbellata*	G1 Candidate Species, SE, S1.1(CA), S1S2 (NV), FSS, TRPA-SI	sandy, shoreline habitats	Yes	Endemic to the Lake Tahoe watershed
	Sanford's Arrowhead	*Sagittaria sanfordii*	G3		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Water Bulrush	*Schoenoplectus subterminalis*	G4G5, S2.3 (CA)	Lakes, ponds, marshes	Yes	Known to occur within the Lake Tahoe watershed, not sure if populations occur on LTBMU land
	Hooded Skullcap	*Scutellaria galericulata*	G5, S2.3 (CA)	Meadows, seeps	Yes	Known to occur within the Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
	Sweet Marsh Ragwort	*Senecio hydrophiloides*	G4G5, S2.3 (CA)	Mesic habitats	Yes	Suspected to occur within the Lake Tahoe watershed
	Naked Catchfly	*Silene nuda ssp.nuda*	G4G5T1T2Q, SNR (CA), S1S2 (NV)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Monroe's Desert Mallow	*Sphaeralcea monroana*	G4, S1.2 (CA)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Peat Moss	*Sphagnum* sppecies	Genus as habitat indicator	fens	Yes	Genera is indicative of unique wetland habitats in Sierra Nevada
	Masonic Mountain Jewelflower	*Streptanthus oliganthus*	G3, S2.2(CA), S2 (NV)		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Beatley's Clover	*Trifolium andersonii ssp. Beatleyae*	G4T4		N/A	Species considered secure
	Lemmon's Clover	*Trifolium lemmonii*	G4?		N/A	Species considered secure
	El Dorado Mule's-ears	*Wyethia reticulata*	G2		N/A	species occurs outside the LTBMU - Lake Tahoe watershed
Reptiles	**Pacific Pond Turtle**	*Actinemys marmorata*	G3G4, S3(CA) S3 (NV)	ponds	N/A	species occurs outside the LTBMU - Lake Tahoe watershed
	Northern Pacific Pond Turtle	*Actinemys marmorata marmorata*	G3G4T3Q, SSC S3(CA), S3 (NV)	ponds	N/A	species occurs outside the LTBMU - Lake Tahoe watershed

Group	Species Name		Status	Habitat	Consider species for analysis in Draft EIS	Comments / Rationale
	Rubber Boa	*Charina bottae*	G5, S4 (CA) S3S4 (NV)	riparian, general forest	N/A	local population considered secure
	Northern Alligator Lizard	*Elgaria coerulea*	G5, S5 (CA) S2S3 (NV)	riparian, general forest	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to population considered secure in CA and not occurring on the NV side of the LTBMU
	Sierra Alligator Lizard	*Elgaria coerulea palmeri*	G5T4, S2S3 (NV)	riparian, general forest	N/A	not considered in detail since they will not be affected by LTBMU management or potential plan components - due to population considered secure in CA and not occurring on the NV side of the LTBMU

Appendix F – Social and Economic Assessment

F.1. Introduction

The Lake Tahoe Basin Management Unit (LTBMU) is an integral part of the economy and social life of Lake Tahoe Basin communities. Visitors from around the country and the world are attracted to Lake Tahoe to enjoy a variety of recreational activities. The scenic quality of Lake Tahoe and its surrounding landscape make visiting the Lake Tahoe Basin a one-of-a-kind experience. The LTBMU contributes to the Lake Tahoe Basin's scenic quality through the conservation and management of vegetation, waterways, infrastructure, and recreation. Recreation opportunities supported by interpretation and conservation education enrich the recreation experience and contribute to enhancing the public's environmental literacy. The Lake Tahoe Basin's economy is driven largely by recreation and tourism. The LTBMU plays an important role in providing outdoor recreation opportunities and preserving the scenic quality of the Tahoe Basin's lands and waterways.

Information and data used in this assessment was collected from the following sources:

- US Census Bureau statistics
- US Bureau of Labor Statistics
- US Bureau of Economic Analysis
- Economic Profile System by Headwaters Economics
- National Visitor Use Monitoring (NVUM) survey

F.2. Study Area

The Lake Tahoe Basin is composed of approximately 200,000 acres of land, of which the Lake Tahoe Basin Management Unit manages approximately 150,000 acres. While the land area of the Lake Tahoe Basin is relatively small, there are many political entities represented. Within the Lake Tahoe Basin, there are five counties, the Tahoe Regional Planning Agency (TRPA), two cities, and two states (see Figure F-1). Along with state, county, and city ownership, close to 90% of Lake Tahoe Basin lands are in public ownership.

The communities within the Lake Tahoe Basin represent only a small share of the surrounding county's total population (which includes the large communities of Placerville, CA and Reno, NV) therefore social and economic data based on county level data overwhelms the social and economic trends of Lake Tahoe communities. While the communities in the Basin differ in many respects, they are united by geography, economy, and social values. So, two assessment areas are used in the Social and Economic Assessment to illustrate the roles and contributions the LTBMU plays in providing local and regional communities with social and economic benefits. The use of multiple study areas also reveals management implications associated with servicing different populations.

The larger area is the Greater Lake Tahoe Area (GLTA) (see Figure F1). The GLTA is representative of the region's functional economy, meaning this is where Lake Tahoe Region residents and businesses are likely to purchase a significant amount of their goods, services, and housing. Counties within the GLTA are influenced by spending patterns of residents, visitors and businesses within the LTR, and have a direct influence on visitor rates and use patterns on the LTBMU.

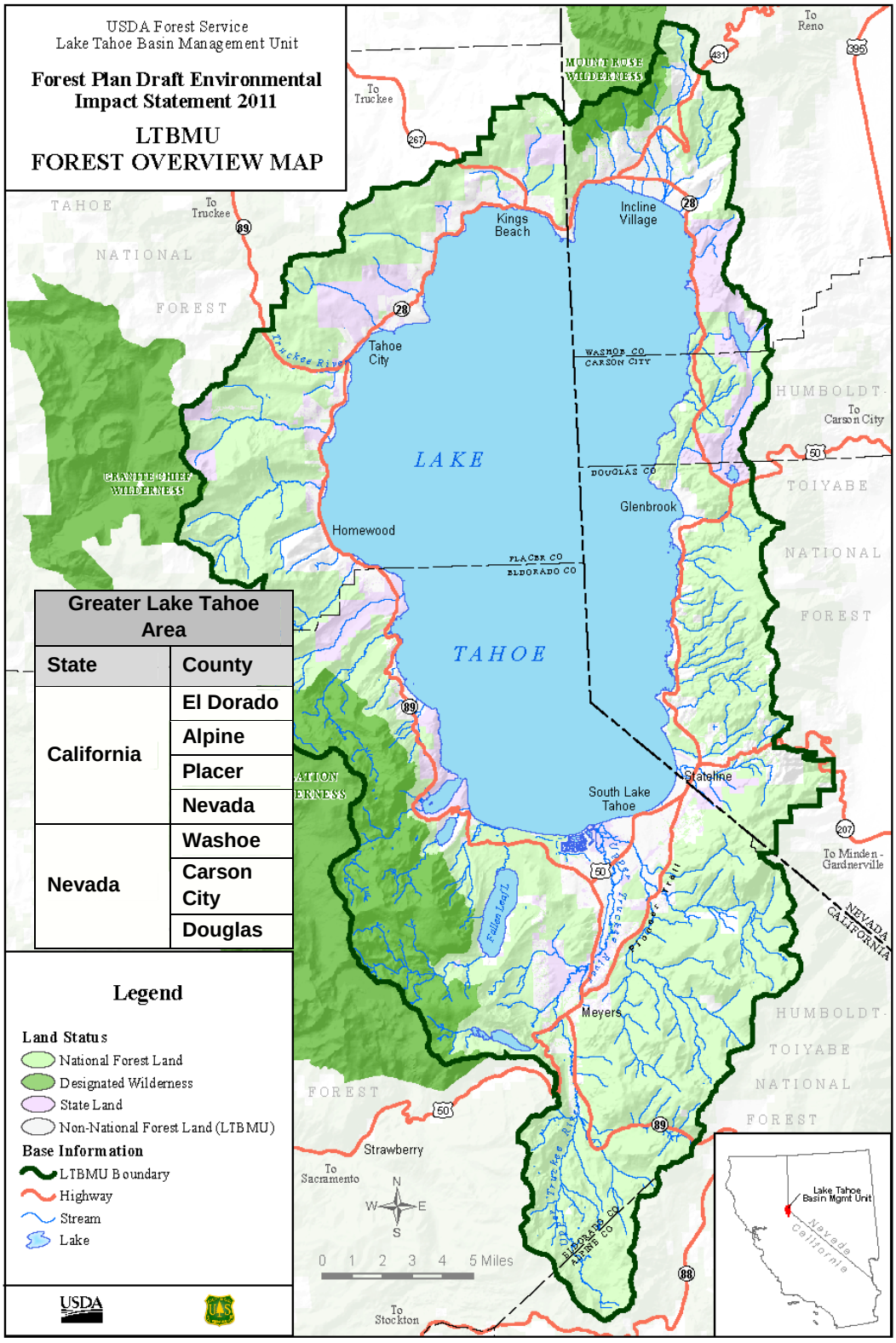
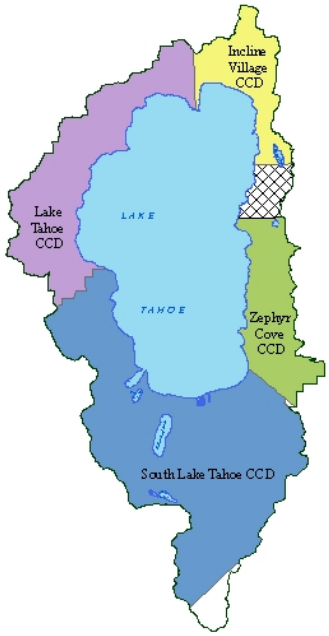


Figure F1. Greater Lake Tahoe Area (GLTA)

The smaller area is located within the Lake Tahoe Basin Management Unit's exterior boundary and is referred to as the "Lake Tahoe Region," or LTR (Figure F-2). The communities within the LTR have a relatively high degree of economic responsiveness to recreation revenues, and there are pronounced social differences between Lake Tahoe communities and adjacent communities located outside of the Lake Tahoe Basin. Census County Divisions (CCDs) from the US Census Bureau are the geographic units used to analyze the LTR social and economic assessment.

The Lake Tahoe Basin Management Unit's influence on the Lake Tahoe Region economy is much greater than on the Greater Lake Tahoe economy given the relative size and diversity of the two economies.

Census County Divisions (CCD)	**Community**
Zephyr Cove	Glenbrook Zephyr Cove Lake Ridge
Incline Village	Incline Village Stateline
South Lake Tahoe	Meyers Tahoma City of South Lake Tahoe
Lake Tahoe	Brockway Lake Forest Rampart (Sunnyside) Tahoe Pines Homewood Chambers Lodge Tahoe Vista



CCD	Community
Zephyr Cove	Glenbrook Zephyr Cove Lake Ridge
Incline Village	Incline Village Stateline
South Lake Tahoe	Meyers Tahoma City of South Lake Tahoe
Lake Tahoe	Brockway Lake Forest Rampart (Sunnyside) Tahoe Pines Homewood Chambers Lodge Tahoe Vista

Figure F2. Lake Tahoe Region by Community Civil Division (CCD)

F.3. Background

For thousands of years, the people of the Washoe Tribe traveled to the shores of Lake Tahoe in the summer to live, trade, and reaffirm tribal unity. The Washoe way of life was greatly impacted in 1859 with the Virginia City silver strike, which marked the beginning of the Comstock Era. By 1890, the forests of Lake Tahoe had been largely clear-cut to fuel mining operations, shore-up mine shafts, and provide building supplies for rapidly growing Virginia City. The lands around Lake Tahoe provided forage for sheep and were home to Basque sheepherders from the 1850s to the 1950s.

In 1899, President William McKinley designated 13,000 acres of Lake Tahoe forests as National Forest Reserves, which would mark the beginning of federal acquisitions in the Tahoe Basin. Between 1890 and 1920, Lake Tahoe was a popular resort destination for wealthy and elite families from San Francisco. Roads were paved during the 1920s and 1930s: Lake Tahoe became accessible to a greater number of people, and tourism and recreation soon became a dominant industry in the Lake Tahoe Basin. The 1940s marked the beginning of the gaming industry, which grew quickly, attracting vacationers looking for urban amenities in a scenic setting. With the 1960 Winter Olympic Games at Squaw Valley Resort, development escalated as Tahoe became known as an international recreation destination.

At this same time, the Forest Service acquired large tracts of land in the Lake Tahoe Basin, and management of this land was divided among three forests: the Eldorado, the Humboldt-Toiyabe and the Tahoe National Forest. However, by 1973, National Forest land managers recognized the need to manage Lake Tahoe's upland resources separately to preserve the unique nature of Lake Tahoe. It was with this goal that the Lake Tahoe Basin Management Unit was formed by carving out sections of the three forests to approximate Lake Tahoe's watershed boundary.

Much of the LTBMU's management priorities and objectives have been driven by legislative acts, which have served to authorize funding for the acquisition and restoration of lands within the Lake Tahoe Basin. In 1980, Congress passed the Santini-Burton Act (PL 96-586), which authorized funding and directed the LTBMU to acquire environmentally sensitive lands, restore watersheds on acquired National Forest System lands, and administer erosion control grants to local government. Thirteen thousand acres have since been acquired through the Santini-Burton Act, of which many are small parcels interspersed throughout urban neighborhoods.

The Lake Tahoe Restoration Act (LTRA), signed by President Bill Clinton in 1997, recognized the unique scenic and ecological features of Lake Tahoe, as well as Lake Tahoe communities' economic dependence on the perpetuation of these characteristics. The LTRA was designed to enable the Forest Service to plan and implement significant new environmental restoration and forest management activities to address water quality, water clarity, and forest health in coordination with Federal, State, local, regional, tribal and private entities. While the LTRA was intended to increase restoration in the Lake Tahoe Basin, this objective was not fully implemented due to lack of federal funding until the Southern Nevada Public Lands Management Act (SNPLMA) was amended in 2003. The SNPLMA amendment guaranteed agencies in the Lake Tahoe Basin a consistent flow of federal funds for eight years, with an average annual funding level of $37.5 million. With these funds, large watershed restoration projects to restore meadows and forest health and reduce fuels have commenced. These funds are expected to be substantially spent by 2018 and exhausted by 2020.

F.4. Social Conditions and Tends

F.4.1. Population

The LTR, with a population of 55,665 represents a small fraction of the GLTA population of 1,053,168 people in 2010. Within the LTR, more than half of the population resided in the South Lake Tahoe CCD. Between 2000 and 2010, Nevada's population grew by 35%, while California's population grew at a much slower rate increasing by 10%. The GLTA grew in population by over 25%. In contrast, the LTR lost 11.5% of its population. An article in the Sierra Sun (March 9, 2011) attributed this loss in population to a worsening economy. Also, the gaming industry declined over 50% since 1990 so there are fewer jobs in the LTR to hold people there. There is also a trend toward increasing second home ownership by people who do not live year-round in the Lake Tahoe Basin area. These are used as vacation homes and do not contribute toward such things as kids in schools, year-round shopping in the local community, etc.

Table F-1. Population 2000-2010

Assessment Area	2000 Census	2010 Census	% Change Since 2000
Nevada	1,998,257	2,700,551	35.1%
California	33,871,648	37,253,956	10.0%
Carson City Co, NV	52,457	55,274	5.4%
Douglas County, NV	41,259	46,997	13.9%
Washoe County, NV	339,486	421,407	24.1%
El Dorado County, CA	156,299	181,058	15.8%
Placer County, CA	248,399	348,432	40.3%
Greater Lake Tahoe Area (GLTA)	837,900	1,053,168	25.7%
Incline Village CCD, NV	9,952	9,087	-8.7%
Zephyr Cove CCD, NV	6,739	5,402	-19.8%
Lake Tahoe CCD, CA	12,158	10,448	-14.1%
South Lake Tahoe CCD, CA	34,042	30,728	-9.7%
Lake Tahoe Region (LTR)	62,891	55,665	-11.5%
% LTR of GLTA	7.5%	5.3%	

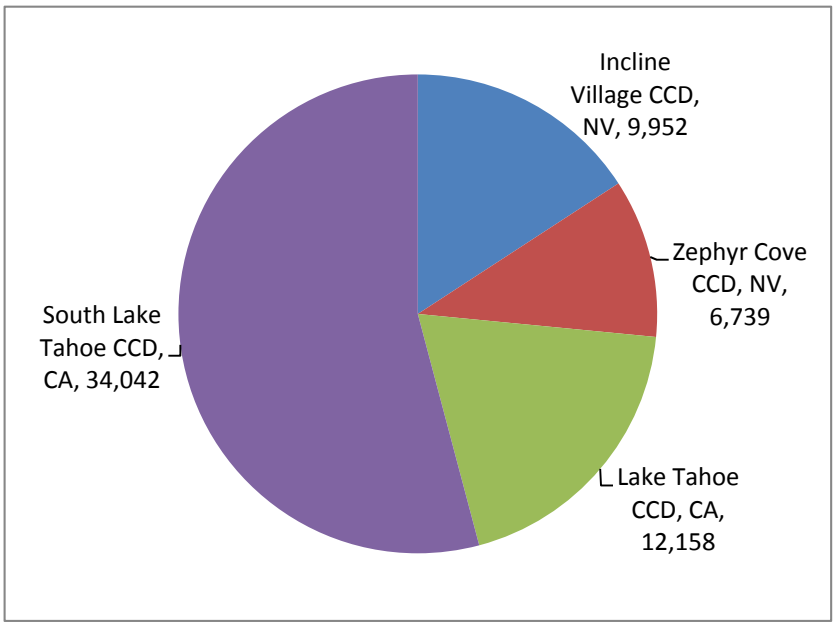


Figure F-3. Percent Population, LTR, 2010.

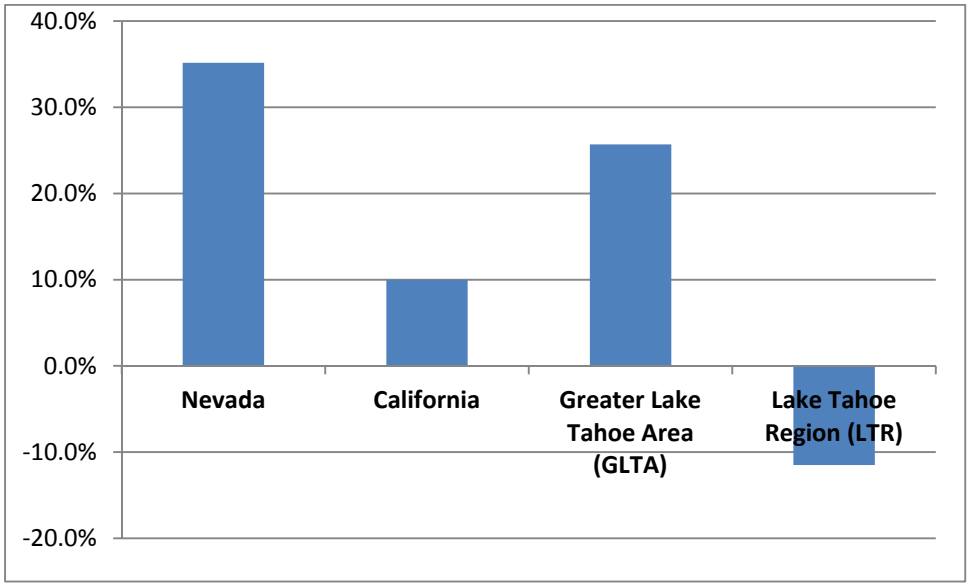


Figure F-4. Population Change, Regional, 1990 - 2000.

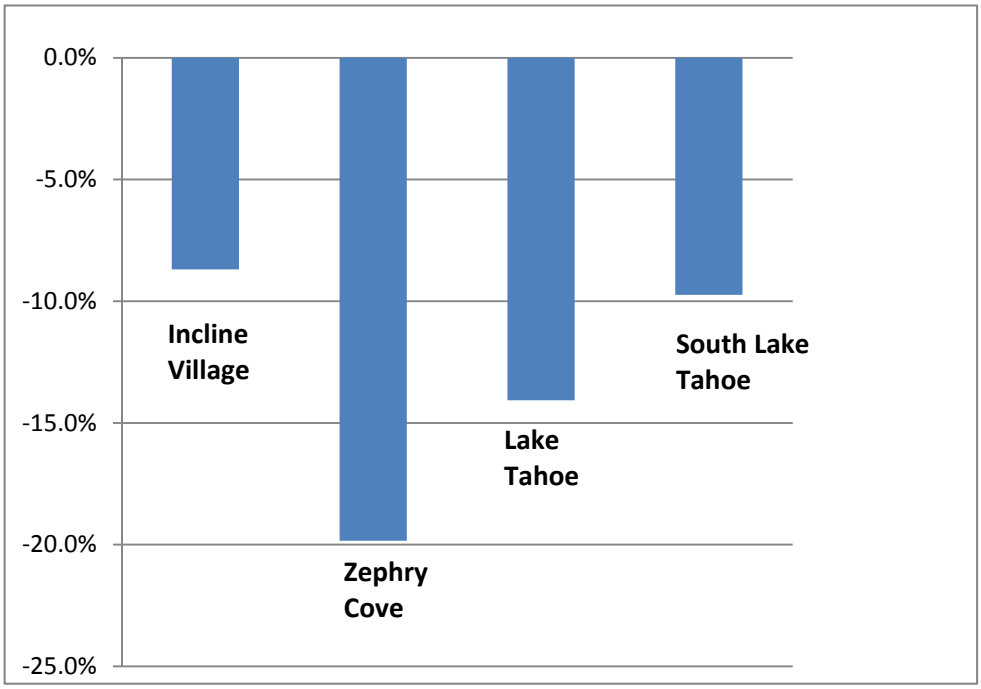


Figure F-5. Population Change, LTR, 2000 - 2010.

F.4.2. Race and Ethnicity

Compared to California and Nevada, the GLTA and the LTR are not as racially and ethnically diverse. In the GLTA, 82% of the population is white, while in the LTR, 84% of the population is white. Within the LTR, South Lake Tahoe CCD is the most racially diverse of the four CCDs, followed by Lake Tahoe CCD.

Just over 37% of California's population was Hispanic in 2010, while Nevada's Hispanic population was reported at 26%. The GLTA had the lowest Hispanic population of the four regions, while the LTR, with a 22% Hispanic population was similar to Nevada's Hispanic composition. Within the LTR 12,206 people identified themselves as Hispanic during the 2010 census. The South Lake Tahoe CCD had the largest Hispanic population with 7,345 people representing 24% of the SLT CCD population. Lake Tahoe CCD was also 27% Hispanic, with 2,720 Hispanic residents. The South Lake Tahoe CCD and Lake Tahoe CCD had on average over 4 times the population of Hispanics than Incline Village and Zephyr Cove.

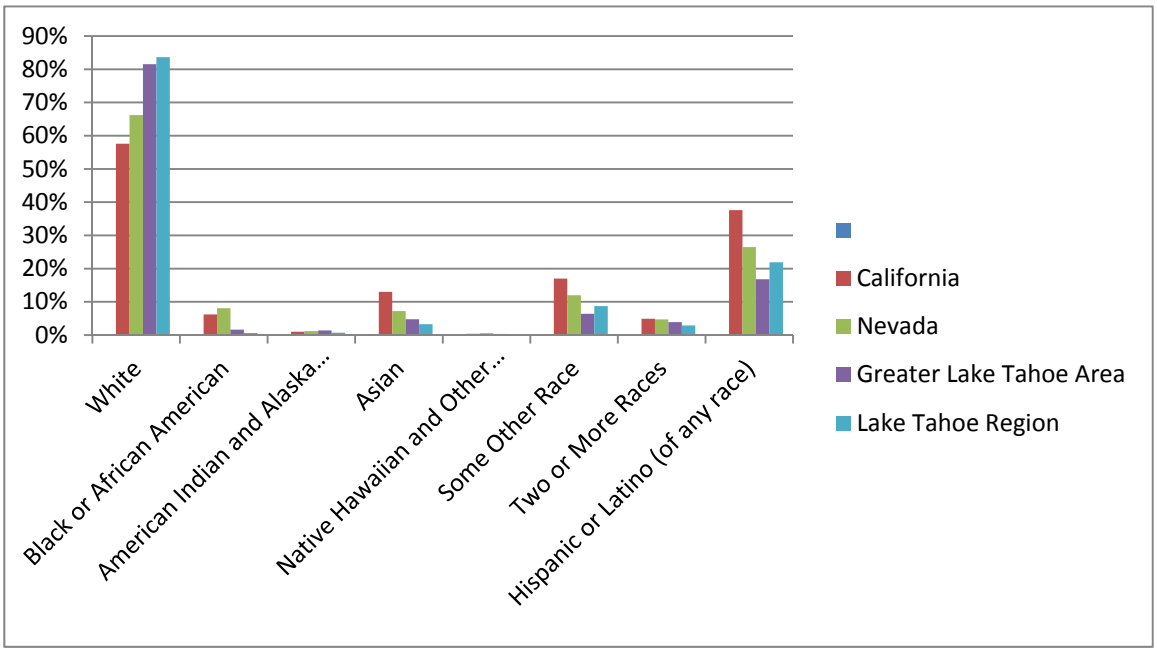


Figure F-6. Race and Ethnicity, Regional, 2010.

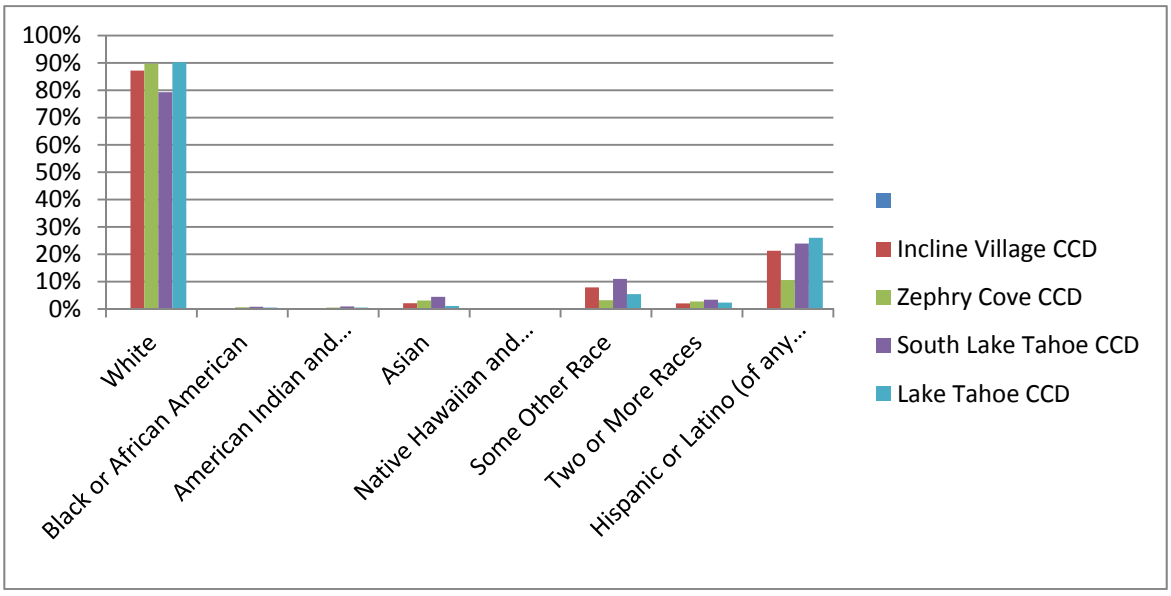


Figure F-7. Race and Ethnicity by CCD, LTR, 2010.

Table F-2. Race and Ethnicity, LTR, 2010

Race/Ethnicity	Incline Village CCD	Zephyr Cove CCD	South Lake Tahoe CCD	Lake Tahoe CCD	Total Lake Tahoe Region
Total population	**9,087**	**5,402**	**30,728**	**10,448**	**55,665**
One Race	8,905	5,254	29,689	10,203	54,051
White	7,928	4,844	24,370	9,425	46,567
Black or African American	29	31	238	48	346
American Indian and Alaska Native	29	29	280	51	389
Asian	194	165	1349	112	1820
Native Hawaiian and Other Pacific Islander	7	10	58	5	80
Some Other Race	718	175	3394	562	4849
Two or More Races	182	148	1039	245	1614
HISPANIC OR LATINO					
Hispanic or Latino (of any race)	1,566	575	7,345	2,720	12,206
Not Hispanic or Latino	7,521	4,827	23,383	7,728	43,459

F.4.3. Poverty

(Note: Poverty statistics were not updated to the 2010 Census information as of this writing (9/8/2011), so 2000 Census data is used.) Census poverty estimates are based on a set of income thresholds for various family sizes and are the same regardless of geography or cost of living. If a family is found to make less than the threshold, then every family member is considered to be in poverty. So while it appears that across almost all races, people living in the GLTA and LTR experience less risk of living in poverty than the general population of California and Nevada, this may not accurately reflect the occurrence of poverty within the LTRs high cost-of-living census county divisions within the Lake Tahoe Basin.

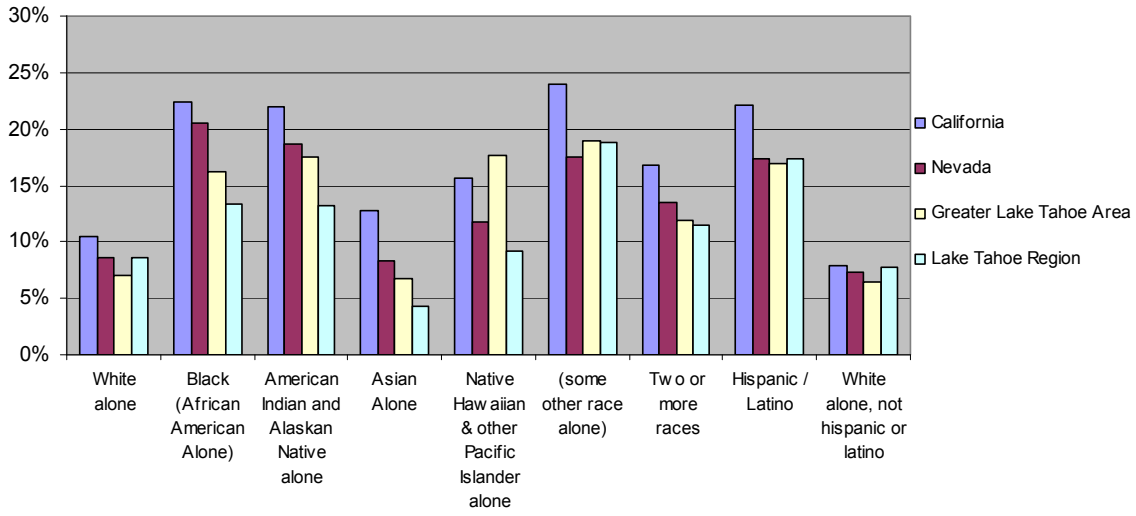


Figure F-8. Poverty by Race and Ethnicity, Regional, 2000.

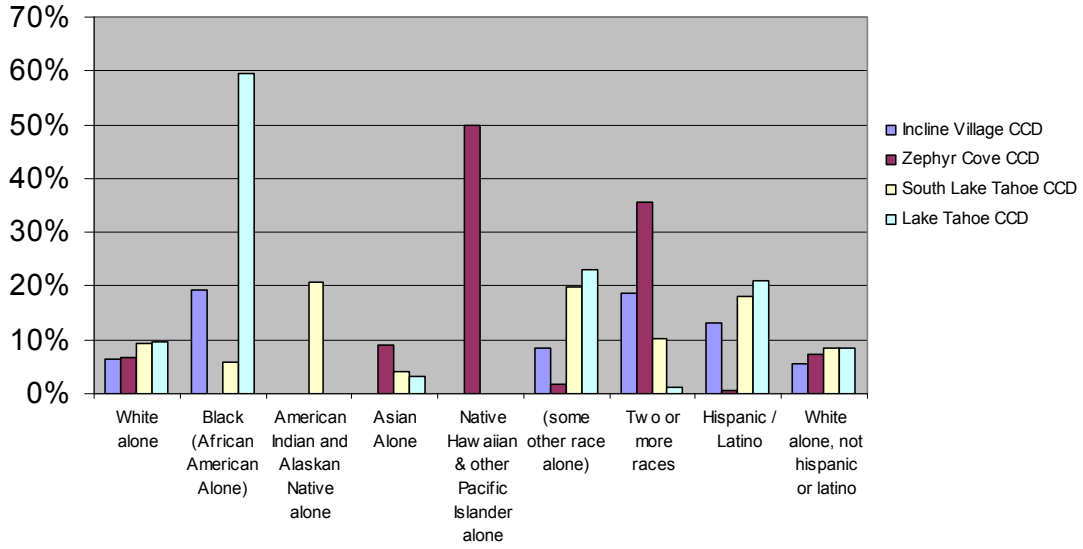


Figure F-9. Poverty by Race and Ethnicity, LTR, 2000.

F.4.4. Age Distribution

The GLTA and LTR had more people in the 45 to 64 age range than Nevada and California, and less people under 45 than Nevada and California. The GLTA and LTR had fewer young people under 19 than Nevada and California. When looking at communities in the LTR, Nevada community populations were older than California community populations. Fifty-four percent of Nevada communities within the LTR were 45 years and older, compared to California communities within the LTR at 41%.

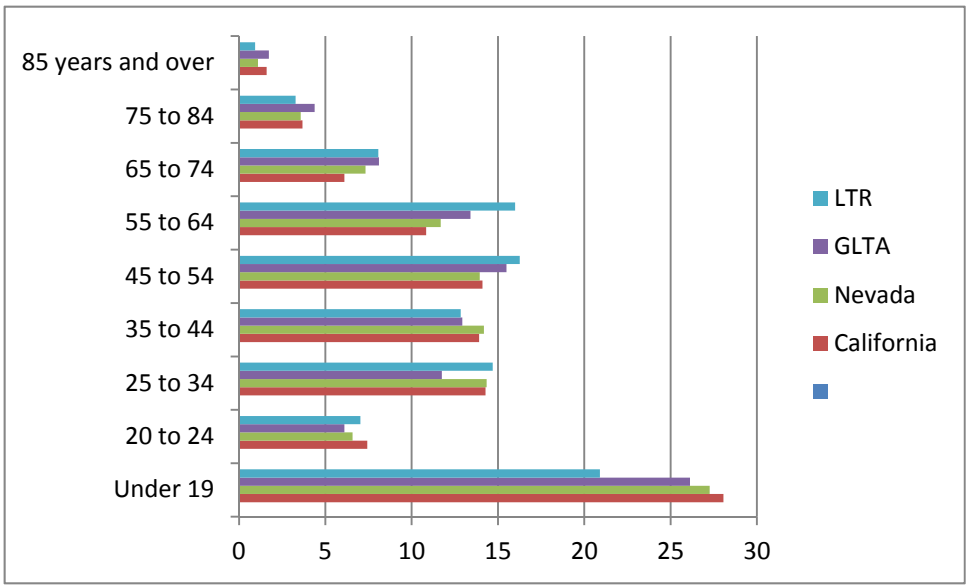


Figure F-10. Age Distribution, Regional, 2010.

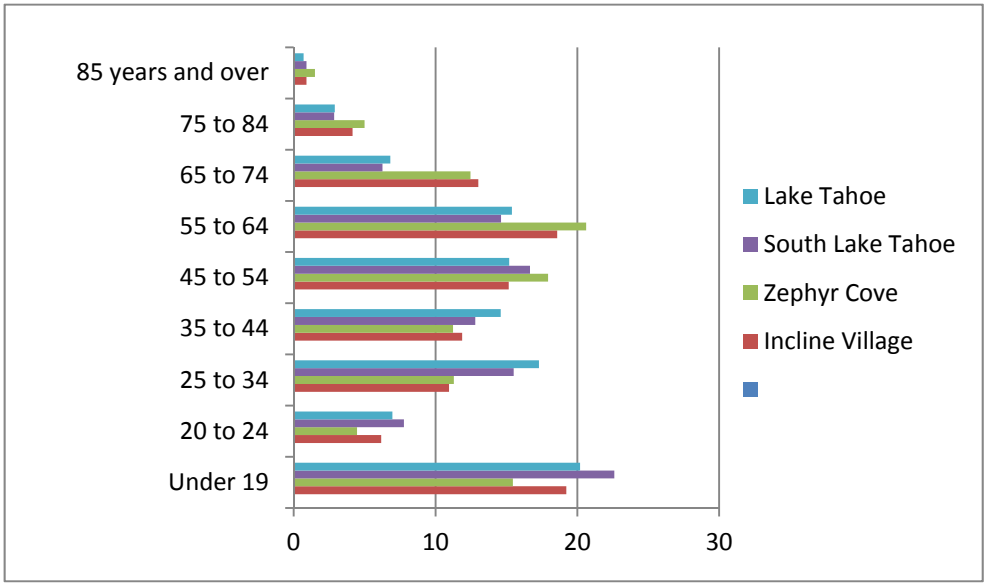


Figure F-11. Age Distribution, LTR, 2010.

F.4.5. Educational Attainment

(Note- Educational Attainment was not yet available for the 2010 Census data, so to the 2000 Census data is used.) Educational Attainment in the GLTA and LTR compared favorably against state percentages. Both the GLTA and LTR had a higher percentage of high school graduates than Nevada and California. When considering the percentage of population with a bachelor's degree or higher, the LTR outranked all other regions; however, GLTA was consistent with California and exceeded Nevada's rate.

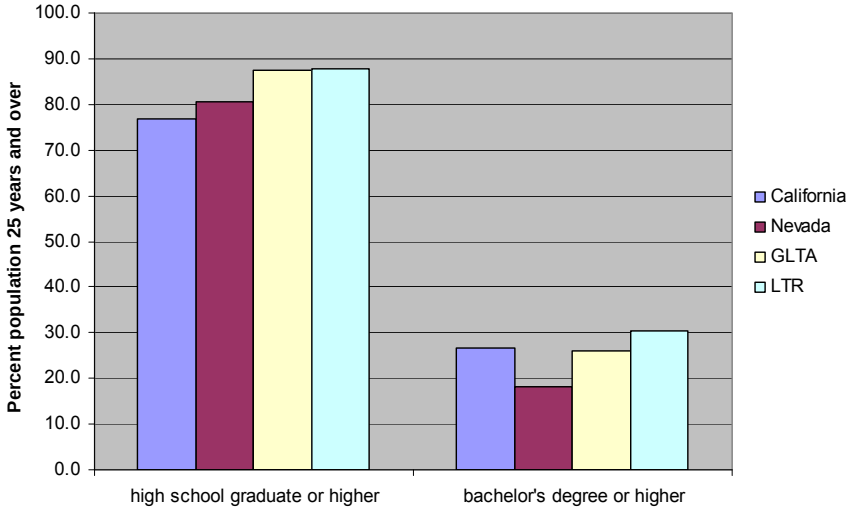


Figure F-12. Educational Attainment, Regional, 2000.

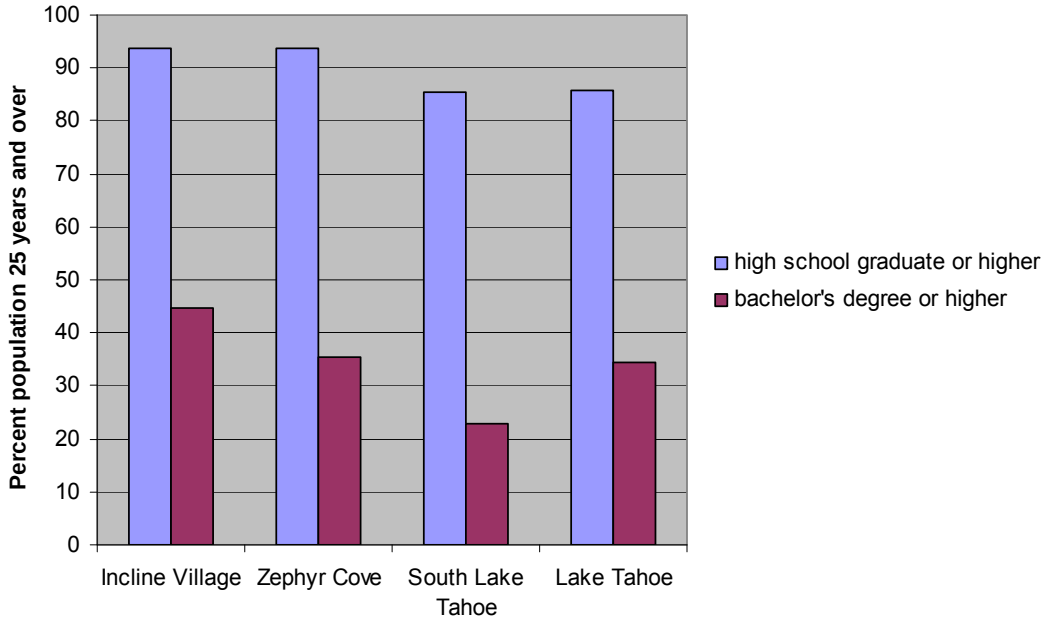


Figure F-13. Educational Attainment, LTR, 2000

F.4.6. Housing

When considering housing occupancy status, the LTR differs greatly from all other regions with a 45% vacancy rate, outstripped the next highest rate, which was for the GLTA at 34%. Of the vacant housing units, the LTR and the GLTA were used primarily for seasonal, recreational, or occasional use. Only 8% of the vacant homes in the LTR were rental units compared to 34% for California and 37% for Nevada. When looking at homeownerships rates the GLTA exceeded all other regions, and the LTR was on par with California and Nevada.

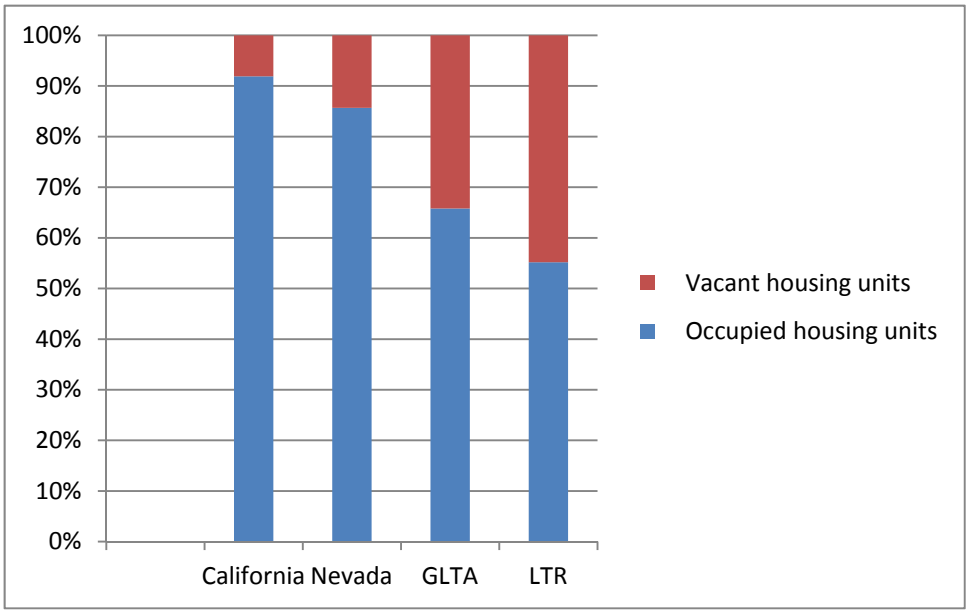


Figure F-14. Housing Occupancy Status, Regional, 2010.

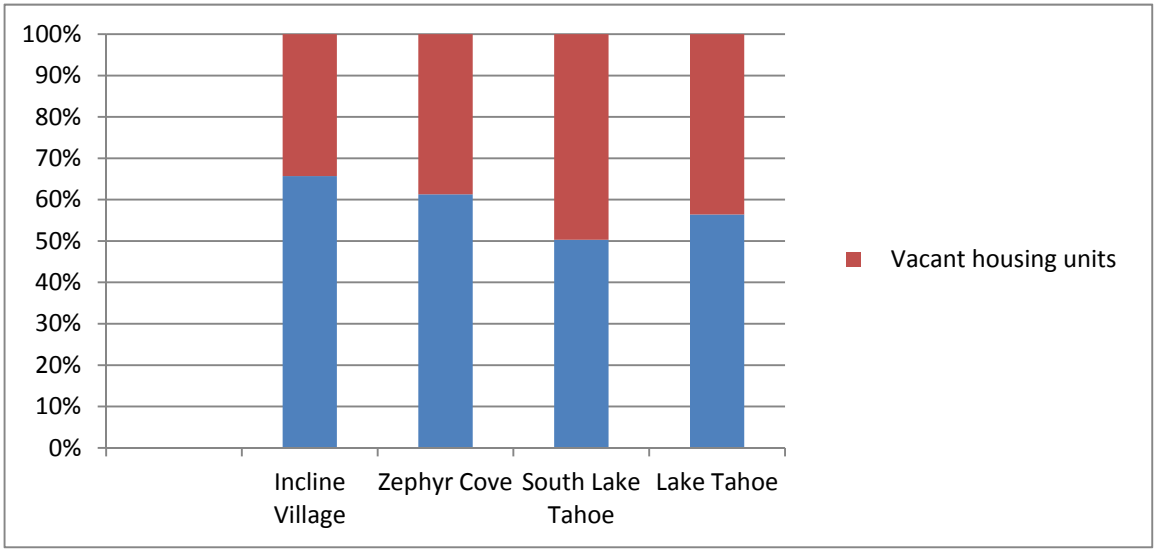


Figure F-15. Housing Occupancy Status, LTR, 2010.

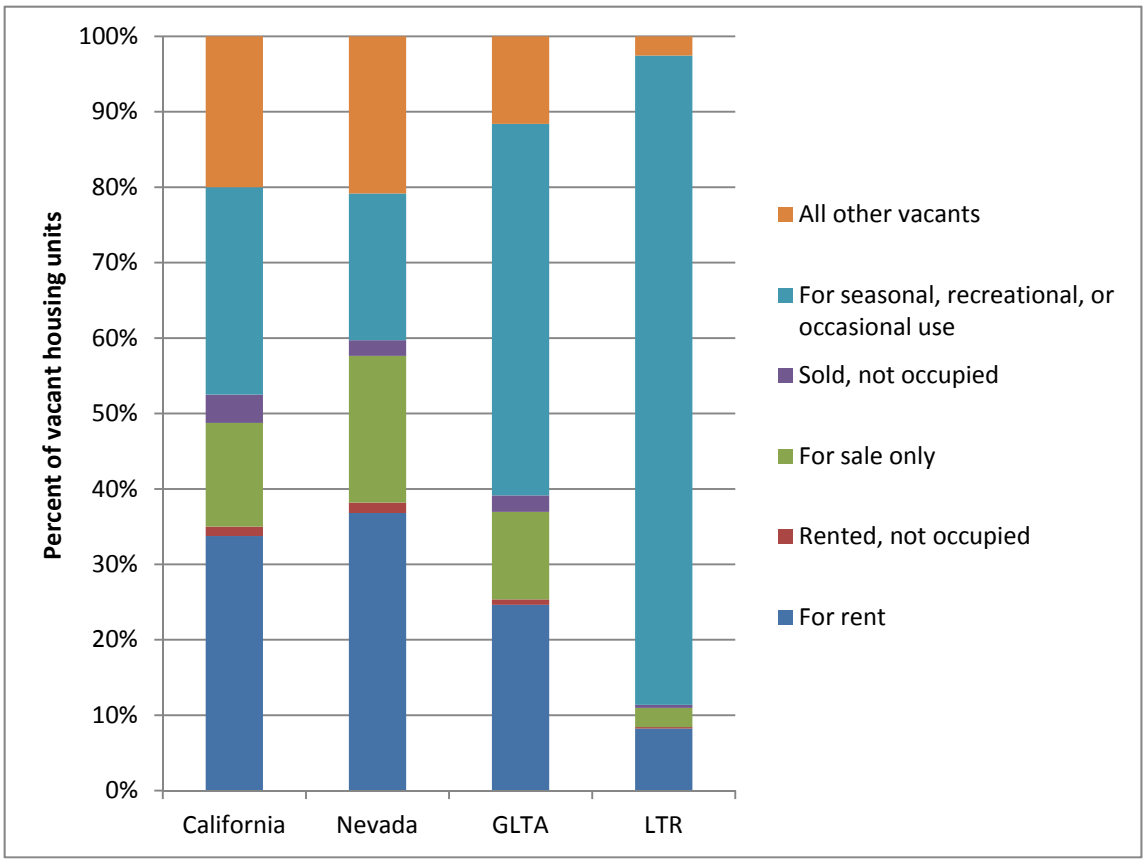


Figure F-16. Housing Tenure, Regional, 2010.

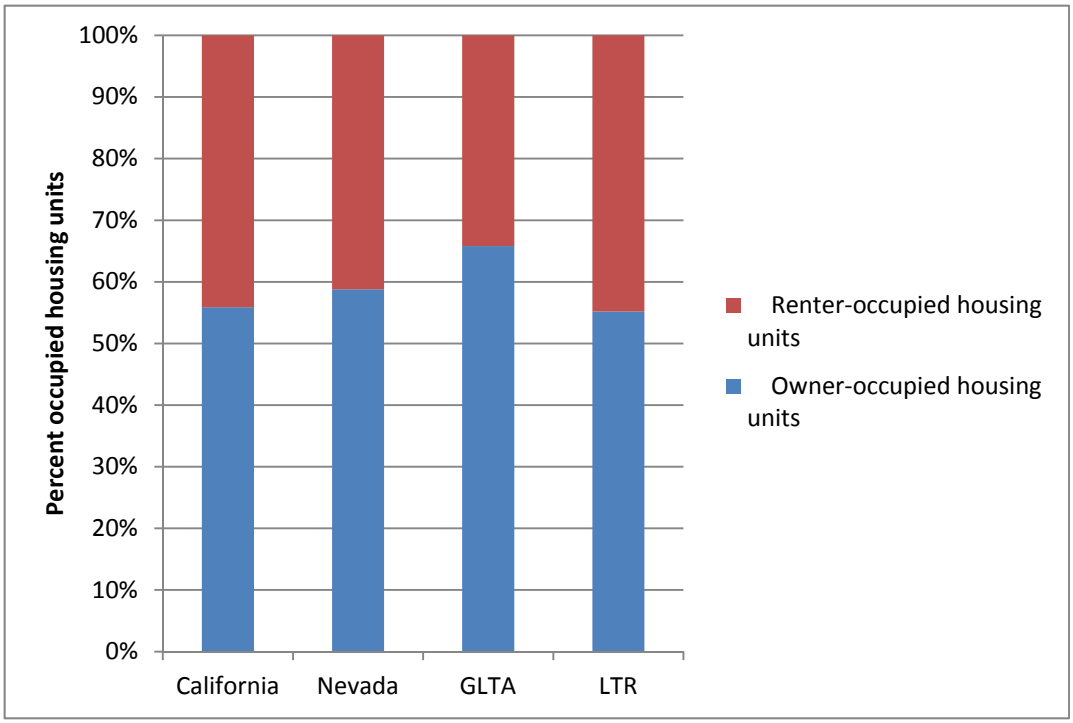


Figure F-17. Renter vs. owner-occupied housing, 2010.

F.4.7. Discussion

The 25% rise in population between 2000 and 2010 in the GLTA translates into higher day-use demand being placed on recreation opportunities in the Lake Tahoe Basin. As reported by National Visitor Use Monitoring reports, shown in Figure F- 14), 41.7% of visitors live within the GLTA. Compared to the surrounding area and states of California and Nevada, it is unusual to see an 11% drop in population from 2000 to 2010 in the LTR. This is at least in part due to a decline in the gaming/casino industry, increased second home ownership, and the general decline in economic condition over this time period.

California LTR communities were generally younger and had a greater degree of ethnic diversity than Nevada communities. With respect to ethnic diversity, the LTR was just a little over half of the California Hispanic percent of population. This indicates a need to design interpretive displays, education programs and planning events that integrate the Lake Tahoe Basin's Hispanic communities in National Forest land management. Meetings designed to integrate the Hispanic community should be located in areas with the greatest concentration of Hispanic population.

Overall communities in the GLTA and LTR had relatively high educational attainment rates when compared to state rates. The GLTA and LTR high school graduation rates exceeded that of California and Nevada, as did three LTR communities: Incline Village CCD; Zephyr Cove CCD; and Lake Tahoe CCD; exceed state rates in percentage of bachelor's degree or higher.

The housing status in the LTR is vastly different in respect to occupancy status and vacancy status from the other regions compared in this study. Close to half of the housing units in the LTR are vacant for seasonal, recreational, and occasional use. This presents a challenge in respect to communicating with and involving absentee landowners in forest planning and programs.

F.5. Economic Conditions and Trends

(Note: Employment and Income for the Lake Tahoe CCD's had not been updated to the 2010 Census as of this writing (9/16/11), so the write-up using the earlier information from the previous Social-Economic Specialist Report written by Christy Prescott (former LTBMU Economist and Susan Winter (Economist for the WO Ecosystem Management Coordination staff) is presented here as it was written.)

F.5.1. Employment (Current Condition and Trends)

The number of full-time and part-time positions in the GLTA was 623,742 in 2003. Wage and salary positions comprised the largest sector, which accounted for 77% of employment, while non-farm proprietorship accounted for 23%, and farm proprietorship accounted for 0.5 %. The GLTA non-farm proprietor sector accounts for 3.4% more in employment and 3.5% lower in wage and salary employment than California and Nevada combined. Farm proprietor employment was slightly higher in the GLTA than in Nevada and California. Nevada and El Dorado Counties' employment composition differed the most from the GLTA, with a greater proportion of employment from non-farm proprietorships and lesser proportion of employment in wage and salary employment.

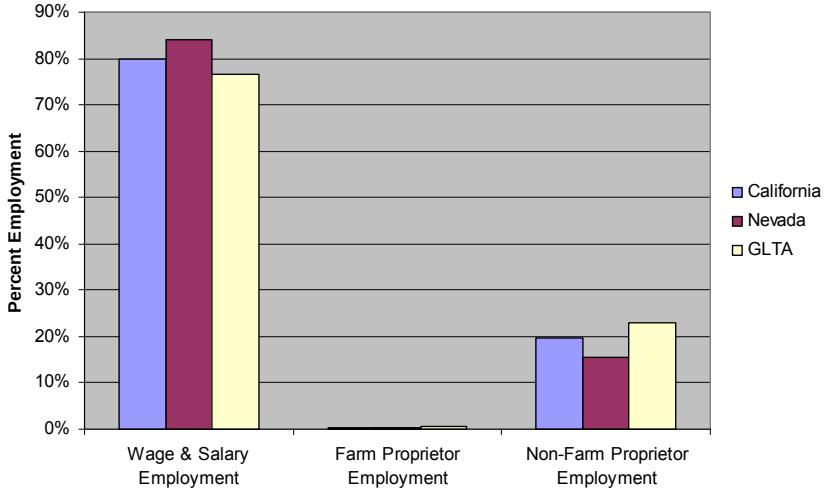


Figure F-18. Employment by Labor Sector, Regional, 2003

When considering the GLTA's employment by industry compared to state figures, the GLTA more closely resembles California's employment structure over Nevada's. Public administration and retail sales provided the greatest share of employment in the GLTA and California. Employment in accommodations and food service was the third highest in the GLTA with 11%; however, Nevada

outpaced the GLTA by 10%. Overall, the GLTA employment was more evenly distributed across industries than Nevada, but less so than California.

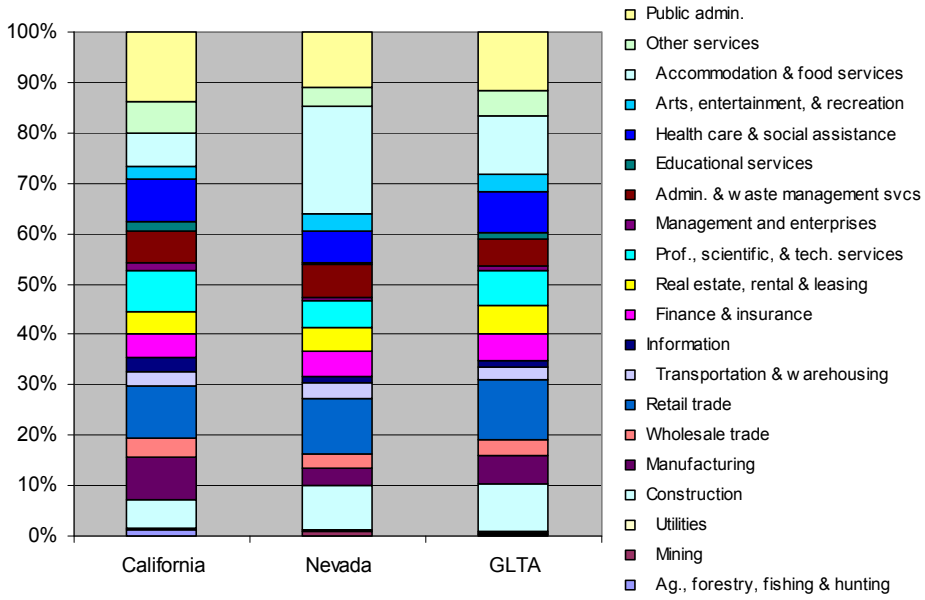


Figure F-19. Regional Comparison of Employment by Industry (NAICS), 2003

Figure F-20 illustrates the employment structure of the GLTA and LTR in 2006. Employment represents part-time, full-time, seasonal, and temporary jobs in the given category. The GLTA has a greater degree of diversity than the LTR, which is to be expected given that the GLTA encompasses a metropolitan area, as well as rural areas. Tourism-related industries dominate the LTR economy with over a quarter of employment opportunities in accommodation and food services, and 8% in arts, entertainment, and recreation. Tourism-related industries assume a much smaller percentage in the GLTA with accommodation and food services accounting for 11% and arts, entertainment and recreation accounting for 3% of employment.

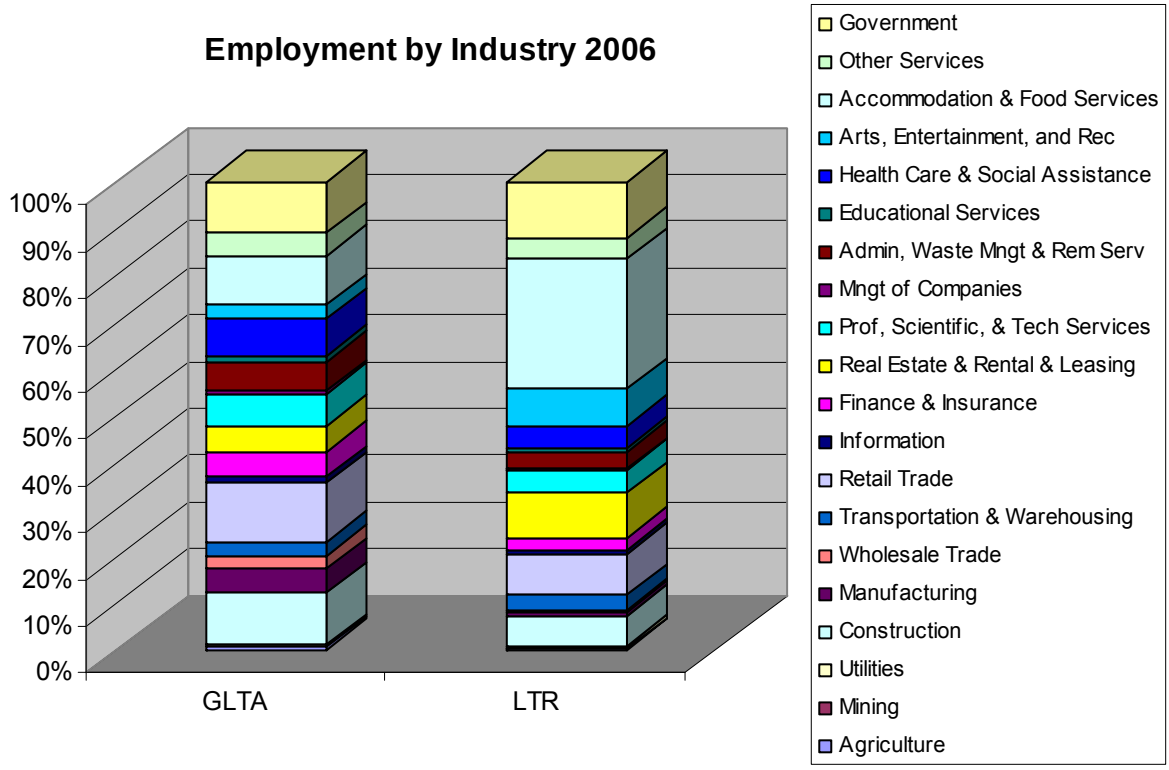


Figure F-20. Employment by Industry (NAICS), GLTA and LTR, 2006.

Figure F-21 illustrates employment by industry among census county divisions (CCD) within the Lake Tahoe Region. The Zephyr CCD far exceeds all other CCDs in the Lake Tahoe Region in the arts, entertainment, and recreation sector; this is explained by the large gaming industry located on the south shore in Nevada. Accommodation and food services provide the greatest number of positions in Incline, El Dorado, and Placer CCDs. The most diversified economy in the LTR is Incline Village CCD, meaning that employment by industry is more evenly distributed across industries in Incline CCD than in other CCDs.

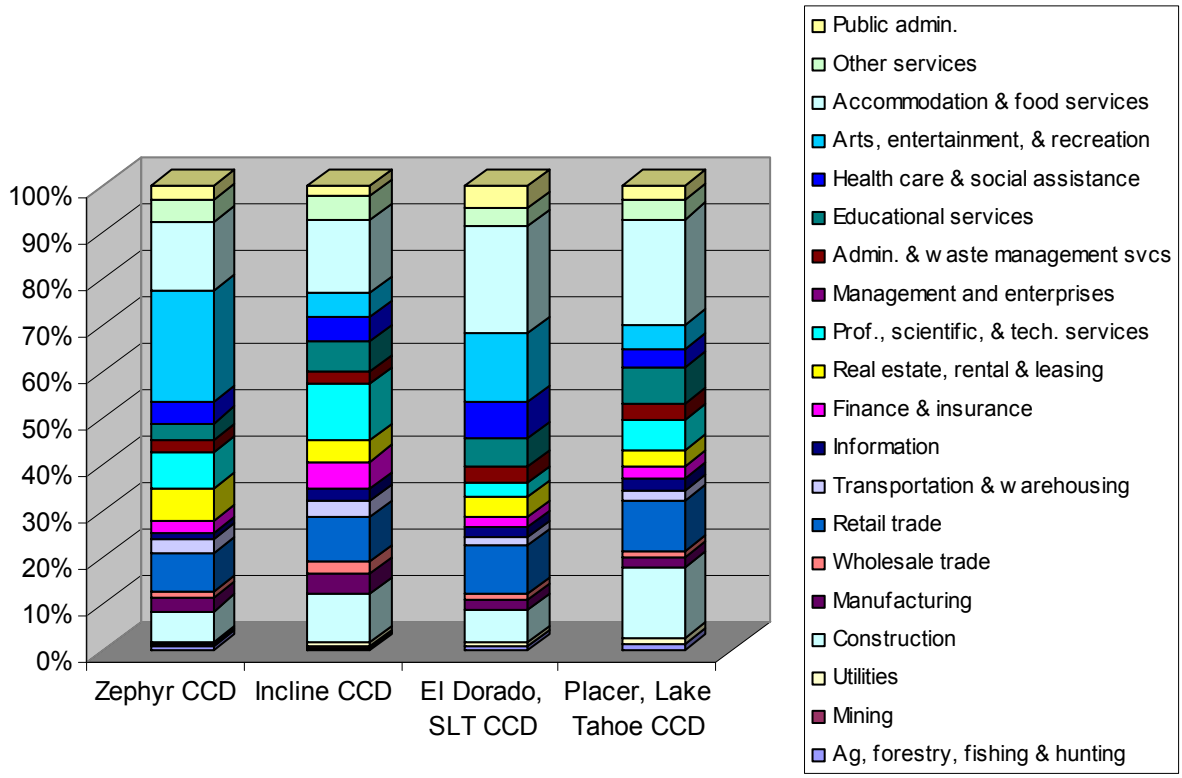


Figure F-21. Employment Distribution by Industry (NAICS), 2000. Lake Tahoe Region by CCD

Figure F-22 illustrates the unemployment rates for California, Nevada, the Greater Lake Tahoe Area, and the Lake Tahoe Region in 2000. The unemployment rate for the LTR was lower than both California and Nevada; however, it exceeded the unemployment rate for the GLTA, which had the lowest unemployment rate of the four regions.

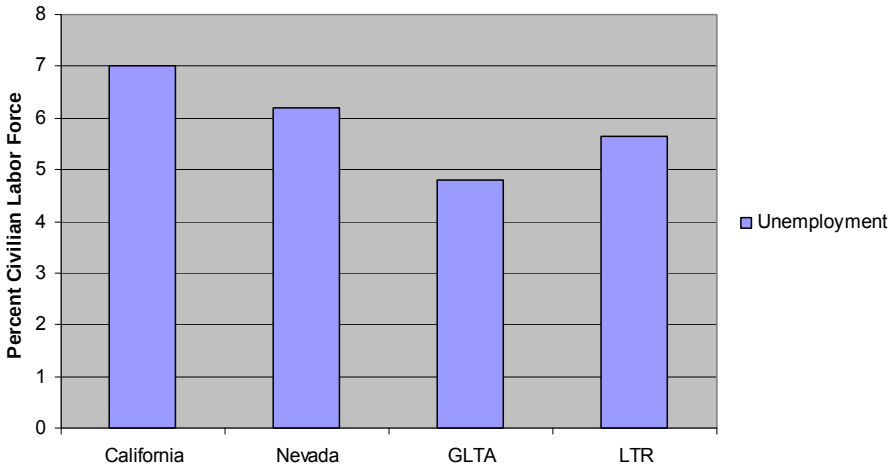


Figure F-22. Regional Unemployment, 2000

When comparing the CCDs that comprise the LTR, it appears that south shore communities had higher unemployment rates than north shore communities (Figure F-23). The higher unemployment rates on the south shore may be explained by the greater degree of employment being occupied by the arts, entertainment and recreation industries, which are subject to the seasonal influx of visitors. Employees in these industries often work seasonally.

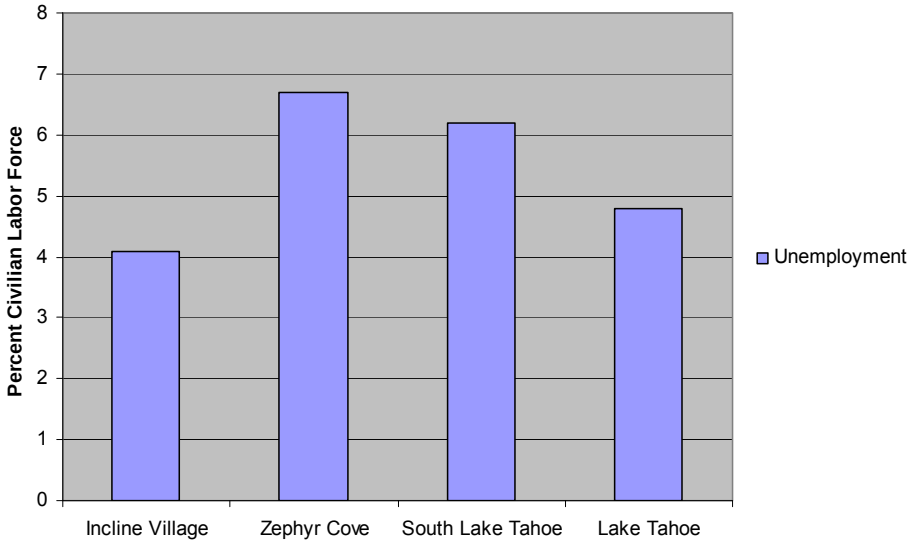


Figure F-23. Unemployment, Lake Tahoe Region CCDs, 2000.

F.5.2. Employment Trends

Overall, employment growth in the GLTA outpaced California but lagged behind Nevada. From 1993 to 2003, total employment in the GLTA increased by 46%. Nevada outpaced the GLTA by 19%; however, the GLTA outpaced California by 26% in increased employment opportunities.

The greatest increase in positions in the GLTA was in the non-farm proprietor sector which increased by 54%. While the GLTA lagged behind Nevada's increase in the non-farm proprietor sector by 34%, the GLTA exceeded California's increase by 27%. The GLTA, Nevada, and California all experienced declining employment in the farm proprietor sector. The greatest loss was in California which declined by 7% and the smallest decline was in Nevada which declined by 4%.

While Nevada led California in increasing employment, all the Nevada counties represented in the GLTA were below the state average. The California counties were above the state average. Placer County increased employment opportunities by 74%, with the greatest percentage of the positions in wage and salary employment. Nevada County showed the largest gain from 1993 to 2003 in the non-farm proprietor sector and had the greatest number of positions in non-farm proprietor employment.

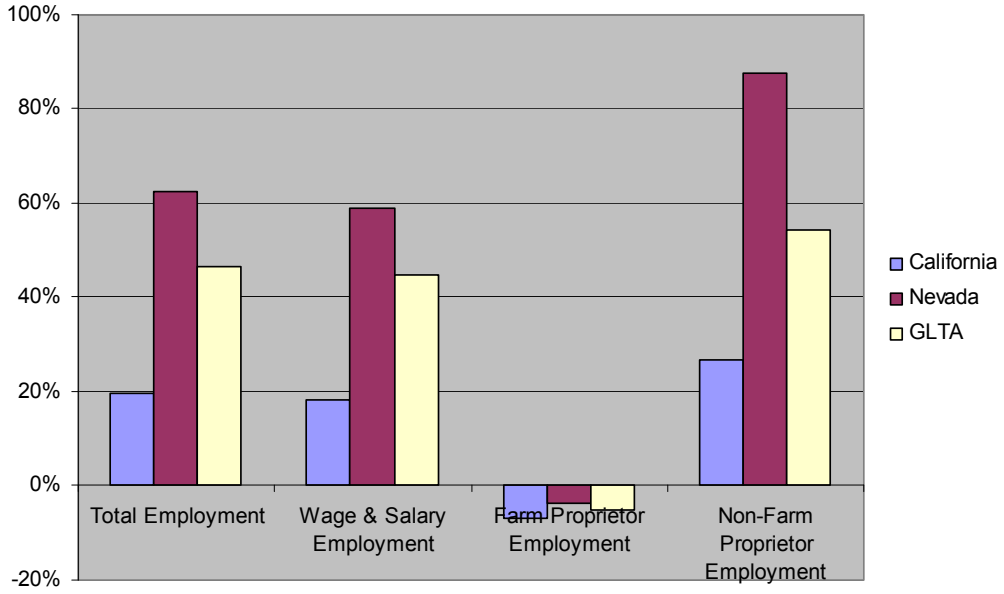


Figure F-24. Trends in Employment by Labor Sector, Regional, 1993-2003.

From 2003 to 2006, employment by industry in the GLTA was relatively stable (Figure F-25). Construction lead in growth, increasing employment by 1.64%,

and accommodation and food services, which declined in total share of employment by 0.8%, accounted for the greatest decline in the GLTA.

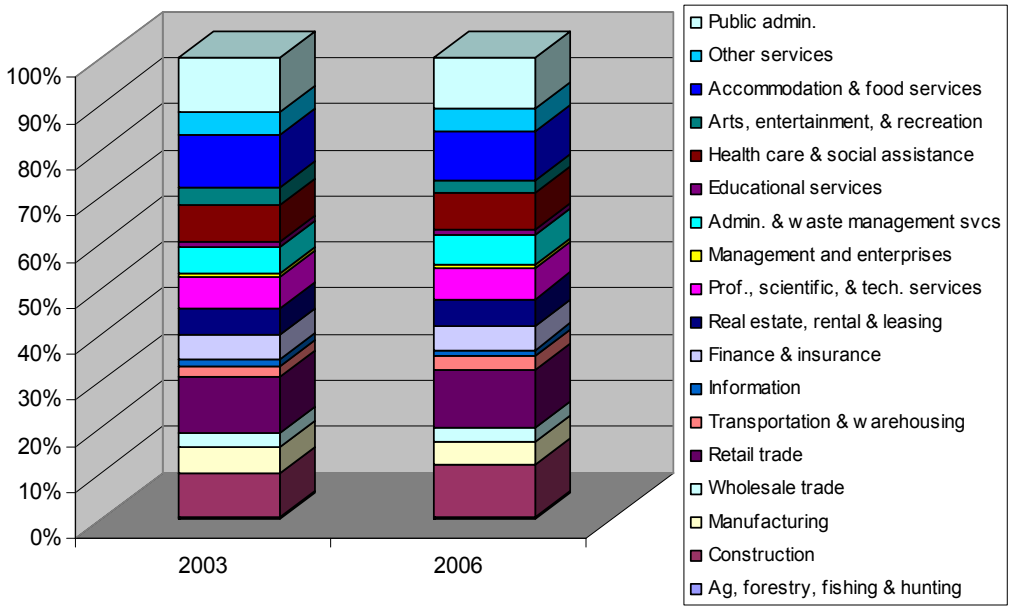


Figure F-25. Trends in Employment by Industry, Greater Lake Tahoe Region, 2003-2006

Between 2000 and 2006, the Lake Tahoe Region's employment by industry was more volatile than the GLTA (Figure F-26). Public administration grew by 8%, followed closely by accommodation and food services at 7% and real estate at 6%. Industries that exhibited a decline in share of employment are the arts, entertainment, and recreation sector, which declined by 4% and the construction sector, which declined by 3%.

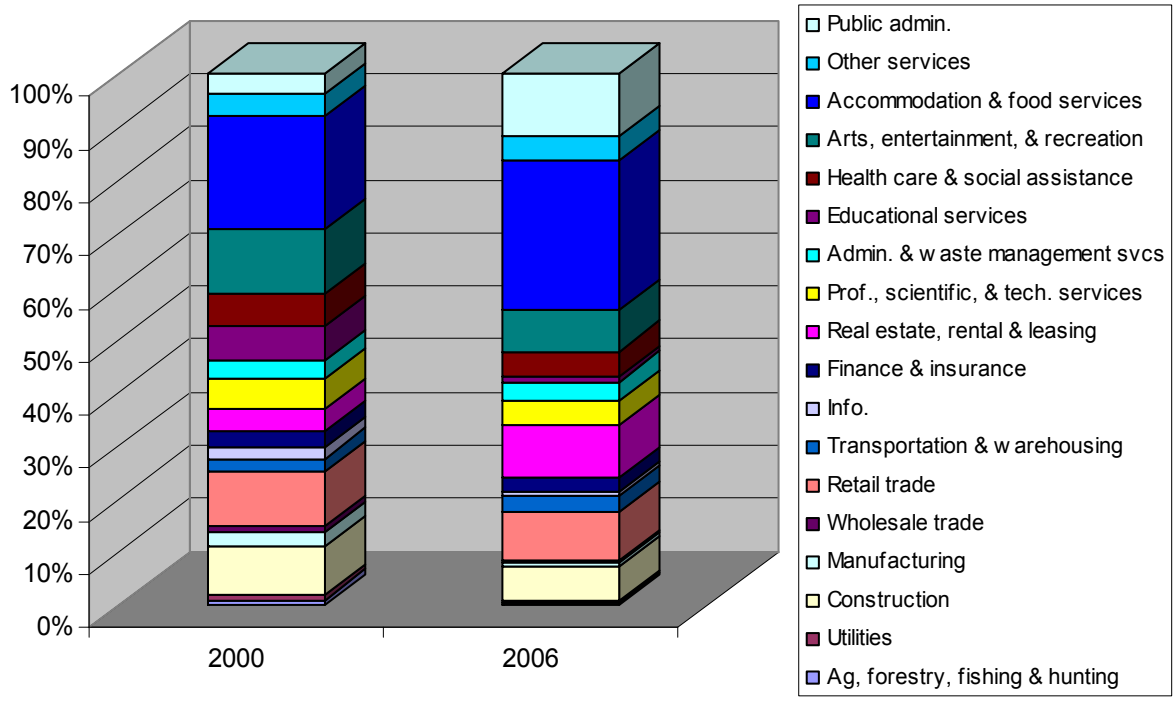


Figure F-26. Trends in Employment by Industry, Lake Tahoe Region, 2000-2006.

Figure F-27 illustrates trends in regional unemployment rates from 1990 to 2000. In both the GLTA and the LTR, unemployment rates fell over the 10-year period, while in Nevada the unemployment rate stayed the same and in California unemployment rose during the same period.

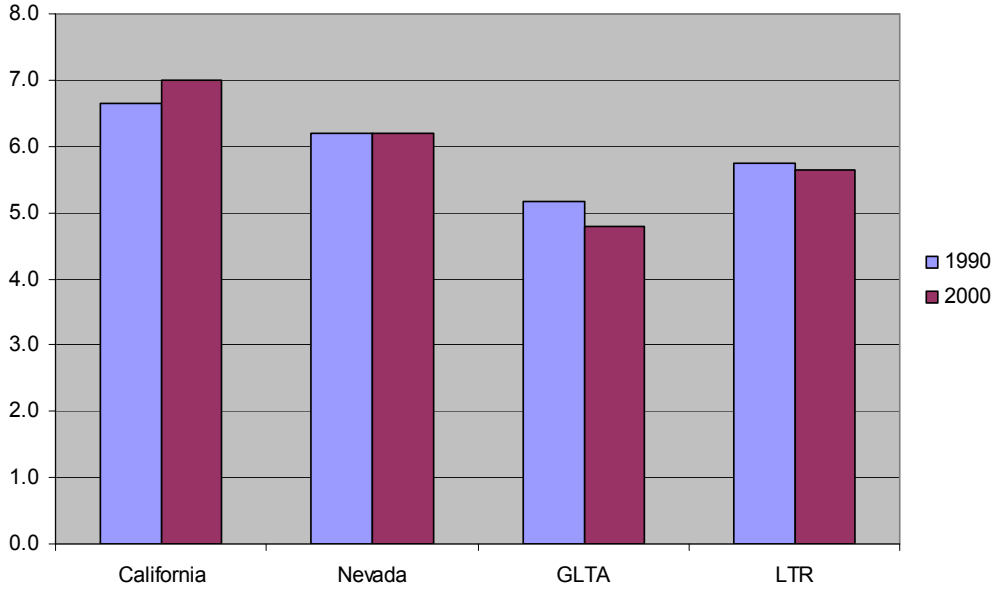


Figure F-27. Trends in Unemployment Rates, Regional, 1990 - 2000.

Figure F-28 shows that unemployment rates fell in all CCDs but the Zephyr Cove CCD, which in 1990 had the lowest unemployment rate of the CCDs but by 2000 had the highest.

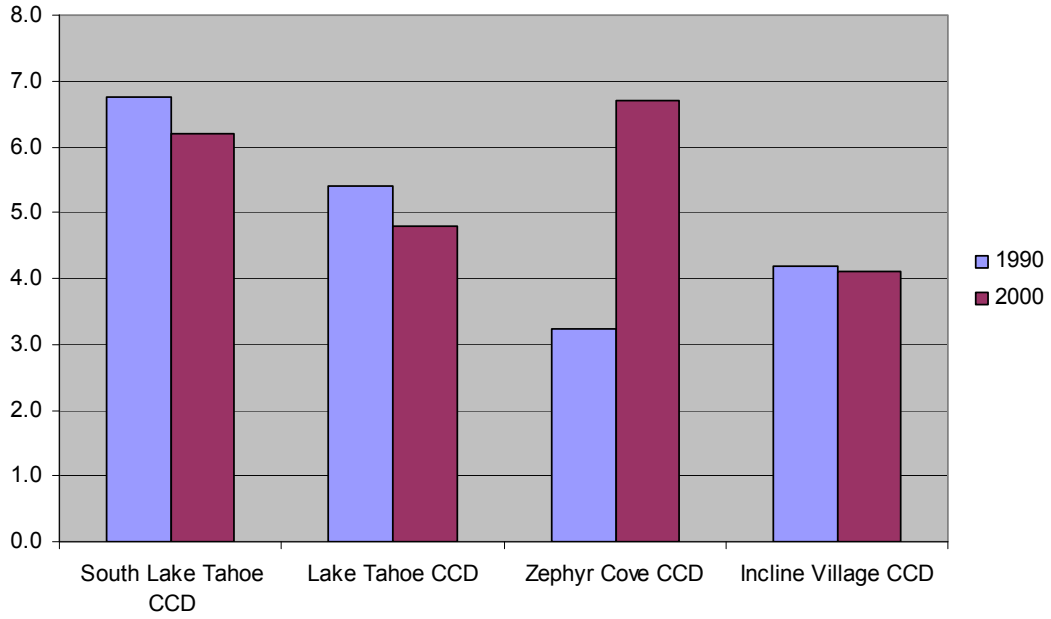


Figure F-28. Trends in Unemployment Rates, Lake Tahoe Region, 1990- 2000.

F.5.3. Income

Current Condition

Public administration, followed by construction, then health care and social assistance provided the greatest amount of income by industry in the GLTA in 2003 (Figure F-29). Within the Lake Tahoe Region in 2006, the accommodation and food services accounted for the greatest share of labor income, followed closely by government (Figure F-30).

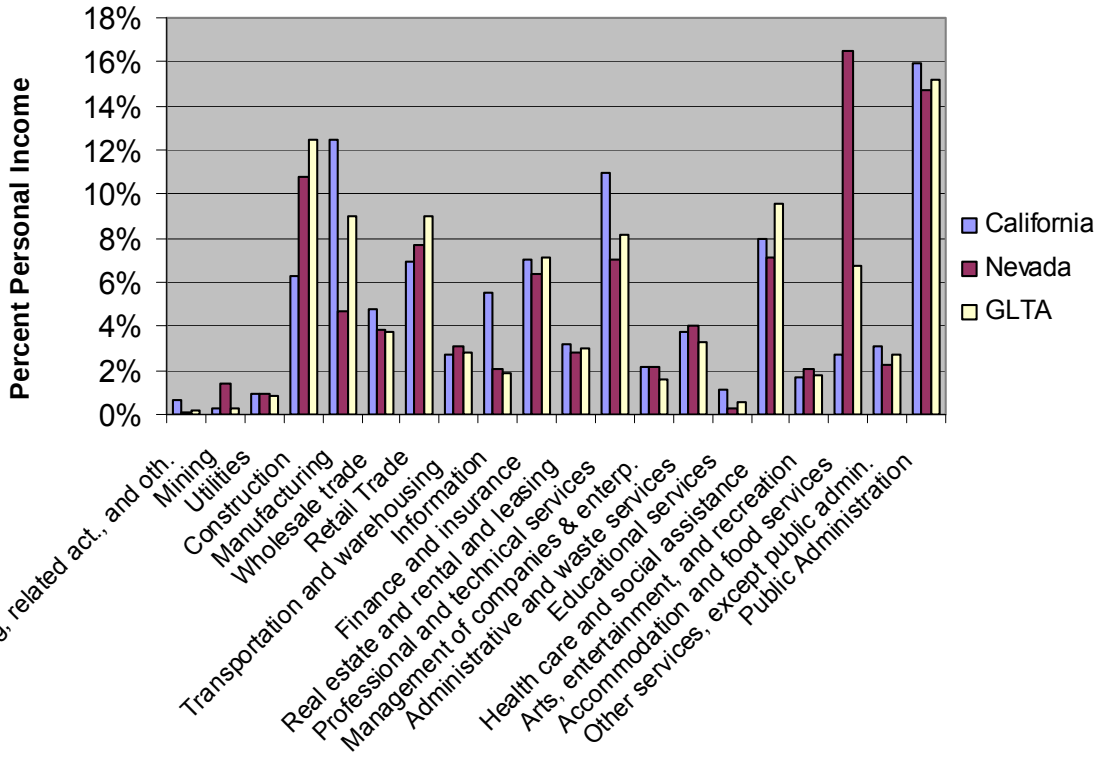


Figure F-29. Income by Industry, Regional, 2003.

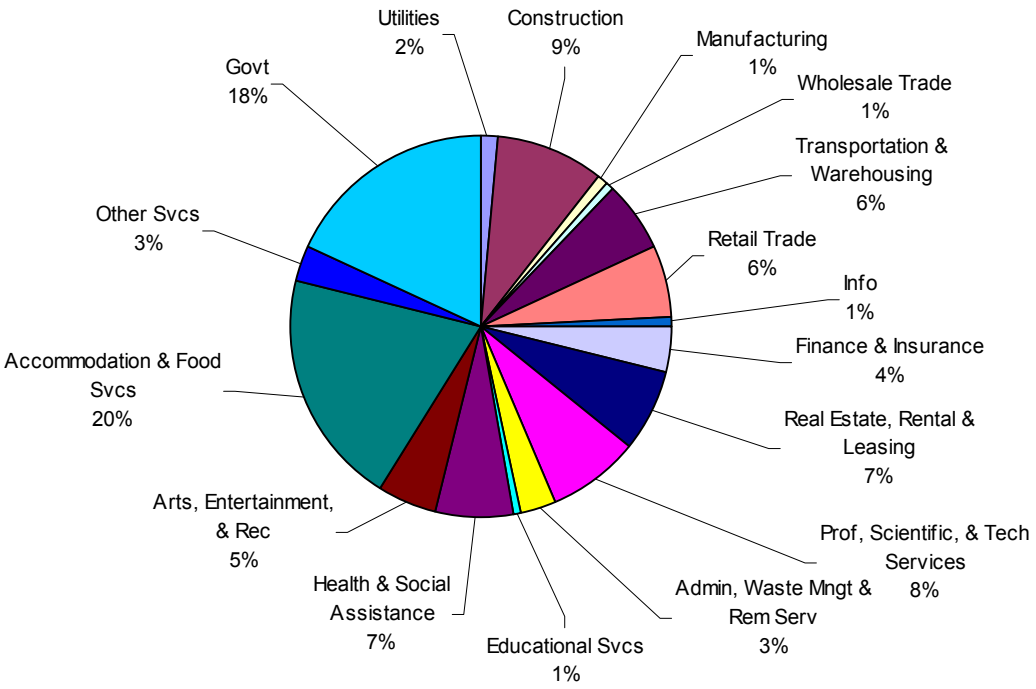


Figure F-30. Labor Income by Industry Sector, Lake Tahoe Region, 2006.

The GLTA differed from California and Nevada by having a greater share of income derived from dividends, interest, and rent than the two states, and a lesser share of personal income coming from wage and salary disbursements.

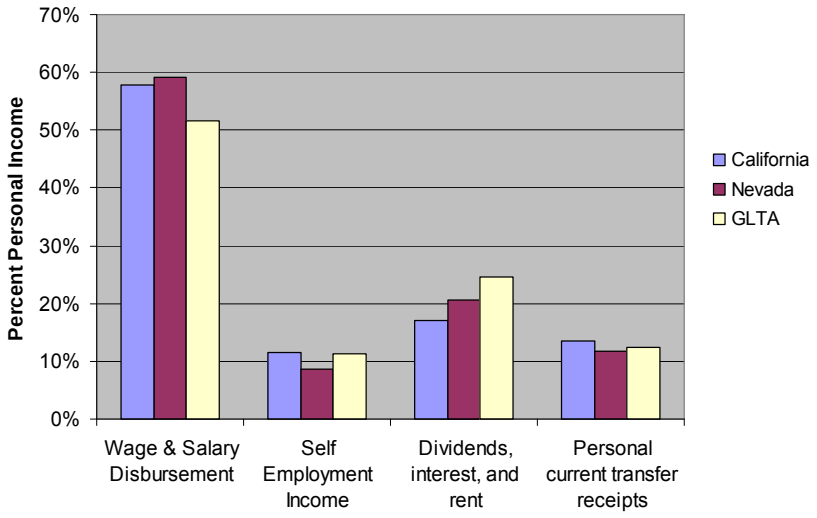


Figure F-31. Income by Labor Sector, Regional, 2003.

Income derived from the wage or salary income labor sector was the dominant source of income across all communities in the Lake Tahoe Region. On average, LTR communities in California derived 69% of personal income from wage and salary positions, compared to Nevada LTR communities where 52% of personal income was from wage and salary positions. In turn, 28% of personal income in Nevada LTR communities was earned through interest, dividends, or net rental income, while in California this sector only accounted for 8% of personal income.

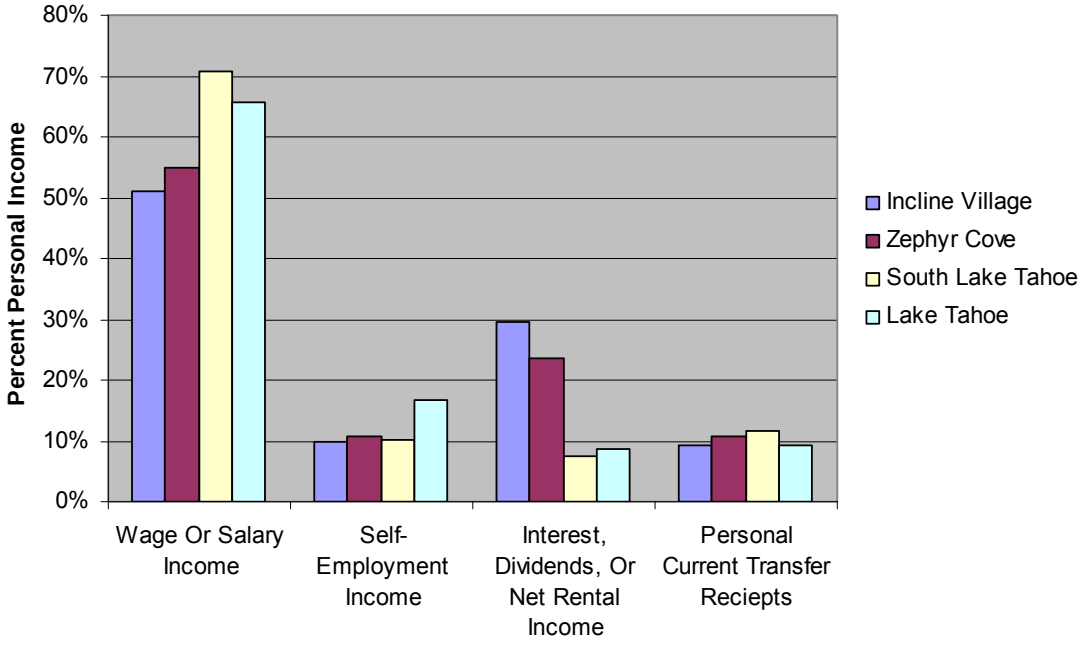


Figure F-32. Income by Labor Sector, Lake Tahoe Region CCDs, 2003.

Trends

Of the four labor sectors, wage and salary positions grew the fastest in the GLTA. For both Nevada and California, the fastest growing labor sector was self-employment.

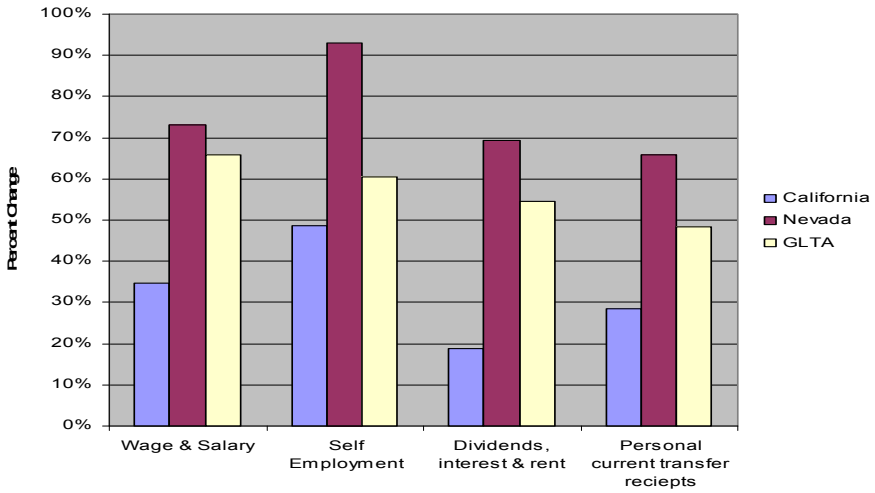


Figure F-33. Percent Change in Personal Income by Labor Sector, Regional, 1993-2003.

Discussion

Although accommodation and food services occupy more than a quarter of the employment opportunities in the Lake Tahoe Region (Figure F-26), they represent only one fifth of the labor income (Figure F-30), which means that the greatest portion of employment opportunities in the Lake Tahoe Region are low paying positions. In contrast, the second largest industry sector by employment is government, which occupies 15% of the employment opportunities and provides 18% of the labor income. Figure F-34 illustrates the relationship between industry sectors in the Lake Tahoe Region and whether each sector's employment proportion is higher or lower than the proportion of wages.

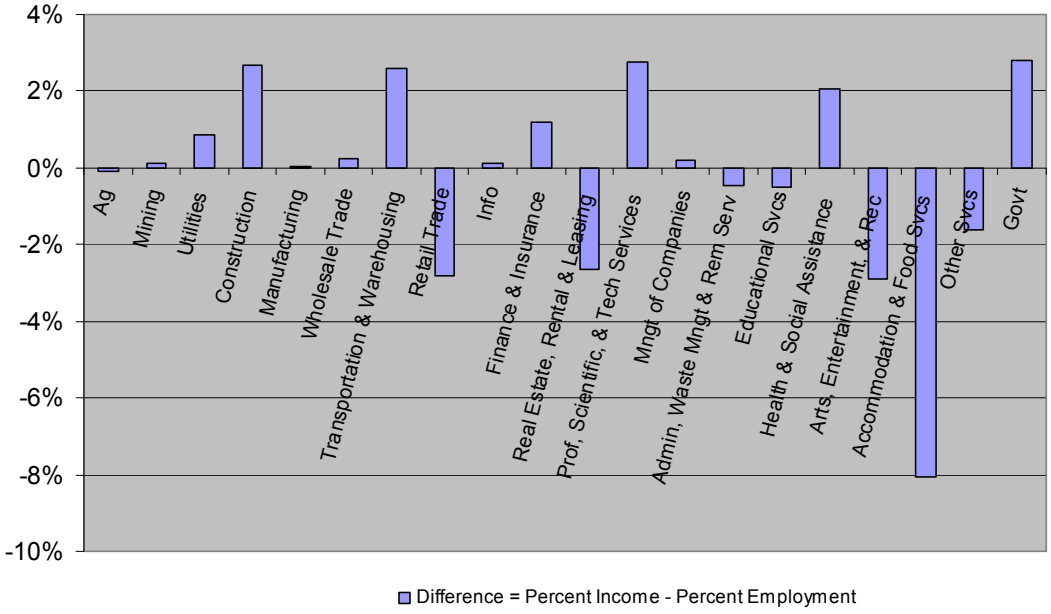


Figure F-34. Relative Income by Industry, Lake Tahoe Region, 2006.

F.6. Unit Economic Contribution Analysis

F.6.1. Methodology

An economic contribution analysis depicts the Forest Service's contribution to the local and regional economy. An economic contribution analysis differs from an impact analysis in that it does not report the economy-wide effects of some anticipated change but rather provides a snapshot of all the income, jobs and industries in an area that are related to National Forest resource management. Where an impact analysis may focus on the economic consequences of proposed alternatives, a contribution analysis provides a description of the structure, size, and dynamics of the current economy and the Forest Service's contribution to it.

Non-market benefits such as ecosystem services or social benefits are not captured in the economic contribution analysis. While non-market benefits such as carbon sequestration, scenic beauty, or opportunities for solitude are important, there is no accepted methodology on how to quantify these values. While the Forest Service does recognize the role of ecosystem services, it has yet to establish a formal policy and protocol on whether or how to quantify these values. For these reasons, non-market benefits will be captured in the Social Assessment section.

IMPLAN is the economic modeling tool created by the Forest Service in cooperation with the Federal Emergency Management Agency and the Bureau of Land Management that was used to estimate the Forest's contribution to the local economy. Originally developed to assist land managers in planning, IMPLAN has since been privatized and is currently run by the Minnesota IMPLAN Group (MIG). IMPLAN models the economic stimulus, i.e., the labor and income generated among 509 economic sectors identified in the North American Industrial Classification System (NAICS) within the study area. The economic sectors were aggregated by the first two digits of their classification number for report purposes to produce twenty aggregate sectors.

F.6.2. Study Area

One of the most important decisions to be made in this type of analysis is the definition of a study area based on a functional local economy. The model built for the LTBMU is based on zip codes which concentrate on the physical boundary of the Basin. This determination is driven by the issues raised by the public and resource managers. The Lake Tahoe region is well defined by the mountain ridges around the lake.

The zip codes listed in Table F-3 were used to model the "Lake Tahoe Region" economy.

Table F3. Zip Codes for Economic Analysis for the Lake Tahoe Region

State	County	Zip Code	City/Town
NV	Washoe	89402	Crystal Bay, NV
NV	Douglas	89413	Glenbrook, NV
NV	Douglas	89448	Zephyr Cove, NV
NV	Douglas	89449	Stateline, NV
NV	Washoe	89450	Incline Village, NV
NV	Washoe	89451	Incline Village, NV
NV	Washoe	89452	Incline Village, NV
NV	Carson City	89703	Carson City, NV
CA	Placer	96140	Carnellian Bay, CA
CA	Placer	96141	Homewood, CA
CA	El Dorado	96142	Tahoma, CA
CA	Placer	96143	Kings Beach, CA
CA	Placer	96145	Tahoe City, CA
CA	Placer	96146	Olympic Valley, CA
CA	Placer	96148	Tahoe Vista, CA
CA	El Dorado	96150	South Lake Tahoe, CA
CA	El Dorado	96151	South Lake Tahoe, CA
CA	El Dorado	96152	South Lake Tahoe, CA
CA	El Dorado	96154	South Lake Tahoe, CA

CA	El Dorado	96155	South Lake Tahoe, CA
CA	El Dorado	96156	South Lake Tahoe, CA
CA	El Dorado	96157	South Lake Tahoe, CA
CA	El Dorado	96158	South Lake Tahoe, CA

Once the base economic model was built with IMPLAN, the following 'Response Coefficients', or rates of economic activity, were estimated.

Recreation: The local economic stimulus for every million dollars of non-local visitor expenditures while visiting the LTBMU.

Wildlife and Fish: The local economic stimulus for every million dollars of non-local visitor expenditures related to hunting, fishing, and wildlife watching while visiting the LTBMU.

Ecosystem Restoration: The acres of mechanical thinning and small openings created for ecosystem restoration.

Forest Service Expenditures: The local economic stimulus for every million dollars of salary and non-salary expenditures to carry out recreation management activities on the LTBMU.

The response coefficients were then imported into "FEAST", an economic analysis tool developed for forest planning, along with baseline economic data and resource data to generate the economic contribution report. The following data on forest related activities and management were used to support the development of the report.

Recreation and Wildlife and Fish

Annual visitors to the LTBMU by activity and by origin (local or non-local) from the National Visitor Use Monitoring (NVUM) survey for the Lake Tahoe Basin Management Unit, 2007.

Expenditure profiles from NVUM (Stynes and White 2007) by activity (including wildlife and fish), type of use (overnight or day use) and by residence (local or non-local).

Forest Service Expenditures

Annual budget expenditures including salary and non-salary expenditures from fiscal year 2008 (October 2007 to September 2008).

Base funding, congressionally-allocated funds

Southern Nevada Public Land Management Act funds

Environmental Improvement Project funding

Erosion control grant funds administered by the LTBMU

LTBMU-related employment and labor income describes the "direct", "indirect" and "induced" economic effects derived from expenditures associated with management activities. A "direct" effect is sales of goods and services by local businesses to National Forest visitors or to the LTBMU. The local purchase of goods and services by directly affected businesses for production purposes is referred to as the "indirect" effect. The local expenditure of income by employees and proprietors of directly and indirectly affected firms is referred to as an "induced" effect.

For example, a visitor who comes to the Lake Tahoe basin for the primary purpose of recreating on National Forest lands may also purchase accommodations off the forest. This would be a direct effect. Supplies purchased by the hotel to provide that hotel room would represent an indirect effect, and the employees of the hotel who spend their wage on groceries generates an induced effect. Induced and indirect impacts are also referred to as secondary, or ripple, effects. Secondary effects in the local economy can also be described as recirculated monies.

The more times money is circulated within the local economy before it "leaks" out, the greater the economic benefit is to the local economy in terms of income and employment. Leakage refers to when monies are spent outside of the local economy. How effective a community is in increasing the number of times a dollar is recirculated in the local economy is largely affected by the degree of economic diversity. The rate of spending and respending of money in an economy is called the "multiplier effect."

In estimating the LTBMU's economic contribution, it is important to note that when considering the economic contribution of recreation visitors, only non-local visitor expenditures are assessed in Table F-4. This is not to say that spending behaviors by local recreationists do not influence the economic vitality of the area, but rather the "substitution effect" is unknown. Substitution effect refers to how spending behaviors would be affected if the LTBMU did not exist. It is conceivable that the local recreationists would find similar local recreation opportunities and their spending behavior would remain the same. In addition, expenditures by locals do not introduce "new money" into the economy.

F.7. Current Conditions of Forest Economic Contribution

Table F-5 describes the LTBMU's contribution to the Lake Tahoe Basin area as measured by jobs and labor income by industry sector. Note that "Jobs" is average annual employment and includes a combination of full and part time, temporary, and seasonal workers. "Labor Income" is the sum of employee compensation (the value of wages and benefits) and proprietor's income. The numbers in the "LTBMU-related" columns are Total Effects – direct effects plus the ripple (secondary) effects in the local economy.

Table F4. LTBMU Economic Contribution to Lake Tahoe Region (2008)

Industry	Employment (jobs)		Labor Income (Thousands of 2010 dollars)	
	Area Totals	FS-Related	Area Totals	FS-Related
Agriculture	54	55	$2,070	$1,751
Mining	51	6	$2,261	$277
Utilities	199	4	$23,685	$620
Construction	3,287	27	$200,103	$1,588
Manufacturing	242	69	$14,983	$1,979
Wholesale Trade	329	81	$24,169	$6,236
Transportation & Warehousing	654	66	$27,195	$2,842
Retail Trade	3,563	385	$115,344	$14,799
Information	411	32	$26,545	$2,044
Finance & Insurance	2,382	50	$74,893	$2,281
Real Estate & Rental & Leasing	7,594	89	$107,985	$1,592
Prof, Scientific, & Tech Services	3,316	160	$178,494	$7,437
Mngt of Companies	156	16	$18,573	$1,881
Admin, Waste Mngt & Rem Serv	2,189	82	$78,082	$2,717
Educational Services	681	20	$15,962	$726
Health Care & Social Assistance	3,748	95	$239,840	$10,931

Industry	Employment (jobs)		Labor Income (Thousands of 2010 dollars)	
Arts, Entertainment, and Rec	2,816	320	$88,447	$10,649
Accommodation & Food Services	10,167	1,784	$316,644	$54,786
Other Services	3,150	77	$125,385	$4,244
Government	7,623	175	$498,144	$14,343
Total	**52,612**	**3,593**	**$2,178,808**	**$143,722**
FS as Percent of Total	**---**	**6.83%**	**---**	**6.60%**

The LTBMU's contribution to employment in the LTR by program area by alternative is shown in Table F-5. Of the Forest Service programs, the greatest economic stimulus to the GLTA and LTA's economy is due to the recreation program. Note: The row titled "Forest Service Expenditures" is the only place government employment for program planning and administration is counted. Employment in all other rows counts only private sector jobs.

Table F5. Employment by Program Area for the Lake Tahoe Region

Resource	Total Number of Jobs Contributed			
	Alternative A (Current)	Alternative B	Alternative C	Alternative D
Recreation: non-local only	3,166	3,324	3,641	2,691
Wildlife and Fish: non-local only	87	92	100	74
Grazing	0	0	0	0
Timber	0	0	0	0
Minerals	0	0	0	0

Ecosystem Restoration	50	50	50	50
Payments to States/Counties	31	31	31	31
Forest Service Expenditures	258	258	258	258
Total Forest Management	3,593	3,755	4,081	3,105
Percent Change from Current	---	4.5%	13.6%	-13.6%

Discussion

Susan Winter, economist and economic modeler working with the Forest Service's Planning Analysis Group (PAG), who ran the IMPLAN model for this analysis, indicated that an economic contribution to the area of analysis of close to 4% is a large contribution in comparison with other National Forests. The typical contribution is 1 - 2%. This contribution is relatively large because the LTBMU is one of the smallest forests in the country and has the highest per acre visitor rate. As illustrated in numerous tables, the dominant industries in the LTR are related to recreation and tourism. One of the industries most dependent on the LTBMU for economic stimulus is accommodation and food services, which, as noted in the income discussion, is dominated by low wage positions. However, the LTBMU also contributes to relatively high wage positions in its administrative capacity related to the Southern Nevada Public Land Management Act. In addition, the LTBMU receives and administers, on average, $37.5 million in federal funding annually to support environmental improvement projects, which contributes to a large share of the employment and income being related to the government sector.

Table F6. Risk Assessment

Current Condition	Risks	Effects on Management
The Lake Tahoe Region is highly dependent on tourism. The greatest contribution by the LTBMU is in tourism related industries.	The Lake Tahoe Region is highly vulnerable to national social, economic, political, and environmental conditions that affect travel and tourism.	Diversify economic opportunities by coordinating with local, county, and state jurisdictions, and economic development organizations to identify and develop small-scale industries dependent on non-timber forest products.
The second greatest contribution of the LTBMU in the LTR is from government expenditures on salary and non-salary items. Much of the operating budget comes from SNPLMA, whose funds are guaranteed through 2012.	There is a great level of uncertainty about what the funding level from SNPLMA will be after 2012. This could translate into a considerably sizable loss of jobs and labor income.	Eventually the SNPLMA funding will run out, likely in the first decade of the revised plan. The budget is expected to drop by around half.
The LTBMU's largest contribution to employment and labor income is in low wage positions.	Wages cannot support cost of living for many local employees. Creates community instability.	Create tourism related economic opportunities for small owner-operated businesses that pay higher wages. Increase outfitter and guiding permittee opportunities.

APPENDIX G – TIMBER SUITABILITY ANALYSIS

G.1. Lands Generally Not Available for Timber Harvest (sec. 62.1)

The first task was to find lands that are generally not available for timber harvests or where timber harvest is not permissive. These lands include area removed from availability due to national designation, such as Wilderness Areas or Research Natural Areas. On the LTBMU, there are three Wilderness Areas (Desolation, Mount Rose, and Granite Chief) and one Research Natural Area (Grass Lake). Also included in this acreage are vegetation types identified as not capable of producing harvestable timber such as barren rock, water, shrub-lands, meadows, and some sub-alpine types. All the remaining acres where considered available for potentially treatments that could involve timber harvests. This resulted in approximately 103,000 acres out 154,000 acres where timber related treatments could be utilized even if the objective was not timber production.

G.2. Lands Suitable for Timber Production (sec. 62.21)

There are no lands on LTBMU where timber "production" is either a primary or even a secondary objective or goal. However, timber output or harvest can be a by-product or derivative from an integrated vegetative treatment where the objective are other than timber production and timber harvest or removal is not explicitly forbidden in the forest plan. Timber output is an incidental product from prescription that had other purposes and timber harvest is seen as a "tool" for accomplishing other objectives such as restoration and fuels hazard reduction. There is no intent of producing a sustainable timber harvest over time on any lands in the basin. Therefore, there are no acres of lands suitable for timber production [3.a in the table above].

G.3. Other Lands Where Trees May Be Harvested for Multiple Use Values Other Than Timber Production (sec. 62.22)

These are lands where achieving desired conditions or resource objectives is not compatible with sustainable timber production, but timber harvest can be used as a tool to achieve other multiple-use purposes. Examples of the reasons that timber harvest could occur on lands where achieving desired conditions or resources objectives is not compatible with timber production may include, but is not limited to:

1. Timber harvest to meet healthy forest and hazardous fuels objectives as part of community wildfire protection plans.

2. Maintaining or recruiting mature forest characteristics in areas where final regeneration of a stand is not planned.

3. Restoring meadow or riparian ecosystems being replaced by forest succession.

4. Cutting trees to promote the safety of forest users. This includes hazard tree removal in campgrounds, picnic grounds, and administrative sites, and along roads and trails open to public travel.

5. Timber harvest to meet early seral habitat objectives for wildlife

6. Timber harvest to meet scenic objectives that may include viewing areas or that increases scenic quality and integrity of an area.

G.4. Other Land Generally Suitable for Timber Harvest (sec. 62.22)

These are lands where achieving desired conditions or resource objectives is not compatible with timber production, but timber harvest can be used to achieve other multiple-use purposes. In some areas, achieving the resource objectives and desired conditions of vegetation may make it difficult to provide timber products on a planned and reasonably predictable basis, yet timber harvest may be an important tool to restore or maintain those desired conditions. Examples of the reasons that timber harvest could occur on lands where achieving desired conditions or resources objectives is not compatible with timber production may include, but is not limited to:

1. Maintaining or recruiting mature forest characteristics in areas where final regeneration of a stand is not planned.

2. Restoring meadow or riparian ecosystems being replaced by forest succession.

3. Cutting trees to promote the safety of forest users. This includes hazard tree removal in campgrounds, picnic grounds, and administrative sites, and along roads and trails open to public travel.

4. Timber harvest to meet early seral habitat objectives for wildlife

5. Timber harvest to meet healthy forest and hazardous fuels objectives as part of community wildfire protection plans.

6. Timber harvest to meet scenic objectives that may include viewing areas or that increases scenic quality and integrity of an area.

A map showing the layout of the suitable vegetation types and unavailable areas within the LTBMU is displayed in Figure G1:

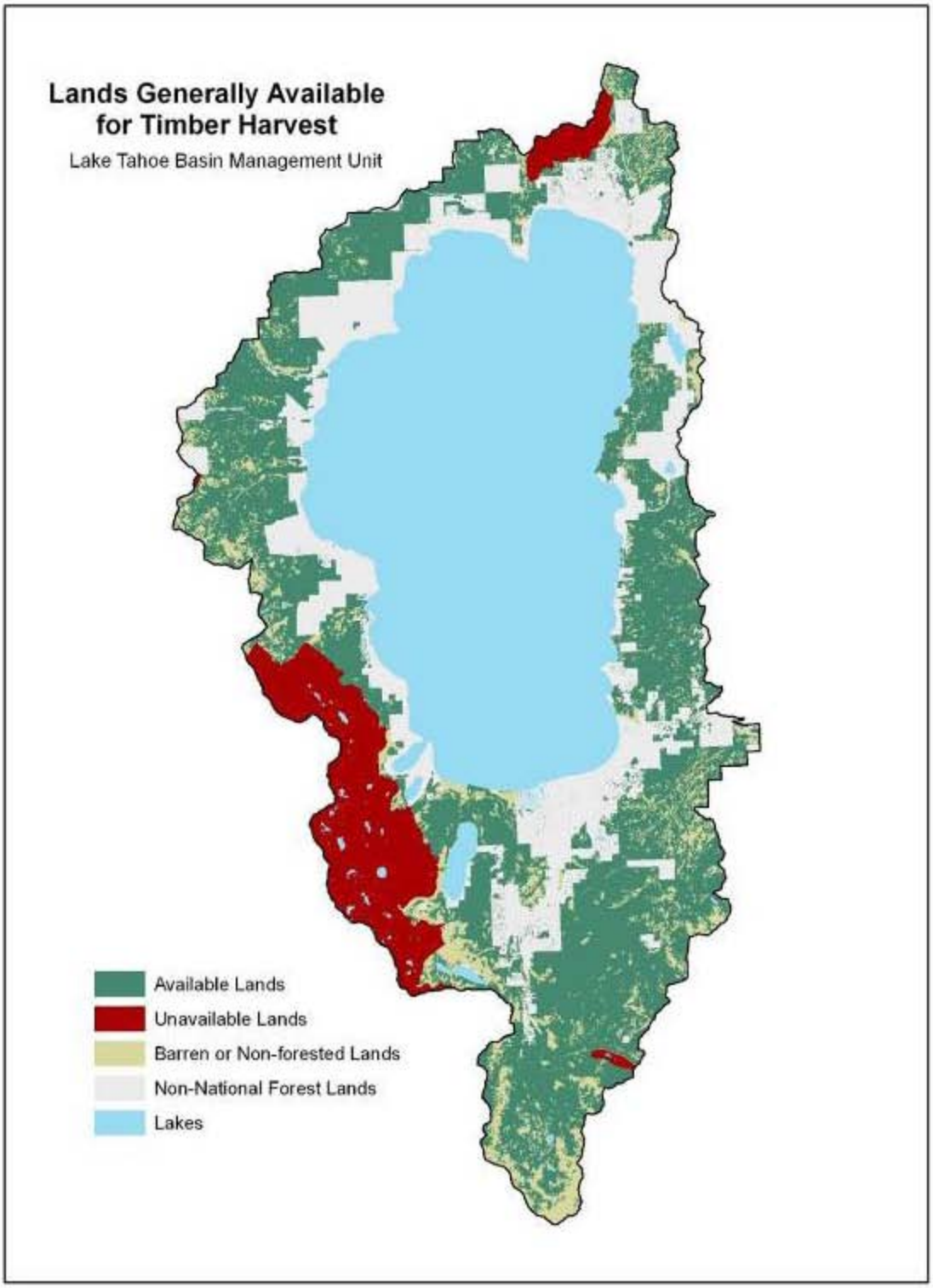


Figure G1. Lands Generally Available for Timber Harvest Map

G.5. Timber Sale Program Quantity (TSPQ) and Long-Term Sustained-Yield Capacity (LTSYC) (sec. 65.3)

G.5.1. Forest Health and Hazardous Fuels Reduction

Over the next 10 to 20 years, the LTBMU will continue to emphasize forest health and hazardous fuels reduction according to the Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy. This strategy prioritizes vegetation and fuels treatments in the Wildland Urban Intermix zones as identified in Community Wildfire Protection Plans. The primary goals of this emphasis are to improve the resiliency of forested ecosystems to disturbance events such as wildfires, wind and storm events, and insect and disease outbreaks, including the management of forest vegetation to protect communities from losses associated with these disturbance events.

G.5.2. Wildlife / Fisheries

Harvesting forest vegetation will serve to improve habitat conditions for terrestrial or aquatic animal species, including threatened, endangered, and sensitive species and communities.

G.5.3. Recreation / Scenery

Harvesting forest vegetation will serve to maintain or improve the recreational experience of forest visitors, including the management of fore vegetation to maintain or improve scenic resources.

Table G1. LTBMU Timber Sale Program Quantity (by Practice)

65.5 - Exhibit 03

Timber Sale Program Quantity [1]

(Annual Average Volume Outputs for First Decade)

Practice	Timber Sale Program Quantity (TSPQ) By Management Emphasis						
Lands Suitable for Timber Production	**Timber Prod.**	**Water Yield**	**Wildlife/ Fisheries**	**Recreation/ Scenery**	**Fire/Fuels/ Forest Health**	**Other**	**Totals**
Regeneration Cutting (even- or two-aged)	-						
Uneven-aged Management							
Intermediate Harvest							
Commercial Thinning							
Salvage/Sanitation							
Other Harvest Cutting							
Subtotal, Sawtimber (MMBF)							
Subtotal, All Products (MMCF)							
Other Lands [2]		Water Yield	Wildlife/ Fisheries	Recreation/ Scenery	Fire/Fuels/ Forest Health	Other	Totals
Regeneration Cutting (even- or two-aged)							
Uneven-aged Management							
Intermediate Harvest							
Commercial Thinning					2.0		2.0
Salvage/Sanitation					0.5		0.5
Other Harvest Cutting							
Subtotal, Sawtimber (MMBF)					2.5		2.5
Subtotal, All Products (MMCF)					6.5		6.5
Grand Totals - Sawtimber (MMBF)					2.5		2.5
Grand Totals, All Products (MMCF)					6.5		6.5

Notes:

All products includes Sawtimber plus other products such as biomass and fuelwood

[1] To be expressed to nearest 0.1 million cubic feet (MMCF). Use local conversion ratios for BF/CF conversions.

[2] Other lands where trees may be harvested for multiple use values other than timber production as described in section 62.22.

MMBF – One million board feet

The TSQP is displayed in the tables and charts below. They are projected for 10-decades and displayed as average annual amounts. Outputs are shown for both green sawlogs greater than 9.9-inch to a utilizable top and for the total, which includes other products that have been converted to MBF or CF along with the sawtimber. Tables are in both board feet and cubic feet.

The Yields are based on treating approximately 3,500 acres [single foot print] in the first decade based on a combination of initial and maintenance treatments. This amount is projected to increase to about 6,000-7,000 acres in the future as additional activities are needed to move the LTBMU toward its desired condition for forest health by the addition of more restoration treatments along with those needed to reduce risk of catastrophic fire in the WUI.

The LTSYC was derived by estimating the amount of treatments needed to maintain the forestlands at its desired condition once the unit reaches that state. Active management is needed to restore and maintain the Basin forestland at its desired condition. This is due to the need to continue fire suppression throughout the unit with the exception of a few small areas in which natural wildfire might be allowed to burn, e.g., Desolation Wilderness or Grass Lake Research Natural Area.

Table G2. LTBMU Long Term Sustained Yield Capacity by Vegetation Type

mmcf/year average Decade	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
TSQP/yr [gsl]-mmbf	2.5	3.0	3.1	3.5	3.6	3.5	3.4	3.3	3.3	3.3
TSQP/yr [all products]	3.3	3.9	4.0	4.6	4.7	4.6	4.3	4.4	4.5	4.7
LTSY/Yr	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9
mmcf/year average Decade	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
TSQP/yr [gsl] mmcf	5.0	6.0	6.2	7.0	7.2	7.0	6.8	6.6	6.6	6.6
TSQP/yr [all products]	6.5	7.8	8.1	9.1	9.4	9.1	8.8	9.0	9.2	9.6
LTSY/Yr [Sawtimber Only]	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8

Notes: TSPQ– Timber Sale Program Quantity; LTSYC– Long-Term Sustained-Yield Capacity

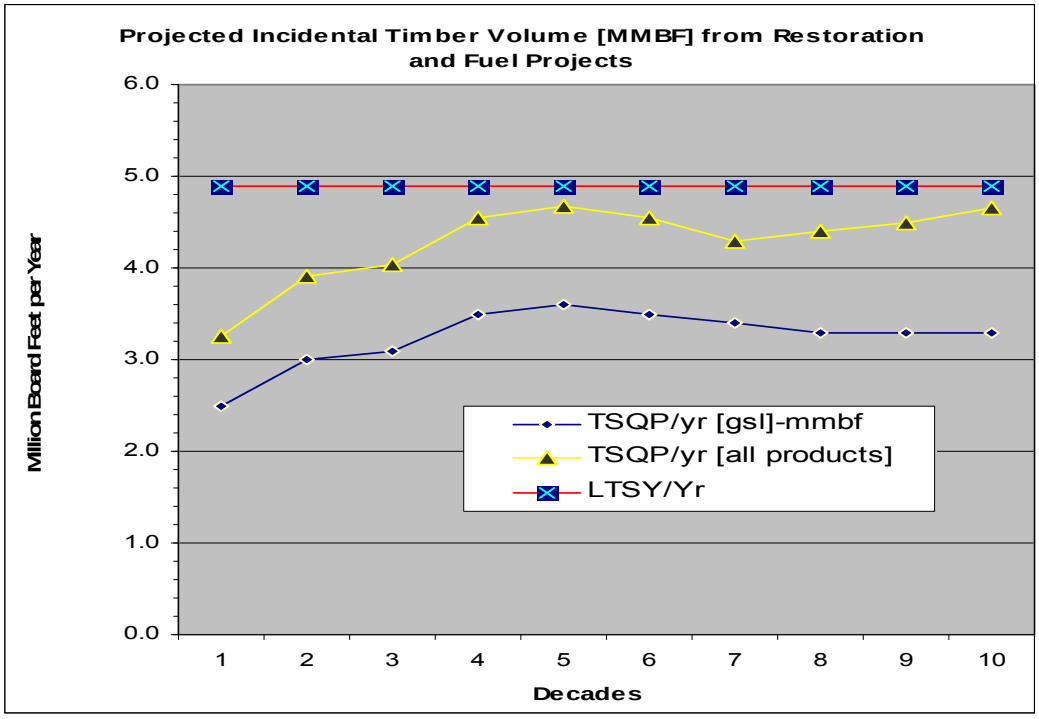


Figure G2. Projected Incidental Timber Volume (MMBF)

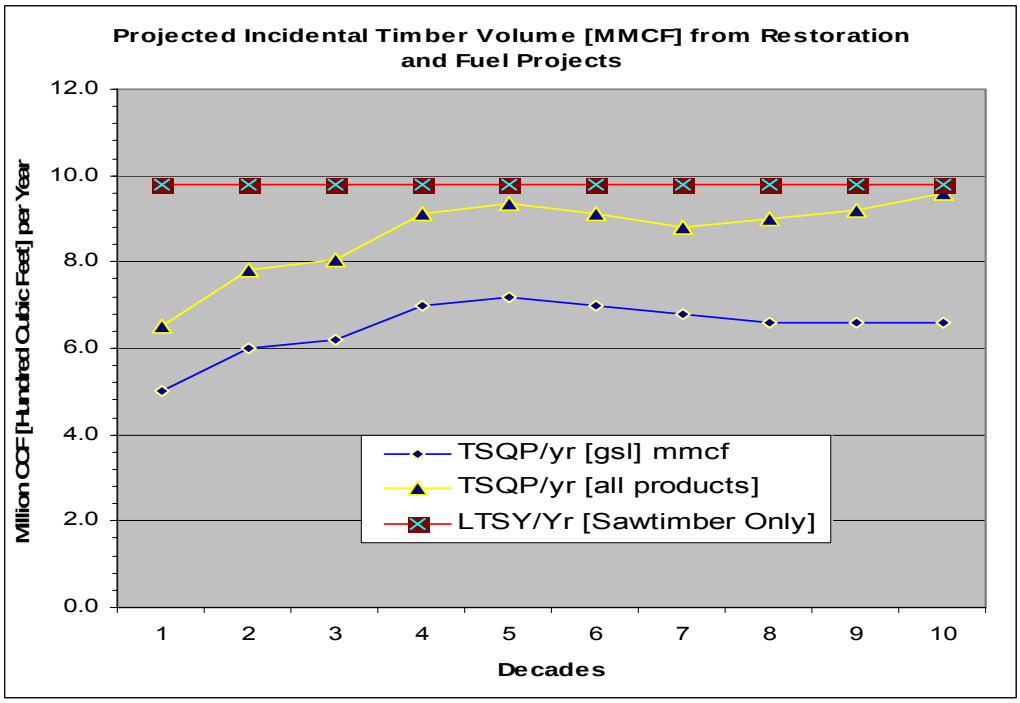


Figure G3. Projected Incidental Timber Volume (MMCF)

APPENDIX H – COMPARISON OF ALTERNATIVES BY MANAGEMENT STRATEGY

Table H1. Comparison of Alternatives by Management Strategy

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D
Physical Resources Program				
Air Quality				
Utilize smoke dispersion models for prescribed fire projects greater than 250 acres.	X	X	X	X
Wherever feasible, apply Emission Reduction Techniques (ERTs) to reduce emissions and control greenhouse gas emissions from burn activities on NFS lands. Consider non-burning alternatives in addition to ERTs wherever possible to reduce and prevent smoke intrusion into communities. Manage emissions from on-forest activities to avoid elevating ambient air concentrations to levels that result in non-attainment of standards for the Lake Tahoe Basin.	X	X	X	X
For Forest Service operated combustion engines, utilize alternative fuels when technically and fiscally feasible, for purposes of reducing greenhouse gas emissions and ozone precursor emissions.	X	X	X	X
Consider the Regional Haze State Implementation Plan targets for the Class 1 Airshed over Desolation Wilderness during project planning.	X	X	X	X
Water Quality and Soil Quality				
Implement PSW Region Best Management Practices to protect and conserve physical resources.	X	X	X	X
Manage activities within SEZs in a manner that is consistent with the protection of SEZ functions and values and protection of beneficial uses of water bodies.	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D
Participate in achieving the program goals for the Integrated Water Quality Management Strategy for achievement of the Lake Tahoe TMDL.	X	X	X	X
Ensure that identified beneficial uses for water bodies are adequately protected. Identify the specific beneficial uses for the project area, and water quality goals from the Regional Basin Plan.	X	X	X	X
Disperse runoff to reduce velocity, and increase infiltration to enhance treatment of nutrients and contaminants. Stabilize soil to prevent accelerated (human-caused) erosion of topsoil and subsequent sedimentation and loss of soil productivity. Utilize NFS lands for treatment of urban runoff where appropriate.	X	X	X	X
Reduce the watershed impacts resulting from land coverage. Minimize the development of new hard and soft coverage from forest management activities. Seek out opportunities to reduce coverage through site design when retrofitting, improving, or rebuilding at existing developed sites.	X	X	X	X
Protect natural functioning of soil resources and sustain or improve long-term soil productivity in areas dedicated to growing vegetation. Where past management activities have reduced soil productivity below Forest Service regional or national guidelines, improve soil productivity by respreading displaced topsoil, using tillage to increase porosity, increasing nutrient supplies through the addition of appropriate amendments, or increasing nutrients and water-holding capacity through the addition of organic matter.	X	X	X	X
Water Use and Development				
Where feasible, arrange for and secure water rights for existing and foreseeable future Forest Service consumptive uses, including administrative, recreation, erosion control, and evaporative losses.	X	X	X	X
Where feasible, obtain water availability assurances for existing and foreseeable future non-consumptive uses, including minimum instream flows and reservoir level maintenance for fish, wildlife, boating, swimming, and aesthetics.	X	X	X	X
Manage dams to ensure adequate flows for downstream uses, including supporting aquatic habitats. Consider opportunities for removal of dams.	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D
If it is not possible to determine from existing data the magnitude of potential adverse effects on the groundwater table of a groundwater development project, a geologic and geotechnical analysis should be conducted.	X	X	X	X
Use plants which do not require long-term irrigation in re-vegetation and landscaping projects in order to conserve water.	X	X	X	X
Natural Hazards				
Evaluate natural hazards before developing or permitting new uses or facilities on NFS lands.	X	X	X	X
Watershed Restoration				
Implement restoration projects in high priority watersheds identified by LRWQCB's total maximum daily load (TMDL) Model for Lake Tahoe, to improve self-sustaining, dynamically stable stream systems, channel stability, and hydrologic function.	X	X	X	X
Implement currently planned projects. New watershed restoration projects would be limited to removal of stressors, and the rate of watershed recovery would be governed by natural processes.				X
Implement projects identified through National USFS Watershed Condition Assessment Process.	X	X	X	X
In general, where stream characteristics are outside the natural range of variability in the area of a proposed project/activity, implement mitigation measures and short-term restoration actions to prevent further declines or cause an upward trend in conditions.	CP	X	X	
Reconnect floodplains with stream channels to enhance treatment of nutrients and contaminants, and improve channel geomorphic function to reduce in-channel sediment sources and increase in-channel sediment storage.	CP	X	X	

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D
Design projects to maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features. Implement restoration projects to attenuate peak flows and promote water storage in SEZs.	**CP**	**X**	**X**	
Maintain or restore: (1) the geomorphic and biological characteristics of special aquatic features, including lakes, meadows, bogs, fens, wetlands, vernal pools, springs; (2) streams, including in stream flows; and (3) hydrologic connectivity both within and between watersheds to provide for the habitat needs of aquatic-dependent species.	**CP**	**X**	**X**	
Identify and implement restoration actions to maintain, restore or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species.	**CP**	**X**	**X**	
Design projects to maintain and restore the hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features. During project analysis, roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths should be identified and corrective actions planned and implemented where necessary to restore connectivity	**CP**	**X**	**X**	
Forest Vegetation, Fuels and Fire Management Program				
Forest Vegetation and Fuels				
Emphasize prevention in the form of silvicultural (e.g. mechanical treatments, herbicides, etc.) or prescribed fire treatments, resulting in forest stands that are less susceptible to high levels of tree mortality caused by drought, wildfires and bark beetles.		**X**	**X**	
Emphasize use of prescribed fire, managed wildfire and hand thinning to achieve forest stands that are less susceptible to high levels of tree mortality caused by drought, wildfires and bark beetles.				**X**

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D
Invoke specific integrated pest management strategies as needed to respond to immediate native or exotic forest insect or disease threats to forest health, which may include removal or treatment of beetle-infested trees, when identified that threaten developed recreation and administrative sites, and private property, prior to beetle emergence, to reduce the likelihood of further infestation.	X	X	X	X
Establish measures to prevent the establishment and spread of invasive plants during project implementation and post-disturbance rehabilitation activities.	X	X	X	X
Consider all available technologies and management tools and practices to meet project objectives.		X	X	
Consider all available technologies and management tools and practices to meet project objectives, but emphasize use of prescribed fire, managed wildfire, and hand thinning.				X
Vegetation management activities adhere to ecologically-based management strategies and are integrated, ultimately to restore or maintain forest resiliency. For example, forest vegetation treatments around communities (thinning that alters density, structure, and species composition) to restore forest resilience to wildfire also meet the goals of reducing forest stand susceptibility to bark beetle-caused tree mortality.	CP	X	X	X
Vegetation treatments in montane forests favor Jeffrey pine, sugar pine that is white pine blister rust-resistant, and aspen, species that have become much less common over the last century due to logging and fire exclusion.	CP	X	X	X
Reforestation strategies incorporate species mix, stocking density, or use of genetically superior or pest resistant planting stock, to restore landscapes and improve adaptability under climate change.		X	X	
Reforestation strategies incorporate species mix, stocking density, or use of genetically superior or pest resistant planting stock, to restore landscapes	X			X
Revegetation following a disturbance event or management activity first considers hazard tree removal, then the potential for natural regeneration of early seral vegetation, and finally, the need for artificial regeneration and corresponding competing vegetation control measures.		X	X	

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D
Revegetation following a disturbance event or management activity first considers hazard tree removal, then the potential for natural regeneration of early seral vegetation.				X
Forest vegetation treatments, including aspen stand enhancements and riparian area restorations, achieve High Minimum Scenic Stability (MSS) and enhance desired scenic attributes and are applied on a project-by-project basis.		X	X	
Forest vegetation treatments, achieve High Minimum Scenic Stability (MSS) and enhance desired scenic attributes and are applied on a project-by-project basis.				X
When restoring disturbance regimes such as fire, many forest stands are currently too dense to allow the re-establishment of a frequent-fire regime. In these cases, management techniques such as thinning and prescribed burning are used as surrogates for wildfire and other mortality agents.	X	X	X	
Planned and unplanned ignitions are used where possible to accomplish forest health, wildlife habitat, or other ecosystem restoration objectives.	X	X	X	X
The majority of fuels reduction treatment efforts are concentrated in WUIs until initial WUI treatments are completed WUI maintenance treatments occur as needed.	X	X	X	X
Consistent with preserving the recreation resource, trees, tree limbs, or downed woody debris identified as hazardous at developed recreation sites are removed.	X	X	X	X
Projects should consider the creation of openings of varying sizes and shapes that retain reserve trees and clumps to produce spatial and structural heterogeneity in forest stands, and should give greater weight to openings from 2 to 7 acres. Forest structure should vary over the landscape in relation to topographic variables of slope, aspect, and slope position.	X	X	X	X
Where reforested areas (generally Pacific Southwest Region size classes 0x, 1x, 2x) are included within area treatments, consider designing treatments to also: (1) accelerate the development of key habitat and late seral characteristics, (2) increase stand heterogeneity, (3) promote hardwoods, and (4) reduce risk of loss to wildland fire.	X	X	X	X

Comparison of Alternatives by Management Strategy	Alt A	Alt B	Alt C	Alt D
Preference should be given to reducing stand density and modifying species composition through thinning treatments to prevent/reduce high levels of bark beetle-or other forest pest -caused tree mortality. Preventive measures such as thinning should be used for reducing opportunities for forest pests.	X	X	X	
Vegetation treatments designed to restore aspen should focus on restoring dominance of aspen in the canopy; regenerating and expanding aspen stands; reducing the risk of loss of aspen stands from the landscape; and developing vigorous under-story deciduous tree, shrub, and herbaceous associations and habitats.	CP	X	X	X
Perpetuate and promote existing late seral stages in each project area and throughout the broader landscape if feasible, with primary emphasis on protecting/enhancing late seral dependent wildlife habitat.		X	X	
Perpetuate and promote existing late seral stages in Old Forest Emphasis Areas with primary emphasis on protecting/enhancing late seral dependent wildlife habitat.	X			X

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APPENDIX I – COMPARISON OF ALTERNATIVES BY OBJECTIVE

Table I1. Comparison of Alternatives by Objective

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D
Physical Resources Program				
OBJ1. Achieve load reduction targets for upland forest and SEZs identified in the Lake Tahoe TMDL during the life of the plan.	X	X	X	X
OBJ2. Implement effective BMPs to achieve 95% implementation and effectiveness ratings forest-wide in BMP assessments annually, as determined by the Pacific Southwest Region's *Best Management Practices Effectiveness Program*.	X	X	X	X
OBJ3. Maintain up to date inventory of water rights and uses on NFS lands, and meet state requirements for maintaining water rights.	X	X	X	X
OBJ4. Implement actions to restore geomorphic and habitat function to approximately 5 miles of stream, and 350 acres of floodplain/SEZ by approximately 2016.	X	X	X	X
Forest Vegetation, Fuels and Fire Management Program				
OBJ5. Reduce surface, ladder and canopy fuels through thinning and fuel reduction treatments on 2,000 acres per year in the WUI.	X	X	X	X
OBJ6. Prescribed burning of surface fuels in the WUI occur on 1,800 acres per year when possible.	X	X		
Prescribed burning of surface fuels in the WUI occur on 2,100 acres per year when possible.			X	X

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D
White fir – mixed conifer				
OBJ7. From the mid-seral stages create approximately 50 acres of openings to early-seral white fir – mixed conifer type each year over the latter 10 years of plan implementation.	**X**	**X**		**X**
From the mid-seral stages create approximately 100 acres of openings to early-seral white fir – mixed conifer type each year over the latter 10 years of plan implementation.			**X**	
OBJ8. In stands historically dominated by pines, convert white fir-mixed conifer type generally in the early or mid-seral stages to Jeffrey pine by approximately 50 acres per year over the latter 10 years of plan implementation. Retain pines during conversion treatments.	**X**	**X**		**X**
In stands historically dominated by pines, convert white fir-mixed conifer type generally in the early or mid-seral stages to Jeffrey pine by approximately 100 acres per year over the latter 10 years of plan implementation. Retain pines during conversion treatments.			**X**	
OBJ9. Thin approximately 200 acres of white fir-mixed conifer each year over the latter 10 years of plan implementation to improve resiliency and reduce susceptibility to insects, disease, and drought.	**X**	**X**		
Thin approximately 400 acres of white fir-mixed conifer each year over the latter 10 years of plan implementation to improve resiliency and reduce susceptibility to insects, disease, and drought.			**X**	
Thin approximately 120 acres of white fir-mixed conifer each year over the latter 10 years of plan implementation to improve resiliency and reduce susceptibility to insects, disease, and drought.				**X**
Jeffrey pine				

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D
OBJ10. From the mid-seral stages create approximately 40 acres of openings to early-seral Jeffrey pine each year over the latter 10 years of plan implementation, and maintain it as the dominant species. Employ techniques to release early seral pine from competing vegetation if necessary. Post-disturbance event treatments will be used as opportunities to regenerate early seral Jeffrey pine. This objective may be accomplished in coordination with white fir – mixed conifer conversion objective, above.	X	X		X
From the mid-seral stages create approximately 80 acres of openings to early-seral Jeffrey pine each year over the latter 10 years of plan implementation, and maintain it as the dominant species. Employ techniques to release early seral pine from competing vegetation if necessary. Post-disturbance event treatments will be used as opportunities to regenerate early seral Jeffrey pine. This objective may be accomplished in coordination with white fir – mixed conifer conversion objective, above.			X	
OBJ11. Thin approximately 250 acres of Jeffrey pine each year over the latter 10 years of plan implementation to improve resiliency and reduce susceptibility to insects, disease, and drought.	X	X		
Thin approximately 500 acres of Jeffrey pine each year over the latter 10 years of plan implementation to improve resiliency and reduce susceptibility to insects, disease, and drought.			X	
Thin approximately 150 acres of Jeffrey pine each year over the latter 10 years of plan implementation to improve resiliency and reduce susceptibility to insects, disease, and drought.				X
Red fir				
OBJ12. From the mid-seral stages create approximately 10 acres of openings to early-seral red fir type each year over the latter 10 years of plan implementation. Utilize opportunities for treatment after disturbance events.	X	X		X

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D
From the mid-seral stages create approximately 20 acres of openings to early-seral red fir type each year over the latter 10 years of plan implementation. Utilize opportunities for treatment after disturbance events.			X	
OBJ13. Thin approximately 50 acres of red fir each year over the latter 10 years of plan implementation to improve resiliency and reduce susceptibility to insects, disease, and drought.	X	X		
Thin approximately 100 acres of red fir each year over the latter 10 years of plan implementation to improve resiliency and reduce susceptibility to insects, disease, and drought.			X	
Thin approximately 30 acres of red fir each year over the latter 10 years of plan implementation to improve resiliency and reduce susceptibility to insects, disease, and drought.				X
Aspen				
OBJ14. Restore or stimulate regeneration of at least 25 acres of aspen per year.	X	X		X
Restore or stimulate regeneration of at least 50 acres of aspen per year.			X	
Biological Resources Program				
Conservation of Habitat and Species Diversity				
OBJ15. Restore a minimum of two fens that are assessed to be at risk of conversion to meadow, based on fen inventory and ranking assessment (California Native Plant Society and LTBMU data) within the life of the Forest Plan.		X	X	

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D
OBJ16. Restore stream segments with degraded habitat in a minimum of 2 streams using natural channel design methods/techniques to design elements such as large wood and pools in aquatic habitats to maintain or improve biological processes (e.g., expansion of native species populations), biological characteristics (e.g., species composition), physical processes (e.g., erosion and aggradation), and physical characteristics (e.g., channel and over-bank flows) within the life of the Forest Plan. This will provide important aquatic habitat needed to support all life history processes.	X	X	X	X
OBJ17. Restore a minimum of 1 site to support self-sustaining aquatic populations within the life of the Forest Plan	CP	X	X	X
OBJ18. Within the life of the Forest Plan, Maintain or increase vegetation cover in meadows where 2009 LTBMU data shows that cover is insufficient.	CP	X	X	
Allow natural processes to control amount of vegetation cover in meadows.				X
OBJ19. Identify cave, cave surrogate, and/or cliff sites that are important to the survival, migration, reproduction, and dispersal of dependent species where removal of human impacts will improve species success. Remove human impacts at a minimum of one site identified, during the life of the Forest Plan.	X	X	X	X
OBJ20. Restore a minimum of three willow flycatcher nesting habitats in historic and currently occupied habitats.		X	X	
Invasive Habitats and Species (Aquatic and Terrestrial)				
OBJ21. Screen hand-carried/non-motorized watercraft are screened or show proof of boat inspection or decontamination at all staffed developed recreation sites (campgrounds, day use areas, resorts) check-in points (i.e. kiosks), within two years of the adoption of the Forest Plan.	X	X	X	X

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D
Protected Activity Centers (PACs) and Home Range Core Areas (HRCAs)				
OBJ22. Restore six California spotted owl PACs (representing approximately 30 percent of the known territories in the Lake Tahoe Basin) during the life of the Plan; treatments would be designed based on restoration needs of the specific PAC.		X	X	
OBJ23. Restore seven northern goshawk PACS (representing approximately 30 percent of the known territories in the Lake Tahoe Basin) during the life of the Plan; treatments would be designed based on restoration needs of the specific PAC.		X	X	
Species Refuge Areas				
OBJ24. Establish at least one self-sustaining Lahontan cutthroat trout sub-population in Fallen Leaf Lake, and implement appropriate conservation measures in Glen Alpine Creek in cooperation with the Lake Tahoe Basin Recovery Implementation Team by 2020.	X	X	X	X
OBJ25. Secure the existing Upper Truckee River (Meiss Meadows) Lahontan cutthroat trout sub-population (four miles of stream habitat) through maintenance removal of brook trout by 2015.	X	X	X	X
OBJ26. Reestablish Lahontan cutthroat trout in ten stream miles of the Upper Truckee River (from Meiss Meadows to the southern extent of Christmas Valley), in cooperation with California Department of Fish and Game by 2020.	X	X	X	X
OBJ27. Recover an additional seven subpopulations of LCT within fluvial and/or lacustrine ecosystems, as identified by the Tahoe Basin LCT Recovery Implementation team within the life of the Forest Plan.	X	X	X	X

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D
OBJ28. Collaborate with California Department of Fish and Game, US Fish and Wildlife Service, and Eldorado National Forest to identify and restore additional suitable habitat for yellow-legged frog as deemed appropriate. Complete restoration of seven high alpine lakes (composed of habitat areas that would support four sub-populations) adjacent to current yellow-legged frog populations in the Desolation wilderness by removing introduced trout species within the life of the Forest Plan.	X	X	X	X
OBJ29. Conduct physical habitat maintenance or enhancement that promotes long-term water availability and structural conditions to create areas for basking and/or cover, for the Hellhole yellow-legged for sub-population, within the life of the Forest Plan.	X	X	X	
OBJ30. Within the life of the Forest Plan, maintain or expand fishless high elevation aquatic habitats near existing or historic SNYLF sub-populations where such habitats are determined to support yellow-legged frog production and development and these actions will increase localized range of SNYLF.	X	X	X	X
Recreation Program				
OBJ31. Complete LTBMU National Visitor Use Monitoring every 5 years and review for trends and visitor satisfaction.	X	X	X	X
Interpretive Services Program				
OBJ32. Within 10 years, develop an interpretive signage program on the East Shore National Scenic Byway in cooperation with Nevada State Department of Transportation.	X	X	X	X

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D
Cultural Resources Program				
OBJ33. Nominate for listing to the National Register of Historic Places - the Comstock Historic Logging District, Angora Lookout, Cave Rock, Hawley Grade, Camp Richardson Resort, Meiss Cabin and Barn, and Skunk Harbor on the National Register of Historic Places during the Plan period.	X	X	X	X
OBJ34. Within five years of Plan approval, development of a management plan for arborglyphs throughout the Lake Tahoe Basin.	X	X	X	X
OBJ35. Add new interpretive elements (i.e. signs, boards, graphics, or new publicly-available printed materials) highlighting historic or cultural areas not yet interpreted in the Lake Tahoe Basin, during the Plan period.	X	X	X	X
Tribal Relations Program				
OBJ36. Revise the consultation protocol defined in the 1996 *Memorandum of Understanding between the LTBMU and the Washoe Tribe* within five years of Plan approval.	X	X	X	X
Access and Travel Management Program				
OBJ37. Implement BMP retrofits on 285 miles of NFS roads by 2025.	X	X	X	X
OBJ38. Implement BMP retrofits on 370 miles of NFS trails by 2025.	X	X	X	X

Comparison of Alternatives by Objective	Alt A	Alt B	Alt C	Alt D
Built Environment Program				
OBJ39. Implement BMP retrofits at all USFS facilities (including visitor centers, campgrounds, and parking lots.) by 2025.	X	X	X	X
OBJ40. Develop, plan and schedule to adoption for retrofitting five developed facilities rated as Development Scale 3-5 to include universally accessible features by 2025.	X	X	X	X
OBJ41. Prioritize buildings and facilities for construction, reconstruction or decommissioning based upon public benefit and ability to eliminate deferred maintenance.	X	X	X	X
OBJ42. Maintain 15 administrative sites to standard by 2025.	X	X	X	X
OBJ43. Maintain 44 recreation sites to standard by 2025.	X	X	X	X
Santini-Burton Acquired Lands/Urban Forest Parcels				
OBJ44. Conduct initial fuels reduction and forest health restoration treatments as needed on all urban forest parcels within five years of plan.	X	X	X	X
OBJ45. Conduct follow-up fuels treatments every 10-15 years in forested stands and every 5-7 years in brush-dominated stands.	X	X	X	X
OBJ46. Restore and vegetate areas of existing disturbance on up to 20 urban forest parcels annually	X	X	X	X

Notes:

CP – Common practice in current program operations; may not have direction within current Plan and/or amendments but is implemented as part of the program

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APPENDIX J – ALTERNATIVE A STANDARDS AND GUIDELINES

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
1	FP	IV-18		In resolving conflicts, the following list of resources or uses are in order of priority and will normally apply: a) Highest priority will be given to the protection of water quality and the enhancement of the clarity of water in Lake Tahoe. b) Protection of threatened and endangered plant and animal species native to the area; c) Preservation of cultural resources determined or believed to be of significance; d) Achievement of air quality standards for health, and visibility, and to prevent the adverse impacts of atmospheric deposition upon water quality; e) Maintenance of viable populations of wildlife; f) Achievement of diverse vegetation communities; g) Establishment of a variety of outdoor recreation facilities and uses at a level that assures a "fair share" of the basin capacity; h) Harvesting and treatment of timber stands to maintain health and diversity of the vegetation and to provide for the safety of people and property; i) Lowest priority will be given to forage grazing.
2	FP	IV-18		Selection of management practices to achieve forest goals and objectives and to resolve problems will be made at the project level based upon site specific analysis. Normally, procedures established in the National Environmental Policy Act and regulations of the Council of Environmental Quality 40CFR 1500-1508 will be used for analysis and documentation.
3	FP	IV-18		Program and project development will be guided by both this forest plan and by the TRPA Regional Plan for the Tahoe Basin. Define the process for TRPA review of national forest activities by Memorandum of Understanding between the two agencies.
4	FP	IV-18		Support the attainment of the Environmental Thresholds established for the Tahoe Basin (see Appendix E). Operate within Forest Service authority toward achievement of the thresholds regardless of the status of regional government in the area.
5	FP	IV-18		Assist adjoining national forest in assessment of projects outside the Lake Tahoe Basin where there is potential for adverse affects upon achievement of environmental threshold standards. Recommend mitigation measures.
6	FP	IV-19	1	Give priority for recreation uses that are the most highly dependent upon the special resources of the area.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
7	FP	IV-19	2	Protect and enhance potential recreation sites for future development.
8	FP	IV-19	3	Locate new recreational facilities on class 4-7 land capability and in proximity to necessary access and utilities.
9	FP	IV-19	4	Evaluate potential hazards and determine necessary mitigations during planning of all projects.
10	FP	IV-19	5	Locate visitor information services in areas of concentrated use or near entry points to the basin.
11	FP	IV-19	6	Base the type, location, and rate of recreation development on demand for such use. This will not exceed the 'fair share' of 4,550 PAOT of additional development. All or a portion of this capacity may be provided by private concessionaire.
12	FP	IV-19	7	Prepare a traffic analysis for each new recreation site which would produce more than 200 trips per day. Prepare a traffic analysis when existing sites that produce substantial traffic are proposed for reconstruction. TRPA criteria for a traffic analysis will be used including modeling that estimates the effects of the project upon level of service at key intersections, effects upon air quality, and effects upon traffic flow. Plan offsetting mitigation measures for the impacts.
13	FP	IV-19	8	Design facilities for service by transit operation. Those facilities that are near the lake shore should also be serviceable by shuttle type boats.
14	FP	IV-19	9	Provide open space between developed sites and between sites and urban areas. The space should be sufficient to keep the effects of one from diminishing the quality of experiences in the other. In situations where there is insufficient space, other measures, including alternative sites, should be considered to buffer effects.
15	FP	IV-19	10	Locate recreation uses which produce high noise levels away from recreation activities where low noise levels are important and away from critical wildlife habitat.
16	SNFPA	62	82, 87, 89	*Mitigate impacts where there is documented evidence of disturbance to the nest or den site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance). Evaluate proposals for new roads, trails, off highway vehicle routes, and recreational and other developments for their potential to disturb nest or den sites*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
17				**2. Dispersed Recreation Facility Construction**
18	FP	IV-19	1	Plan for and construct approximately 2,230 PAOT of facilities such as trailheads in support of dispersed recreation. (Nearly 80% of this development is to provide for existing use rather than to expand use). Such facilities may be located on land capability classes 1-7. When located on class 1-3 land, the following findings must be made: a) The project by its very nature must be sited on environmentally sensitive land; b) There is no feasible alternative which avoids encroachment on these lands; and c) The impacts are fully mitigated through the application of BMP and restoration of comparably disturbed land at the rate of 1.5 to 1 for disturbance beyond that which is allowed for the Land Capability System (added by FP amendment #1, 6/1/1990)
19	FP	IV-19	2	Increase opportunity for hiking and riding outside of Desolation Wilderness with particular attention to those areas which have been, for lack of access or public ownership, poorly accessed in the past.
20				**3. Development and Administration of Private Sector Recreation**
21	FP	IV-20	1	Consider new private sector recreation use proposals including recreation events on the merits of each case. Applicants must demonstrate that private land is not available, capable, or suitable. Proponents will normally be expected to do their own environmental analysis and submit the documentation in an environmental assessment or impact statement acceptable to the Forest Supervisor.
22	FP	IV-20	2	Manage developed sites so that the number of occupants at any one time does not exceed the designed capacity.
23	FP	IV-20	3	Continue existing resort developments so long as they serve a public need that cannot be met on non-national forest system lands or where the resort development offsets the need for substantial capital investment by the Forest Service to meet public recreation demand.
24	FP	IV-20	4	Allow new organization camps to be located in the Mt. Tallac Tract.
25	FP	IV-20	5	Arrange for removal of existing private structures (piers, boathouses, rafts, moorings, etc.) on lakeshore unless: a) they are necessary for the reasonable enjoyment of associated special use permits that are planned for continued use, and b) the need cannot reasonably be met through community or public facilities.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
26	FP	IV-20	6	Allow new public use facilities on lakeshore as necessary to provide for recreation access to and enjoyment of the lake and shore areas. New structures for private purposes will not be allowed on lakeshore or other waterfront.
27	FP	IV-20	7	Do not permit new recreation residences including those upon unoccupied lots within existing recreation residence tracts.
28	FP	IV-20	8	Evaluate the suitability of recreation residence reconstruction case by case if destroyed by fire, snowloading, or other causes.
29	FP	IV-20	9	Permits for recreation residences within 100-year flood plain, avalanche path, unstable areas, or other hazardous situation, require a clause stating that substantial damage caused by the hazard will cause the permit to be revoked. No additions to existing improvements will be authorized for residences in such circumstances.
30	FP	IV-20	10	Continue existing recreation residences until a future use determination indicates one or more of the following conditions exist: a) The site is suitable for producing goods and services for which there is a demonstrated current or projected public need at that location; b) Substantial physical or psychological conflict with public recreation uses exists or is probable in the future, that cannot be mitigated in other ways; c) Unacceptable environmental effects upon water, air, or scenic quality, cultural resources or threatened and endangered species that cannot be mitigated or that the permittee is unwilling to mitigate; d) Significant natural hazards to the users of the site, now or in the future.
31	FP			*Recreation residences will not be allowed to expand in size to handle larger numbers of people or allowed additional impervious surface coverage. The exception is where the Forest Service or other regulatory agencies require additions to the residence for such improvements as toilet facilities. Modifications to assist persons with disabilities may be considered. If the required addition cannot be accommodated within the existing land coverage, additional coverage may be authorized.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
32	FP	IV-20	13	Manage the waiver to total waste water export granted by the Lahontan Water Quality Control Board for Echo Lakes; Angora Lakes; Lily Lake; Fish Hatchery Tract; and Lots 1, 19-23, 33, *35,* and 62-63 of Fallen Leaf Lake Tract. (Order #6-70-48). Requirements of the waiver are: a) Seasonal occupancy be normally limited to the summer months; b) Toilet wastes be exported from the Lake Tahoe Basin or incinerated; c) Solid wastes be exported from the Lake Tahoe Basin; d) No automatic washing machines, dishwashers, or garbage disposals be used; e) Only natural soaps or phosphate free cleaning agents be used; f) Food wastes be exported from the Lake Tahoe Basin or incinerated; g) Wash waters be discharged to leaching areas located a minimum of 100 feet from any surface water with a soil mantle adequate for percolation.
33	FP	IV-20	14	If the Lahontan Water Quality Control Board waiver (order # 6-70-48) is revoked, require the permittees to find acceptable methods for treating sewage or terminate the permits in ten years. The basis for the waiver was the finding that: a) The continued operation of septic tanks, cesspools, or other means of waste disposal in such areas will not, individually or collectively, directly or indirectly affect the quality of the waters of lake Tahoe, and b) The sewering of such area would have a damaging effect upon the environment.
34	FP	IV-21	15	Uses accessory to a permitted use, such as old privies, buildings and garages, outside storage of building materials, etc. will be evaluated as to need and appropriateness to the site. Inclusion or removal of the accessory uses in the permit, will be based upon the evaluation.
35	FP	IV-21	16	When renewing permits or making significant amendments, provisions will be made to incorporate the latest requirements for mitigating the environmental impacts of the activity or installation. These requirements will include, but are not limited to, incorporating Best Management Practices, visual improvements, noise management and mitigation of air and traffic impacts.
36	FP	IV-21	17	Arrange for a program for sharing maintenance costs on roads and trails serving both special use sites and general public use, on a basis proportionate to use. Agreements will be developed with individual permittees or associations of permittees to perform the maintenance.
37				**4. Downhill Skiing**

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
38	FP	IV-21	1	Expansion of existing ski facilities shall be permitted based upon an approved master plan for the future facilities. The plan must demonstrate that: 1) the expansion is consistent with the availability of accommodations and infrastructure to support visitors when they are off the ski area, 2) the expansion does not result in any enlargement of total parking facilities for personal automobiles in the Lake Tahoe Basin, and 3) the expansion is consistent with all other goals and policies of the TRPA Regional Plan and all other standards and guidelines of this forest plan. Existing master plans will be amended to account for the above criteria. Expansion shall not exceed 12,400 PAOT of additional capacity from all ski areas on national forest land
39	FP	IV-21	2	Proposals for ski area development at any sites not approved in this forest plan will not be considered until this plan is revised in the next round of planning. Stevens Peak, Waterhouse Peak, Blackwood and Freel were potential ski areas that will not be considered.
40				**5. Developed Recreation and VIS Site Operation, Maintenance and Protection**
41	FP	IV-21	1	Manage developed sites so that the number of occupants does not exceed the design capacity. Provide standard service level throughout the primary use period (June 15 through Labor Day). Sites may be operated at low standard or closed to public use outside of this primary use period.
42	FP	IV-21	2	Provide a coordinated system of interpretive facilities and programs that efficiently meet the needs of target audiences. Develop interagency interpretive facilities and programs where feasible.
43	FP	IV-21	3	Stress understanding of the natural and cultural environment and forest management practices in interpretive programs. Emphasize self-guided interpretation that involves people as an integrated part of the natural environment. Use the interpretive program to aid in understanding the special management required to protect Lake Tahoe.
44				**6. Dispersed Recreation and VIS Site Operation, Maintenance and Protection**
45	FP	IV-22	1	Manage developed sites so that the number of occupants does not exceed the design capacity. Provide standard service level throughout the primary use period (June 15 through Labor Day). Sites may be operated at low standard or closed to public use outside of this primary use period.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
46	FP	IV-21	2	Provide a coordinated system of interpretive facilities and programs that efficiently meet the needs of target audiences. Develop interagency interpretive facilities and programs where feasible.
47	FP	IV-21	3	Stress understanding of the natural and cultural environment and forest management practices in interpretive programs. Emphasize self-guided interpretation that involves people as an integrated part of the natural environment. Use the interpretive program to aid in understanding the special management required to protect Lake Tahoe.
48				**7. Dispersed Recreation Management - Summer**
49	FP	IV-22	1	Give priority to the following actions to facilitate dispersed recreation activities: a) Maintain a variety of environmental conditions (ROS classes) to satisfy different visitor interests (see ROS map); b) Minimize adverse resource impacts from concentrated dispersed use by developing resource or social carrying capacity limits as needed; c) Assure access to locations offering dispersed recreation attractions where environmental and social conditions permit; d) Provide information to visitors about the variety of recreation opportunities and regulations regarding the management of national forest lands; e) Enhance the opportunities by building and maintaining where appropriate, trails, trailheads, and other support facilities to provide for multiple kinds of dispersed recreational opportunities; f) Identify potential summer and winter OHV routes that can be developed consistent with environmental and management guidelines, *including protection of water quality and critical wildlife habitat*, with special emphasis placed on minimizing conflicts between users and urban areas.
50	FP	IV-22	2	Allow opportunities for dispersed undeveloped camping. Annually review the camping closures, through an interdisciplinary process, to assure that the purpose for the closures is being achieved. Revise Forest Supervisor's orders for closures as necessary.
51	FP	IV-22	3	Hazard tree removal will meet the standards required for developed sites where intensity of dispersed use is comparable to a developed site.
52	FP	IV-22	4	Cooperate with other jurisdictions to manage highway traffic for enjoyable travel. Generally, peak use traffic flow shall not exceed level of service 'C' in the Roaded Natural ROS Class Areas and level of service 'D' within Rural ROS Class Areas. (Levels refer to Federal Highway Administration Standards.)

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
53	FP	IV-22	5	Minimize conflict between dispersed recreation user groups, including those operating under special use permits. Deny a special use when such use would not be compatible with desired ROS class of the area or where public recreation use is already at a high level.
54	FP	IV-22	6	Manage density of use so as not to exceed the level where resource damage becomes unacceptable on the lower Truckee River, at the east shore beaches, and at other environmentally sensitive but highly attractive dispersed recreation sites. Where the number of recreationists results in unacceptable degradation of the site and the only solution would be to develop facilities inappropriate to the target ROS class, visitor rationing may be imposed.
55	FP	IV-22	7	Allow mountain bicycles on system roads and trails except within wilderness areas, where they are prohibited. Further study the impacts of this relatively new use of trails to better determine the environmental effects and appropriate regulations. Where necessary to prevent environmental degradation or user conflict, trails may be closed to mountain bike use. Encourage mountain bikes to remain on developed roads and trails.
56	FP	IV-22	8	Develop direction for management of the Tahoe Rim Trail including regulations for use of the trail, facility and signing design, maintenance and patrol, and education programs. Defer issuance of outfitter guide permits on completed segments of the Tahoe Rim Trail for five years after construction or until completion of a Rim Trail management plan, which ever occurs first.
57	FP	IV-22	9	Provide a system of system roads and trails designed to meet the needs of a wide variety of off-highway vehicles. Allow summer off-highway vehicle use only on designated (marked) forest system roads and trails that are managed for this use. Summer OHV use is not permitted on Forest System roads and trails that have been administratively closed and marked as such by gates, signing, fencing or other means of designation. Summer OHV use will not be permitted on trails unless they are signed or otherwise marked as a motorized trail. OHVs will only be permitted to access the national forests through designated trailheads or roadways. Random access through public lands will not be allowed

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
58	FP	IV-23	10	Roads and trails will be closed when there is a finding that adverse resource impacts are occurring that cannot be reasonably mitigated, and where OHV use is significantly conflicting with established urban areas adjacent to the national forest. Soil, water and other resource monitoring will be instituted as part of the Unit OHV program
59	FP	IV-23	11	Summer OHV road and trail system opportunities will be provided in those areas identified in the Management Area Directions for the LTBMU and on the Summer OHV Management Map. Emphasis of the OHV system will be to divert use away from sensitive areas, to direct use away from private land interface and to provide routes that encourage access to suitable OHV use areas. Consistent monitoring of user compliance will be maintained.
60	FP	IV-23	12	Suitable conditions for summer OHV use of designated roads and trails will exist when road or trail surface is sufficiently dry to prevent resource damage. All roads and trails are closed to motorized use when wet conditions would lead to resource damage.
61	FP	IV-23	13	Maintain a public information program to inform and involve OHV users regarding the implementation of OHV regulations and direction. Maintain an active program of patrol and maintenance on designated routes, and of law enforcement to minimize unlawful OHV use.
62	SNFPA	59	69	*Prohibit wheeled vehicle travel off of designated routes, trails, and limited off highway vehicle(OHV) use areas. Unless otherwise restricted by current forest plans or other specific area standards and guidelines, cross-country travel by over-snow vehicles would continue.*
63	SNFPA	62	82, 87, 89	*Mitigate impacts where there is documented evidence of disturbance to the nest or den site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance). Evaluate proposals for new roads, trails, off highway vehicle routes, and recreational and other developments for their potential to disturb nest or den sites.*
64				**8. Dispersed Recreation Management - Winter**

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
65	FP	IV-23	1	Give priority to the following actions to facilitate dispersed recreation activities: a) Maintain a variety of environmental conditions (ROS classes) to satisfy different visitor interests (see ROS map); b) Minimize adverse resource impacts from concentrated dispersed use by developing resource or social carrying capacity limits as needed; c) Assure access to locations offering dispersed recreation attractions where environmental and social conditions permit; d) Provide information to visitors about the variety of recreation opportunities and regulations regarding the management of national forest lands; e) Enhance the opportunities by building and maintaining where appropriate, trails, trailheads, and other support facilities to provide for multiple kinds of dispersed recreational opportunities; f) Identify potential summer and winter OHV routes that can be developed consistent with environmental and management guidelines, with special emphasis placed on minimizing conflicts between users and urban areas.
66	FP	IV-23	2	Allow opportunities for dispersed undeveloped camping. Annually review the camping closures, through an interdisciplinary process, to assure that the purpose for the closures is being achieved. Revise Forest Supervisor's orders for closures as necessary.
67	FP	IV-23	3	Hazard tree removal will meet the standards required for developed sites where intensity of dispersed use is comparable to a developed site.
68	FP	IV-23	4	Cooperate with other jurisdictions to manage highway traffic for enjoyable travel. Generally, peak use traffic flow shall not exceed level of service 'C' in the Roaded Natural ROS Class Areas and level of service 'D' within Rural ROS Class Areas. (Levels refer to Federal Highway Administration Standards.)
69	FP	IV-23	5	Minimize conflict between dispersed recreation user groups, including those operating under special use permits. Deny a special use when such use would not be compatible with desired ROS class of the area or where public recreation use is already at a high level.
70	FP	IV-23	6	Manage density of use so as not to exceed the level where resource damage becomes unacceptable on the lower Truckee River, at the east shore beaches, and at other environmentally sensitive but highly attractive dispersed recreation sites. Where the number of recreationists results in unacceptable degradation of the site and the only solution would be to develop facilities inappropriate to the target ROS class, visitor rationing may be imposed.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
71	FP	IV-23	7	Allow mountain bicycles on system roads and trails except within wilderness areas, where they are prohibited. Further study the impacts of this relatively new use of trails to bet determine the environmental effects and appropriate regulations. Where necessary to prevent environmental degradation or user conflict, trails may be closed to mountain bike use. Encourage mountain bikes to remain on developed roads and trails.
72	FP	IV-23	14	The winter OHV management map shows those areas where snowmobiles and other over-the-snow vehicles are permitted and those areas closed to winter motorized use. Over-the-snow vehicles are permitted only where at least six inches of snow covers the ground. Modifications of the Winter OHV Management Map may be made following project level planning and preparation of an environmental analysis.
73				**Visual and Cultural Resources**
74				**9. Visual Quality Restoration or Improvement**
75	FP	IV-24	1	Schedule rehabilitation of sites that do not meet the adopted Visual Quality Objectives except where natural processes are expected to provide adequate restoration by the year 2005.
76	FP	IV-24	2	Increase opportunities to view Lake Tahoe or other scenic attractions from highways, vista points, and other planned locations.
77	FP	IV-24	3	Include mitigation measures for all activities where the activity would alter the landscape beyond the adopted Visual Quality Objective.
78	FP	IV-24	4	Participate with State and local jurisdictions in the design of highway corridors to provide an aesthetically pleasant drive through the basin, opportunities to appreciate the lake as a focal point, and to emphasize the natural rather than the man' made environment. Initiate enhancement action as well as restorative action. (Refer to the TRPA visual quality system for roadways.)
79	FP	IV-24	5	Establish procedures with local governments that encourage depositing of refuse at authorized disposal site and discourages unauthorized dumping caused by high fees or inconveniences resulting from mandatory export from the basin.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
80	FP	IV-24	6	Design recreation or special use construction on the lakeshore (above high water line) to preserve the visual character of shorezone. (Refer to the TRPA visual quality system for the shorezone.)
81	FP	IV-24	7	Signs installed on the forest will be maintained, removed, or replaced if determined to be distracting to near view visual standards.
82				**10. Cultural Resource Management**
83	FP	IV-24	1	Conduct surveys and inventories to identify the presence or absence of archaeological, historical, or other cultural resource properties, giving priority to planned activity areas, in a manner consistent with the National Historic Preservation Act. Prepare written reports documenting survey coverage, methods, and recordation using guidelines from the State Historic Preservation Officer (SHPO), the Forest Service, and the Advisory Council on Historic Preservation (ACHP).
84	FP	IV-24	2	Evaluate properties to assess their scientific, ethnic, or historic significance by applying the National Register of Historic Places criteria of eligibility. Assess the effects of each undertaking on significant historic properties. In consultation with the SHPO and the ACHP if necessary, develop mitigation measures alleviate adverse impacts on significant properties.
85	FP	IV-24	3	Protect all identified cultural properties until they are evaluated, with all unevaluated properties being treated as eligible for nomination to the National Register of Historic Places and afforded the same consideration as national register properties. Evaluate the historical and architectural significance of all buildings scheduled for removal.
86	FP	IV-24	4	Conduct compliance inspections of special use operations and project activities with stipulations or conditions regarding known cultural resources. Ensure confidentiality of most site locations to minimize threat of thefts and vandalism. Prevent natural physical deterioration where possible.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
87	FP	IV-24	5	Enhance cultural resources through scientific study and interpretation of their significant values, for increased public education and enjoyment. Avoid and/or protect Native American religious or burial sites; and encourage the reestablishment of traditional ties to Lake Tahoe by the Washoe Tribe through such means as the construction of a cultural center near Taylor Creek. Rehabilitate or restore historic structures for interpretive or other purposes.
88				**Wilderness**
89				**11. Management of Wilderness Resource**
90	FP	IV-25	1	Provide the opportunity for public use, enjoyment, and understanding of the wilderness at a level of visitation that assures availability of solitude, and a primitive, unconfined recreation experience. Maintain stable watersheds, indigenous plants and animals, and other features essential to preserving natural conditions.
91	FP	IV-25	2	Maintain a high level of freedom for movement and activity once a visitor has entered the wilderness. Employ constraints when necessary to maintain the wilderness resource.
92	FP	IV-25	3	Reduce the impact of nonconforming activities or improvements so that the imprint of these works is not noticeable.
93	FP	IV-25	4	Require outfitter guides to participate in the maintenance of wilderness trails and camps.
94	FP	IV-25	5	Evaluate the need to set an upper limit on the number of outfitter guide special use permits within designated Wilderness. Issue no new outfitter guide permits within Desolation Wilderness. Issue no permits for competitive recreation events within Wilderness areas.
95	FP	IV-25	6	Evaluate major emission sources which might affect the Class I airshed; including sources not on Federal land. Inventory and assess identified air quality related values (AORV) and the effects of air pollution on them.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
96	FP	IV-25	7	Consider insect and plant disease control only when necessary to prevent a) unacceptable or unnatural loss of the wilderness resource due to exotic pests, b) unacceptable damage to resources on adjacent lands, and c) any threat to continued lawful uses of, or activities in, the area. If control is necessary, it will be carried out using techniques which have the least adverse impact on the wilderness resource and are compatible with wilderness management direction.
97				**Wildlife and Fish**
98				**12. Nonstructural Wildlife Habitat Management**
99	FP	IV-26	1	Protect or improve habitat through coordination with other management activities.
100	FP			*When timber management is selected to modify forest habitat, the location and extent of openings and the potential for type conversion, reforestation, and timber stand improvement will be evaluated and selected as necessary to ensure that wildlife objectives are achieved.*
101	SNFPA	51	10	*Determine down woody material retention levels on an individual project basis, based on desired conditions. Emphasize retention of wood in the largest size classes and in decay classes 1, 2, and 3. Consider the effects of follow-up prescribed fire in achieving desired down woody material retention levels*
102	SNFPA	51-52	11	*Determine snag retention levels on an individual project basis for vegetation treatments. Design projects to implement and sustain a generally continuous supply of snags and live decadent trees suitable for cavity nesting wildlife across a landscape. Retain some mid- and large diameter live trees that are currently in decline, have substantial wood defect, or that have desirable characteristics (teakettle branches, large diameter broken top, large cavities in the bole) to serve as future replacement snags and to provide nesting structure.*
103	FP	IV-26		Provide cover for a variety of species by retaining at least two slash piles per acre in areas lacking other suitable wildlife cover except where fire hazard or visual management standards would be exceeded.
104	FP	IV-26		Provide adequate advance posting and notification when seasonal closures are used to protect habitat, especially nesting sites, of species sensitive to human activity. Duration of closure will be as short as feasible where recreation opportunities are in demand.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
105	FP	IV-26		Require non-degradation of existing deciduous tree types, wetland, and meadow habitat. Increase the acreage in these riparian associations where opportunities are present.
106	FP	IV-26		Maintain the present acreages of the seven seral stages in the mixed conifer and the red fir timber types while producing increases in seral stages 1 & 2 through vegetation management activities.
107	FP			Evaluate opportunities to manage and improve diversity through timber management and wildlife habitat improvement activities on a watershed or management area level, as well as basinwide.
108	FP			In created openings larger than two acres, 4 – 6 % of the green stand, preferably in dispersed clumps, will be retained for snag recruitment, except in areas where it would conflict with objectives for type conversion. In openings smaller than two acres, retention of trees for snag recruitment will be considered in project planning.
109	FP	IV-26		Establish maximum beaver population levels for zones or watersheds and manage so as not to exceed the level as described in the Beaver Management Plan for the LTBMU, 1980. Decisions for population control in a zone will be based upon food cache and colony size estimates, or upon the new occupancy of areas undesirable for beaver.
110	SNFPA	54	33	*Conduct surveys in compliance with the Pacific Southwest Region's survey protocols during the planning process when proposed vegetation treatments are likely to reduce habitat quality in suitable California spotted owl habitat with unknown occupancy . Designate California spotted owl protected activity centers (PACs) where appropriate based on survey results*
111	SNFPA	59	71	*Within the assessment area or watershed, locate fuels treatments to minimize impacts to PACs. PACs may be re-mapped during project planning to avoid intersections with treatment areas, provided that the re-mapped PACs contain habitat of equal quality and include known nest sites and important roost sites. Document PAC adjustments in biological evaluations*
112	SNFPA	59	71	*When treatment areas must intersect PACs and choices can be made about which PACs to enter, use the following criteria to preferentially avoid PACs that have the highest likely contribution to owl productivity.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
113	SNFPA	60	72	*Mechanical treatments may be conducted to meet fuels objectives in protected activity centers (PACs) located in WUI defense zones. In PACs located in WUI threat zones, mechanical treatments are allowed where prescribed fire is not feasible and where avoiding PACs would significantly compromise the overall effectiveness of the landscape fire and fuels strategy. Mechanical treatments should be designed to maintain habitat structure and function of the PAC.*
114	SNFPA	60	73	*While mechanical treatments may be conducted in protected activity centers (PACs) located in WUI defense zones and, in some cases, threat zones, they are prohibited within a 500-foot radius buffer around a spotted owl activity center within the designated PAC. Prescribed burning is allowed within the 500-foot radius buffer. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted prior to burning as needed to protect important elements of owl habitat. Treatments in the remainder of the PAC use the forest-wide standards and guidelines for mechanical thinning.*
115	SNFPA	60	74	*In PACs located outside the WUI, limit stand-altering activities to reducing surface and ladder fuels through prescribed fire treatments. In forested stands with overstory trees 11 inches dbh and greater, design prescribed fire treatments to have an average flame length of 4 feet or less. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted prior to burning as needed to protect important elements of owl habitat.*
116	SNFPA	53	16	*Outside of WUI defense zones, salvage harvests are prohibited in PACs and known den sites unless a biological evaluation determines that the areas proposed for harvest are rendered unsuitable for the purpose they were intended by a catastrophic stand-replacing event*
117	SNFPA	60	75	*For California spotted owl PACs: Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the activity center during the breeding season (March 1 through August 31), unless surveys confirm that California spotted owls are not nesting. Prior to implementing activities within or adjacent to a California spotted owl PAC and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location of the nest or activity center.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
118	SNFPA	60	76	*For northern goshawk PACs: Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. If the nest stand within a protected activity center (PAC) is unknown, either apply the LOP to a ¼- mile area surrounding the PAC, or survey to determine the nest stand location.*
119	SNFPA	60	77	*The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be modified*
120	SNFPA	61	78, 79	*Breeding season limited operating period restrictions may be waived, where necessary, to allow for use of early season prescribed fire in up to 5 percent of California spotted owl and northern goshawk PACs per year on a forest.*
121	SNFPA	61	80	*For California spotted owl PACs: Conduct vegetation treatments in no more than 5 percent per year and 10 percent per decade of the acres in California spotted owl PACs in the 11 Sierra Nevada national forests. Monitor the number of PACs treated at a bioregional scale.*
122	SNFPA	61	81	*For northern goshawk PACs: Conduct mechanical treatments in no more than 5 percent per year and 10 percent per decade of the acres in northern goshawk PACs in the 11 Sierra Nevada national forests.*
123	SNFPA	54	34	*Conduct surveys in compliance with the Pacific Southwest Region's survey protocols during the planning process when vegetation treatments are likely to reduce habitat quality are proposed in suitable northern goshawk nesting habitat that is not within an existing California spotted owl or northern goshawk PAC. Suitable northern goshawk nesting habitat is defined based on the survey protocol*
124	FP	IV-26		Identify potential bald eagle nesting sites and manage to encourage reestablishment of four pairs. Sites will consist of mature or overmature conifer stands, within 1/2 mile of large bodies of water, and with relative freedom from human disturbance.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
125	FP	IV-27		Reintroduce one Peregrine falcon pair to a potential nest site. Prohibit rock climbing on nesting cliffs between April 1 and July 31. Construct no trails or roads to the top or base of nesting cliffs.
126	FP	IV-27		Manage wetlands suitable for waterfowl nesting for low level human disturbance from March 1 to June 30, excepting the Pope Beach recreation site, which may be opened beginning Memorial Day weekend. Harassment of nesting waterfowl by domestic animals (especially dogs) must be controlled.
127	FP	IV-27		Protect mule deer fawning areas by constructing no permanent roads within 100 feet of meadow edges and by avoiding meadow crossings. Keep road density to less than five linear miles per square mile of land area.
128	FP	IV-27		Work with local communities to control domestic animals that conflict with wildlife.
129	SNFPA	54	32	*Detection of a wolverine or Sierra Nevada red fox will be validated by a forest carnivore specialist. When verified sightings occur, conduct an analysis to determine if activities within 5 miles of the detection have a potential to affect the species. If necessary, apply a limited operating period from January 1 to June 30 to avoid adverse impacts to potential breeding. Evaluate activities for a 2-year period for detections not associated with a den site.*
130	SNFPA	54	35	*Conduct additional surveys to established protocols to follow up reliable sightings of great gray owls.*
131	SNFPA	54	60	*For historically occupied willow flycatcher sites, assess willow flycatcher habitat suitability within the meadow. If habitat is degraded, develop restoration objectives and take appropriate actions (such as physical restoration of hydrological components, limiting or re-directing grazing activity, and so forth) to move the meadow toward desired conditions.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
132	SNFPA	58	56	*For occupied and historically occupied willow flycatcher sites: Initiate a 4-year cycle for willow flycatcher surveys. Conduct surveys to established protocols in all sites the first year. Second year surveys will be conducted in those sites where willow flycatchers were not found. Surveys will not be conducted in the third and fourth years. The survey cycle will then be repeated. For conditionally occupied sites: Surveys will be conducted in the first year. If willow flycatchers are found, these sites will be managed as occupied sites. If not found, these sites will be surveyed in the second year. If birds are not found in the second year, these sites will be dropped from the willow flycatcher site database*
133	SNFPA	58	57	*In meadows with occupied willow flycatcher sites, allow only late-season grazing (after August 15) in the entire meadow.*
134	SNFPA	58	58	*Standard and guideline #57 above may be waived if an interdisciplinary team has developed a site- specific meadow management strategy. This strategy is to be developed and implemented in partnership with the affected grazing permittee. The strategy objectives must focus on protecting the nest site and associated habitat during the breeding season and the long-term sustainability of suitable habitat at breeding sites. It may use a mix of management tools, including grazing systems, structural improvements, and other exclusion by management techniques to protect willow flycatcher .*
135	SNFPA	58	61	*Evaluate site condition of historically occupied willow flycatcher sites. Those sites that no longer contain standing water on June 1 and a deciduous shrub component and cannot be reasonably restored may be removed from the willow flycatcher site database*
136	SNFPA	58	62	*As part of the project planning process, survey emphasis habitat within 5 miles of occupied willow flycatcher sites to determine willow flycatcher occupancy. Emphasis habitat is defined as meadows larger than 15 acres that have standing water on June 1 and a deciduous shrub component. Use established protocols to conduct these surveys. If these surveys determine willow flycatcher occupancy, add these to the database of occupied willow flycatcher sites and include them in the 4-year survey cycle of willow flycatcher sites described above*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
137	SNFPA	62	83	*Apply a limited operating period, prohibiting vegetation treatments and road construction within ¼ mile of an active great gray owl nest stand, during the nesting period (typically March 1 to August 15). The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be reduced*
138	SNFPA	61	84	*In meadow areas of great gray owl PACs, maintain herbaceous vegetation at a height commensurate with site capability and habitat needs of prey species. Follow regional guidance to determine potential prey species and associated habitat requirements at the project level*
139	SNFPA	61	85	*Protect fisher den site buffers from disturbance with a limited operating period (LOP) from March 1 through June 30 for vegetation treatments as long as habitat remains suitable or until another Regionally-approved management strategy is implemented. The LOP may be waived for individual projects of limited scope and duration, when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location*
140	SNFPA	61	86	*Avoid fuel treatments in fisher den site buffers to the extent possible. If areas within den site buffers must be treated to achieve fuels objectives for the urban wildland intermix zone, limit treatments to mechanical clearing of fuels. Treat ladder and surface fuels to achieve fuels objectives. Use piling or mastication to treat surface fuels during initial treatment. Burning of piled debris is allowed. Prescribed fire may be used to treat fuels if no other reasonable alternative exists.*
141	SNFPA	62	88	*Protect marten den site buffers from disturbance from vegetation treatments with a limited operating period (LOP) from May 1 through July 31 as long as habitat remains suitable or until another Regionally-approved management strategy is implemented. The LOP may be waived for individual projects of limited scope and duration, when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
142	SNFPA	63	98	*Within 500 feet of known occupied sites for the California red-legged frog, Cascades frog, Yosemite toad, foothill yellow-legged frog, mountain yellow-legged frog, and northern leopard frog, design pesticide applications to avoid adverse effects to individuals and their habitats.*
143				**13. Early Successional Stage Vegetation Management**
144	FP	IV-27	1	Develop and maintain a watershed by watershed inventory of where and when forest openings up to five acres in size could be introduced to produce greatest benefits for vegetative diversity and wildlife habitat. Use this inventory to establish priorities for the timber management program.
145	FP	IV-27	2	Schedule treatments to produce early successional stages through prescribed fire, precommercial cutting or other methods if the minimum desired acreage (400 new acres by 1996) cannot be achieved through the timber program.
146	SNFPA	58	60	*For historically occupied willow flycatcher sites, assess willow flycatcher habitat suitability within the meadow . If habitat is degraded, develop restoration objectives and take appropriate actions (such as physical restoration of hydrological components, limiting or re-directing grazing activity, and so forth) to move the meadow toward desired conditions.*
147				**14. Old Growth Management**
148	FP	IV-27	1	Maintain 5% or more of the land area in the mixed conifer type, and in the red fir type, in old growth (seral stage 4C) to support dependent wildlife species and to provide visual variety. Continue to preserve most of the 4G stands and size 6 trees.
149	FP	IV-27	2	Old growth stands that are larger than 40 acres and are within 1/2 mile of water will be protected and maintained for wildlife.
150	SNFPA	53	27	*Minimize old forest habitat fragmentation. Assess potential impacts of fragmentation on old forest associated species (particularly fisher and marten) in biological evaluations.*
151	SNFPA	54	28	*Assess the potential impact of projects on the connectivity of habitat for old forest associated species.*
152	SNFPA	54	29	*Consider retaining forested linkages (with canopy cover greater than 40 percent) that are interconnected via riparian areas and ridgetop saddles during project-level analysis.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
153	SNFPA	54	31	*Identify areas for acquisition, exchange, or conservation easements to enhance connectivity of habitat for old forest associated species.*
154				**15. Nonstructural Fish Habitat Management**
155	FP			*Where beaver populations are negatively impacting the fishery resource, appropriate measures will be taken in cooperation with the State to control the localized population.*
156	FP			*Large woody debris will be left or repositioned in stream channels unless channel stability needs dictate otherwise*
157	FP	IV-27		Obtain water availability assurance for instream flows sufficient to meet fisheries' needs.
158	FP	IV-28		Determine with the TRPA and State fish and wildlife agencies the streams that will be maintained as excellent habitat and those that will be maintained in good condition. Schedule restoration to improve streams that are below the desired habitat condition.
159	FP	IV-28		Removal of debris from streams in order to stabilize the channel will be planned to obtain maximum improvement for fish habitat.
160	FP	IV-28		Maintain stream channel entrances to Lake Tahoe and Fallen Leaf Lake to allow unobstructed access of fish to upstream spawning sites.
161	FP	IV-28		Maintain shaded bank conditions on rainbow trout streams by maintaining at least 50% of the stream bank site potential for herbaceous and shrub cover and at least 25% of the site potential for tree cover. Where natural tree cover is less than 20%, 80% of the potential should be retained. Thirty five to 70% of the stream should be shaded from 11:00 AM to 4:00 PM.
162	FP	IV-28		Manage lakeshore activities to keep disturbance from power boats at a low level in shallow water areas, especially prime lake spawning areas.
163	SNFPA	63	101	*Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for aquatic-dependent species. Locate water drafting sites to avoid adverse effects to in stream flows and depletion of pool habitat. Where possible, maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
164	SNFPA	63	104	*In stream reaches occupied by, or identified as "essential habitat" in the conservation assessment for, the Lahontan and Paiute cutthroat trout and the Little Kern golden trout, limit streambank disturbance from livestock to 10 percent of the occupied or "essential habitat" stream reach. (Conservation assessments are described in the record of decision.) Cooperate with State and Federal agencies to develop streambank disturbance standards for threatened, endangered, and sensitive species. Use the regional streambank assessment protocol. Implement corrective action where disturbance limits have been exceeded.*
165	SNFPA	64	108	*Determine if the level of coarse large woody debris (CWD) is within the range of natural variability in terms of frequency and distribution and is sufficient to sustain stream channel physical complexity and stability. Ensure proposed management activities move conditions toward the range of natural variability.*
166				**16. Structural Wildlife Habitat Improvement**
167	FP	IV-28	1	Secure water rights for wildlife water impoundments and other improvements.
168				**17. Structural Fish Habitat Management**
169	FP	IV-28	1	Assure fish movement past dams and other structures on streams where such would be feasible and cost effective.
170	FP	IV-28	2	Secure water rights for dam construction and operation.
171				**18. Protection and Enhancement of Threatened and Endangered and Sensitive Plant Habitat**
172	FP	IV-28		Manage sensitive plants to ensure that species do not become threatened or endangered because of Forest Service activities. Prepare recovery plans for newly discovered populations.
173				*Establish Grass Lake as a Research Natural Area.*
174	FP	IV-28		Permit no collection of sensitive plant species except when authorized by the Regional Forester.
175	FP	IV-28		Manage uncommon plant communities to preserve their natural characteristics, specifically Osgood Swamp, Grass Lake, and Freel Cushion Plant Community.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
176	FP	IV-28		Modify or exclude uses not compatible with survival of threatened or endangered species.
177	FP	IV-28		Require use of plant species native to the area or species approved for local use when revegetating disturbed sites and landscaping improvements.
178	FP	IV-28		Protect known populations of Rorippa subumbellata on beaches receiving high level of recreation use by fencing or other means to exclude disturbance. Artificially supplement natural propagation on natural habitat. Details of management are found in LTBMU Interim Management Prescriptions for this species, 1982.
179	FP	IV-28		Protect known populations of Lewisia pygmaea subsp. longipetala; Corex paucifructus; Draba asterophora v. asterophora; and Draba asterophora v. macrocarpa as detailed in LTBMU Interim Management Prescriptions, 1981.
180	SNFPA	65	118	*Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles.*
181				**Range**
182				**19. Range Allotment Management**
183	FP	IV-29	1	Reserve sufficient forage for grazing by recreation livestock (horses and mules) in allotments used by cattle and sheep. The amount to be reserved will be determined based upon estimates of current and projected equestrian or packer use.
184	FP	IV-29	2	Limit grazing or modify the grazing management system on deteriorating ranges to assist recovery.
185	FP	IV-29	3	Administer existing grazing allotments to achieve proper use and compatibility with other resource values.
186	FP	IV-29	4	Do not fill an allotment when non-use is taken by the permittee.
187	FP	IV-29	5	Consider the effects upon water quality, riparian areas, wildlife and fish before permitting grazing on a vacant allotment.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
188				**20. Range Pasture Management**
189	FP	IV-29	1	Study pastures near the lakeshore, or in other areas where meadow lands are serving as a last filtering system for sediment and nutrients carried by surface water, to determine if special utilization standards or management practices should be applied.
190	FP	IV-29	2	Do not permit pastures for individually owned private livestock.
191	SNFPA	58	59	*In willow flycatcher sites receiving late-season grazing, monitor utilization annually using regional range analysis and planning guide. Monitor willow flycatcher habitat every 3 years using the following criteria: rooting depth cores for meadow condition, point intercepts for shrub foliar density, and strip transects for shrub recruitment and cover. Meadow condition assessments will be included in a GIS meadow coverage. If habitat conditions are not supporting the willow flycatcher or trend downward, modify or suspend grazing.*
192	SNFPA	58	63	*Evaluate proposals for new concentrated stock areas (for example, livestock handling and management facilities, pack stations, equestrian stations, and corrals) located within 5 miles of occupied willow flycatcher sites.*
193	SNFPA	65	117	*Assess the hydrologic function of meadow habitats and other special aquatic features during range management analysis. Ensure that characteristics of special features are, at a minimum, at Proper Functioning Condition, as defined in the appropriate Technical Reports (or their successor publications*
194	SNFPA	65	118	*Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles. Criteria for defining bogs and fens include, but are not limited to, presence of: (1) sphagnum moss (Spagnum spp.), (2) mosses belonging to the genus Meessia, and (3) sundew (Drosera spp.) Complete initial plant inventories of bogs and fens within active grazing allotments prior to re-issuing permits*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
195	SNFPA	65	119	*Locate new facilities for gathering livestock and pack stock outside of meadows and riparian conservation areas. During project-level planning, evaluate and consider relocating existing livestock facilities outside of meadows and riparian areas. Prior to re-issuing grazing permits, assess the compatibility of livestock management facilities located in riparian conservation areas with riparian conservation objectives*
196	SNFPA	65	120	*Under season-long grazing:For meadows in early seral status: limit livestock utilization of grass and grass-like plants to 30 percent (or minimum 6-inch stubble height).For meadows in late seral status: limit livestock utilization of grass and grass-like plants to a maximum of 40 percent (or minimum 4-inch stubble height; Determine ecological status on all key areas monitored for grazing utilization prior to establishing utilization levels. Use Regional ecological scorecards and range plant list in regional range handbooks to determine ecological status. Analyze meadow ecological status every 3 to 5 years. If meadow ecological status is determined to be moving in a downward trend, modify or suspend grazing. Include ecological status data in a spatially explicit Geographical Information System database; intensive grazing systems (such as rest-rotation and deferred rotation) where meadows are receiving a period of rest, utilization levels can be higher than the levels described above if the meadow is maintained in late seral status and meadow-associated species are not being impacted. Degraded meadows (such as those in early seral status with greater than 10 percent of the meadow area in bare soil and active erosion) require total rest from grazing until they have recovered and have moved to mid- or late seral status.*
197	SNFPA	66	121	*Limit browsing to no more than 20 percent of the annual leader growth of mature riparian shrubs and no more than 20 percent of individual seedlings. Remove livestock from any area of an allotment when browsing indicates a change in livestock preference from grazing herbaceous vegetation to browsing woody riparian vegetation*
198				**21. Range Improvements**
199	FP	IV-29	1	Permanent fences constructed in significant foreground view areas (such as highway corridors, recreation sites or urban fringes) will be of rustic design. Split rail or pole will be preferable to wire on wood post. Steel post and wire is generally unacceptable in high visibility areas, but useable when set back inconspicuously in heavily wooded areas.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
200	FP	IV-29	2	Prevent livestock from entering recreation and urbanized areas, highway corridors, areas of steep or otherwise sensitive soils, and where riparian and other resource values could be damaged.
201	FP	IV-29	3	Consider snow conditions when designing type and stoutness of fence.
202	SNFPA	55	50	*To protect hardwood regeneration in grazing allotments, allow livestock browse on no more than 20 percent of annual growth of hardwood seedlings and advanced regeneration. Modify grazing plans if hardwood regeneration and recruitment needs are not being met*
203	SNFPA	56	51	*Grazing utilization in annual grasslands will maintain a minimum of 60 percent cover. Where grasslands are in satisfactory condition and annual precipitation is greater than 10 inches, manage for 700 pounds residual dry matter (RDM) per acre. Where grasslands are in satisfactory condition and annual precipitation is less than 10 inches, manage for 400 pounds RDM per acre. Where grasslands are in unsatisfactory condition and annual precipitation is greater than 10 inches, manage for 1,000 pounds RDM per acre; manage for 700 pounds RDM per acre where grasslands are in unsatisfactory condition and precipitation is less than 10 inches. Adjust these standards, as needed, based on grassland condition. This standard and guideline only applies to grazing utilization*
204	SNFPA	56	52	*Where professional judgment and quantifiable measurements find that current practices are maintaining range in good to excellent condition, the grazing utilization standards above may be modified to allow for the Forest Service, in partnership with individual permittees, to rigorously test and evaluate alternative standards*
205				**Timber**
206				**22. Timber Management (General)**
207				*When timber management is selected to modify forest habitat, the location and extent of openings and the potential for type conversion, reforestation, and timber stand improvement will be evaluated and selected as necessary to ensure that wildlife objectives are achieved and to achieve optimum benefits for visual quality, recreation, and watershed protection.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
208				*In created openings larger than two acres, 4 – 6% of the green stand, preferably in dispersed clumps, will be retained for snag recruitment, except in areas where it would conflict with objectives for type conversion. In openings smaller than two acres, retention of trees for snag recruitment will be considered in project planning*
209	FP	IV-30	1	Use a full range of timber management practices including openings up to 5 acres, to maintain or enhance the multiple use values that have been identified in this plan. See Appendix D for additional discussion of silvicultural systems. Review land suitability for timber production at least every 15 years.
210	FP	IV-30	2	Planning for where, when and how timber will be cut will be conducted on a watershed by watershed basis. Introduction of forest openings shall be based on an inventory of early successional stage needs (see practice 13).
211	FP	IV-30	3	Utilize as much of a harvested tree as possible to keep residual treatment to a minimum.
212	FP	IV-30	4	Tractors may normally operate on slopes up to 30%. Cable and aerial systems shall normally be used on slopes greater than 30%.
213	FP	IV-30	5	Prohibit tractors in SEZ except where a firm, protective base of compacted snow or ice is present or where crossings exist that are designed to prevent adverse impact.
214	FP	IV-30	6	Avoid commercial log hauling on weekends and holidays.
215	FP	IV-30	7	Treat conifer stumps with borax within four hours of cutting to reduce the spread of Fomes annosus in developed recreation sites, administrative sites, and other high use areas where losses to this disease threaten the special value of the site.
216	FP	IV-30	8	Provide firewood users with information that assists in achievement of TRPA visibility standard through particulate control. Included would be use of Best Available Control Technology (BACT) such as preparation of firewood for burning, use of high efficiency stoves, control of combustion, and information on special devices that can be attached to woodburning appliances.
217	FP	IV-30	9	Close temporary roads, or access ways created through public or commercial timber management activities, to prevent vehicle travel as soon as practical and/or upon completion of the use.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
218	FP	IV-30	10	Incorporate Best Management Practices into the construction of landings or other temporary improvements for logging that involve earth moving, to help drain, stabilize and revegetate upon completion of logging activities.
219	FP		11	Selection of any particular method for pest treatment will be made at the project level based upon a site-specific analysis of the relative effectiveness, the environmental effects, and the cost of the feasible alternatives.
220	SNFPA	60	75	*For California spotted owl PACs: Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the activity center during the breeding season (March 1 through August 31), unless surveys confirm that California spotted owls are not nesting. Prior to implementing activities within or adjacent to a California spotted owl PAC and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location of the nest or activity center.*
221	SNFPA	60	76	*For northern goshawk PACs: Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. If the nest stand within a protected activity center (PAC) is unknown, either apply the LOP to a ¼- mile area surrounding the PAC, or survey to determine the nest stand location.*
222	SNFPA	60	77-78	*The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be modified.*
223	SNFPA	61	79	*Breeding season limited operating period restrictions may be waived, where necessary, to allow for use of early season prescribed fire in up to 5 percent of California spotted owl and northern goshawk PACs per year on a forest.*
224	SNFPA	61	80	*For California spotted owl PACs: Conduct vegetation treatments in no more than 5 percent per year and 10 percent per decade of the acres in California spotted owl PACs in the 11 Sierra Nevada national forests. Monitor the number of PACs treated at a bioregional scale.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
225	SNFPA	61	81	*For northern goshawk PACs: Conduct mechanical treatments in no more than 5 percent per year and 10 percent per decade of the acres in northern goshawk PACs in the 11 Sierra Nevada national forests.*
226	SNFPA	61	83	*Apply a limited operating period, prohibiting vegetation treatments and road construction within ¼ mile of an active great gray owl nest stand, during the nesting period (typically March 1 to August 15). The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be reduced.*
227	SNFPA	62	88	*Protect marten den site buffers from disturbance from vegetation treatments with a limited operating period (LOP) from May 1 through July 31 as long as habitat remains suitable or until another Regionally-approved management strategy is implemented. The LOP may be waived for individual projects of limited scope and duration, when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location.*
228				**23. Regeneration Harvest (Selection Cutting)**
229	FP	IV-30	1	Allow this practice to be applied on land capability classes 3, 4, 5, 6, and 7 that are accessed or can be efficiently accessed in the future.
230	FP	IV-30	2	Do not allow openings created by timber harvesting to exceed five acres. An opening is created when most of the vegetation is removed from an area larger than one acre. Naturally occurring areas of permanent low growth vegetation or barrens are not considered openings.
231	FP	IV-30	3	Regeneration openings will no longer exist when the average tree reaches 4 1/2 feet in height and the number of trees free to grow exceeds 200 per acre in red and white fir forest and 150 per acre in mixed conifer forest.
232	FP	IV-31	4	Disperse openings throughout the forest setting. Preferably, openings will not be adjoining. Where this is not practical, openings may have up to 15% contact on their periphery.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
233	FP	IV-31	5	Allow the use of harvest techniques to maintain old growth conditions for dependent wildlife except during the nesting period or other critical periods.
234				**24. Sanitation Salvage Cut**
235	FP	IV-31	1	Allow this practice to be applied on all land capability classes including stream environment zones that are accessed.
236	SNFPA	52	13	*Determine the need for ecosystem restoration projects following large, catastrophic disturbance events (wildfire, drought, insect and disease infestation, windstorm, and other unforeseen events) . Objectives for restoration projects may include limiting fuel loads over the long term, restoring habitat, and recovering economic value from dead and dying trees. In accomplishing restoration goals, long-term objectives are balanced with the objective of reducing hazardous fuel loads in the short term.*
237	SNFPA	52	13	*Salvage harvest of dead and dying trees may be conducted to recover the economic value of this material and to support objectives for reducing hazardous fuels, improving forest health, reintroducing fire, and/or re-establishing forested conditions.*
238	SNFPA	52	13	*Design projects to reduce potential soil erosion and the loss of soil productivity caused by loss of vegetation and ground cover. Examples are activities that would: (1) provide for adequate soil cover in the short term; (2) accelerate the dispersal of coarse woody debris; (3) reduce the potential impacts of the fire on water quality; and (4) carefully plan restoration/salvage activities to minimize additional short-term effects.*
239	SNFPA	52	13	*Design projects to protect and maintain critical wildlife habitat. Examples are activities that would: (1) avoid areas where forest vegetation is still largely intact; (2) provide for sufficient quantities of large snags; (3) maintain existing large woody material as needed; (4) provide for additional large woody material and ground cover as needed; (5) accelerate development of mature forest habitat through reforestation and other cultural means; and (6) provide for a mix of seral stages over time.*
240	SNFPA	52	13	*Design projects to manage the development of fuel profiles over time. Examples are activities that would: (1) remove sufficient standing and activity generated material to balance short-term and long-term surface fuel loading; and (2) protect remnant old forest structure (surviving large trees, snags, and large logs) from high severity re-burns or other severe disturbance events in the future.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
241	SNFPA	52	13	*Design projects to recover the value of timber killed or severely injured by the disturbance. Examples are activities that would: (1) conduct timber salvage harvest in a timely manner to minimize value loss; (2) minimize harvest costs within site-specific resource constraints; and (3) remove material that local managers determine is not needed for long-term resource recovery needs.*
242	SNFPA	52	14	*In post fire restoration projects for large catastrophic fires (contiguous blocks of moderate to high fire lethality of 1,000 acres or more), generally do not conduct salvage harvest in at least 10 percent of the total area affected by fire*
243	SNFPA	52	15	*Use the best available information for identifying dead and dying trees for salvage purposes as developed by the Pacific Southwest Region Forest Health Protection Staff*
244	SNFPA	53	16	*Outside of WUI defense zones, salvage harvests are prohibited in PACs and known den sites unless a biological evaluation determines that the areas proposed for harvest are rendered unsuitable for the purpose they were intended by a catastrophic stand-replacing event*
245	SNFPA	53	17	*Consider ecological benefits of retaining small patches of mortality in old forest emphasis areas*
246				**25. Special Cut**
247	FP	IV-31	1	This practice may be applied on all land capability classes, including stream environment zones, following analysis and documentation in an environmental assessment that demonstrates the project is necessary to meet resource objectives and that the proposed treatment methods provide adequate resource protection.
248				**26. Thinning**
249	FP	IV-31	1	Allow this practice to be applied on land capability classes 3, 4, 5, 6, and 7 that are accessed, or can be efficiently accessed in the future, where the cut trees can be harvested for consumptive purposes.
250	SNFPA	50	6	*For all mechanical thinning treatments, design projects to retain all live conifers 30 inches dbh or larger. Exceptions are allowed to meet needs for equipment operability*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
251	SNFPA	51	7	*The following 8 items apply to mechanical thinning treatments in mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6) outside WUI defense zone, and do not apply to the eastside pine type*
252	SNFPA	51	7	*Design projects to retain at least 40 percent of the existing basal area. The retained basal area should generally be comprised of the largest trees*
253	SNFPA	51	7	*Where available, design projects to retain 5 percent or more of the total treatment area in lower layers composed of trees 6 to 24 inches dbh within the treatment unit.*
254	SNFPA	51	7	*Design projects to avoid reducing pre-existing canopy cover by more than 30 percent within the treatment unit. Percent is measured in absolute terms (for example, canopy cover at 80 percent should not be reduced below 50 percent.*
255	SNFPA	51	7	*Within treatment units, at a minimum, the intent is to provide for an effective fuels treatment.*
256	SNFPA	51	7	*Where existing vegetative conditions are at or near 40 percent canopy cover, projects are to be designed remove the material necessary to meet fire and fuels objectives.*
257	SNFPA	51	7	*Within California spotted owl Home Range Core Areas: Where existing vegetative conditions permit, design projects to retain at least 50 percent canopy cover averaged within the treatment unit. Exceptions are allowed in limited situations where additional trees must be removed to adequately reduce ladder fuels, provide sufficient spacing for equipment operations, or minimize re-entry. Where 50 percent canopy cover retention cannot be met for reasons described above, retain at least 40 percent canopy cover averaged within the treatment unit.*
258	SNFPA	51	7	*Outside of California spotted owl Home Range Core Areas: Where existing vegetative conditions permit, design projects to retain at least 50 percent canopy cover within the treatment unit. Exceptions are allowed where project objectives require additional canopy modification (such as the need to adequately reduce ladder fuels, provide for safe and efficient equipment operations, minimize re-entry, design cost efficient treatments, and/or significantly reduce stand density.) Where canopy cover must be reduced below 50 percent, retain at least 40 percent canopy cover averaged within the treatment unit.*
259	SNFPA	51	7	*Within California spotted owl PACs, where treatment is necessary, remove only material needed to meet project fuels objectives. Focus on removal of surface and ladder fuels.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
260	SNFPA	51	8	*For mechanical thinning treatments outside defense zones in the eastside pine type: in mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6), design projects to retain 30 percent of the existing basal area . The retained basal area should be generally comprised of the largest trees. Projects in the eastside pine type have no canopy cover retention standards and guidelines*
261	SNFPA	51	9	*Standards and guidelines # 6, 7, and 8 above apply only to mechanical thinning harvests specifically designed to meet objectives for treating fuels and/or controlling stand densities*
262				**27. Timber Stand Improvement**
263	FP	IV-31	1	Allow this practice to be applied on land capability classes 3, 4, 5, 6, and 7 that are accessed, or can be efficiently accessed in the future, except within developed recreation sites.
264				**28. Reforestation**
265				*Created openings will not be reforested when type conversion for vegetative diversity is determined appropriate in the project level planning*
266	FP	IV-32		Site preparation before reforestation will disturb only enough of the ground cover (grasses, forbs, shrubs and litter) to provide a planting bed. On harvest areas, disturbance from the logging operation should provide adequate ground preparation. Additional preparation may be planned if determined necessary following site specific analysis.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
267	SNFPA	49-50		*Where young plantations (generally Pacific Southwest Region size classes 0x, 1x, 2x) are included within area treatments, apply the necessary silvicultural and fuels reduction treatments to: (1) accelerate the development of key habitat and old forest characteristics, (2) increase stand heterogeneity, (3) promote hardwoods, and (4) reduce risk of loss to wildland fire . In size class 2x plantations, treatments should be designed to reduce fire intensity, rate of fire spread and tree mortality. Design a sequence of fuel reduction projects to achieve the following standards: 3 inches and smaller surface fuel load: less than 5 tons per acre, less than 0.5 foot fuel bed depth, stocking levels that provide well-spaced tree crowns (for example, approximately 200 trees per acre in 4 inch dbh trees, less than 50 percent surface area with live fuels (brush); tree mortality less than 50 percent of the existing stocking under 90th percentile fire weather conditions (2x type only).*
268	SNFPA	52	12	*Promote shade intolerant pines (sugar and Ponderosa) and hardwoods.*
269				**Water**
270				**29. Water Use Management**
271	FP	IV-33	1	Arrange for and secure water rights for existing and foreseeable future Forest Service consumptive uses, including administrative, recreation, agriculture, erosion control, irrigation, and evaporative losses.
272	FP	IV-33	2	Obtain water availability assurances for existing and foreseeable future non-consumptive uses, including minimum instream flows and reservoir level maintenance for fish, wildlife, boating, swimming, and aesthetics.
273	FP	IV-33	3	Prevent loss of groundwater quality and quantity, and where possible, through the development of a groundwater management plan in cooperation with other agencies. Where groundwater is found to be degrading, initiate measures to determine causes, effects and mitigation measures.
274	FP	IV-33	4	Conduct a geologic and geotechnical analysis of all groundwater development projects which may adversely impact the groundwater table.
275	FP	IV-33	5	Work towards connecting domestic water supply systems at developed recreation and administrative sites to commercial water systems, if quality, volume, and cost of operation significantly improve existing conditions.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
276	FP	IV-33	6	Implement water conservation measures at developed recreation and administrative sites.
277	FP	IV-33	7	Use plants which do not require long term irrigation in order to conserve water in revegetation projects.
278				**30. Water Quality Maintenance and Improvement**
279	FP	IV-33		Utilize the land capability system as described in Land Capability Classification of the Lake Tahoe Basin, Calif/Nev, A Planning Guide, Bailey, 1974, as a guide for locating and planning the kind and intensity of management activities.
280	FP	IV-33		Ensure that permanent land disturbance and impervious surface coverage does not exceed that recommended by the land capability system. Consider disturbance that partially and/or temporarily impairs the ability of soil to resist erosion and absorb, utilize and store nutrients as recoverable and not subject to the same limits as impervious coverage.
281	FP	IV-33		Implement Best Management Practices (BMP) to meet water quality objectives and maintain and improve the quality of surface water on the forest. Methods and techniques for applying the BMP will be identified during project level environmental assessments and incorporated into the associated project plan and implementation documents. (See Appendix H).
282	FP	IV-33		Prohibit soil disturbing activities from October 15 to May 1 of each year. Waivers will be granted individually. Assure that permanent or temporary erosion control measures are in place for the winter season.
283	FP	IV-33		Manage existing naturally functioning stream environment zones (SEZ) lands in their natural hydrologic condition with few exceptions.
284	FP	IV-33		Identification and mapping of stream environment zone (SEZ) will be through the determination of: a) Wetlands, meadows, and other areas of riparian vegetation; b) One hundred year flood plain; c) Ephemeral stream courses and soil areas associated with high runoff or high water tables; and d) Area within 25 feet of first order stream, 50 feet of second order stream, and 100 feet of third order stream.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
285	FP	IV-33		Permit outdoor recreation facilities in SEZ and on land capability classes 1, 2 and 3 where they are a part of long range development plans, where the nature of the activity must be so sited, where there is no feasible alternative, where it is fully mitigated, and where disturbed SEZ beyond allowed coverage is restored at 150% of the amount disturbed.
286	FP	IV-34		Permit public works projects (roads, trails, utilities, etc.) in SEZ and on land capability classes 1, 2 and 3 where necessary for health, safety or environmental protection, where there is no reasonable alternative, where the impacts are fully mitigated and where disturbed SEZ beyond allowed coverage is restored at 150% of the amount disturbed.
287	FP	IV-34		Permit replacement of existing land coverage in SEZ where the project will reduce impacts on SEZ and will not impede restoration efforts.
288	FP	IV-34		Insure that temporary erosion control measures will be in place prior to commencing any soil disturbing activities.
289	FP	IV-34		Do not allow solid and liquid wastes to be discharged on or in the soil or water, with the exception of vegetative debris from forest management practices, clean earth and rock disposed of in approved locations, and wastes for which special waivers have been granted by state water quality protection agencies.
290	FP	IV-34		Permit no effluent disposal areas or dumps on national forest land.
291	FP	IV-34		Maintain emergency caches for hazardous material cleanup in cooperation with other agencies.
292	FP	IV-34		Ensure that vegetation and soil remain undisturbed in the unstable area of the shorezone, except as necessary for public safety or to provide for uses that by their nature require location within the shorezone. (The unstable area of the shorezone is where littoral and/or wave action processes have their greatest influence. The area may vary considerably in width.)
293	FP	IV-34		Manage the use of chemical and biological materials used to aid in snowmaking so as not to degrade either surface or groundwater.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
294	FP	IV-34		Restore damaged watersheds and sites contributing to water quality degradation. Schedule restoration of land identified in the watershed improvement needs inventory to be completed within 20 years. The priority for restoration will be 1) stream environment zones; 2) shorezones; and 3) high hazard land.
295	FP	IV-34		Attain an overall 5% increase in the acreage of naturally functioning SEZ land in the basin by restoring disturbed SEZ land.
296	FP	IV-34		Use fertilizer only where necessary to establish vegetation associated with restoration of disturbed areas and to maintain existing turf. Utilize the TRPA guidlines for fertilizer use.
297	FP	IV-34		Assist special use permittees in the planning and design of Best Management Practices to apply to the area of their permitted use to meet water quality standards.
298	SNFPA	63	95	*For waters designated as "Water Quality Limited" (Clean Water Act Section 303(d)), participate in the development of Total Maximum Daily Loads (TMDLs) and TMDL Implementation Plans. Execute applicable elements of completed TMDL Implementation Plans.*
299	SNFPA	63	96	*Ensure that management activities do not adversely affect water temperatures necessary for local aquatic- and riparian-dependent species assemblages*
300	SNFPA	63	97	*Limit pesticide applications to cases where project level analysis indicates that pesticide applications are consistent with riparian conservation objectives.*
301	SNFPA	63	99	*Prohibit storage of fuels and other toxic materials within RCAs and CARs except at designated administrative sites and sites covered by a Special Use Authorization. Prohibit refueling within RCAs and CARs unless there are no other alternatives. Ensure that spill plans are reviewed and up-to-date.*
302				**31. Road or Trail Closures**
303	FP	IV-34	1	Use temporary road closures where necessary to protect water quality until the road is reconstructed to suitable standard.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
304	FP	IV-34	2	Employ seasonal closure to restrict vehicle travel when the road surface can be damaged or water quality may be adversely effected. Specific information concerning closure of roads by gates is contained in the LTBMU Gate Management Plan, July 1982, and is periodically amended. Location of the gate, period of closure, type of lock, and authorization for entry are contained in the plan.
305				**32. Water Flow Timing**
306	FP	IV-34	1	Coordinate with California Department of Fish and Game in the operation and maintenance of small water regulating dams installed to maintain stream flows for fish.
307				**33. Water Yield Improvement**
308	FP	IV-34	1	Permit weather modification to increase precipitation unless it is shown that the modification will produce permanent substantial changes in the land use or significant adverse environmental effects.
309				**Minerals**
310				**34. Minerals Management**
311	FP	IV-35	1	Approve locatable mineral operations under a plan of operations which assures that water quality and other environmental factors can be maintained or enhanced. Consider on a site specific basis through NEPA procedures.
312	FP	IV-35	2	Authorize extraction of leasable minerals through lease documents only where water quality and other environmental factors can be maintained or enhanced. Consider on a site specific basis through NEPA procedures.
313	FP	IV-35	3	Approve no extraction of common variety minerals on currently undeveloped sites. Extraction may be authorized on sites where material had been previously removed, provided that (1) the plan for removal demonstrates partial or full rehabilitation of the site; and (2) that water quality and other environmental factors will be maintained or enhanced throughout the extraction process.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
314	FP	IV-35	4	Stockpiling of rock, soil and other earthen material, removed from grading operations, may be approved. Measures will be employed that prevent stockpiled material from being washed into stream channels or adding nutrients to, or otherwise adversely effecting, groundwater. Preferred locations for stockpiling will be on sites where the material could be used in onsite rehabilitation if not reused elsewhere.
315	FP	IV-35	5	Insure that mineral operators meet appropriate laws and regulations (36 CFR 228 and 293.14) that apply. Work with the state, regional and local governments in the development and review of "Plans of Operation".
316	FP	IV-35	6	Prior to authorizing operations within withdrawn areas, valid existing rights will be verified. Valid existing rights will be recognized, but the integrity for which the area was set aside will be maintained.
317	SNFPA	58	64	*Ensure that plans of operation, reclamation plans, and reclamation bonds address the costs of: (1) removing facilities, equipment, and materials; (2) isolating and neutralizing or removing toxic or potentially toxic materials; (3) salvaging and replacing topsoil; and (4) preparing the seed bed and revegetating to meet the objectives of the land allocation in which the operation is located*
318	SNFPA	59	65	*Ensure that mine owners and operators limit new road construction, decommission unnecessary roads, and maintain needed roads consistent with Forest Service roads policy and management direction for the land allocation*
319	SNFPA	59	66	*Require mine reclamation to be conducted in a timely manner*
320	SNFPA	59	67	*Inspect and monitor mining-related activities on a regular basis to ensure compliance with laws, regulations, and operating plans. Base the frequency of inspections and monitoring on the potential severity of mining activity-related impacts*
321	SNFPA	59	68	*During mining-related activities, limit the clearing of trees and other vegetation to the minimum necessary. Clearing of vegetation should be pertinent to the approved phase of mineral exploration and development*
322				**Lands**
323				**35. Land and Resource Management Planning**

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
324	FP	IV-35		Augment the Interior Department's National Natural Landmark program (administered by the Park Service) by: a) cooperating in the evaluation of the entire Lake Tahoe area as a Priority 1 rated candidate for status in the river and lakes major theme; b) considering Grass Lake Moss Bog for status if it does not become a part of the Research Natural Area system; c) considering the addition of national forest land to the Emerald Bay State Park registered area; d) considering the inclusion of Osgood Bog and the Freel Peak Cushion Plant Community into the system.
325	FP	IV-35		Direct the Special Interest Area program by:a) managing the Tallac Historic Site as a SIA; b) evaluating Emerald Bay, Osgood Bog, Freel Peak Cushion Plant Community, and Taylor Creek Wetlands during this planning period for inclusion into the system; c) monitoring Grass Lake Moss Bog, Hell Hole, Floating Island Lake, Pope and Baldwin Marshes, Cave Rock, Glacial Moraine Deposits, and Ward and Blackwood Canyons and managing them to protect their special features for possible future evaluations; d) identifying new areas having promise for inclusion.
326	FP	IV-36		Plan recreation development with the states of Nevada and California with the following goals: a) Compatibility of development; b) Comparable fees; c) Consistency of rules with which the public must comply (Laws governing national forest lands are different than the state laws governing the state parks and therefore exact uniformity is not possible).
327	FP	IV-36		To the extent feasible, data should be assembled and measured in a manner comparable with that used by the TRPA.
328				*Implement the Wild and Scenic Rivers Act by conducting an eligibility assessment for the Truckee River. If the river, or segment thereof, is eligible, schedule a suitability assessment. Until a decision is made regarding the river's status, the following interim management will be in effect:*
329				*1.To the extent that the Forest Service is authorized under law to control stream impoundments and diversions, the free flowing characteristics of the Truckee River will not be modified.*
330				*2. Outstandingly remarkable values for the Truckee River will be identified, protected and, to the extent practicable, enhanced.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
331				*3. Management and development of the Truckee River and its corridor will not be modified to the degree that potential eligibility or classification will be affected (i.e., cannot be changed from wild to scenic or scenic to recreational)*
332				**36. Special Land Use (Non-Recreation)**
333	FP	IV-36	1	Consider new land use proposals on the merits of each case. Applicants must demonstrate that private land is not available, capable, or suitable. Proponents will normally be expected to do their own environmental analysis and submit the documentation in an environmental assessment or impact statement acceptable to the Forest Supervisor. (Utilities necessary to provide adequate, reliable service for the urban development approved in the TRPA Regional Plan will be considered as essential public services).
334	FP	IV-36	2	Consider applications for electronic facilities and antenna sites different than the above sites on a case by case basis.
335	FP	IV-36	3	Direct applicants for major trans-Sierra right-of-way to established corridors such as Interstate 80 as the preferred location.
336	FP	IV-36	4	Obligate the minimum amount of land for a period no greater than needed to exercise the privileges granted. Improvements will be designed to utilize a minimum of land coverage.
337	FP	IV-36	5	Locate all types of transmission lines outside of view areas where possible and require joint use of existing rights-of-way unless the proponent can clearly show joint use is not practical.
338	FP	IV-36	6	Install power distribution lines up to 33kv underground in existing or new roadway prisms unless the proponent can clearly show that this is not practical or another method of installation would cause less long term environmental damage.
339	FP	IV-36	7	Insure that existing above ground utilities will normally be undergrounded by priorities established in the R-5 Undergrounding Master Plan.
340	FP	IV-36	8	Coordinate the review of applications for power licenses with FERC, TRPA, and other agencies. Process applications for uses associated with a license through special use procedures.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
341	FP	IV-36	9	Represent permittees in deliberations with the TRPA for project review. Exceptions to this rule include, but are not confined to, cases where the project is partially on non-national forest land.
342	FP	IV-36	10	Require a permit applicant to obtain permission to cross private land where a public right of way does not exist.
343				**37. Withdrawals**
344	FP	IV-37	1	In compliance with PL 94-579 (Section 204), review all existing withdrawals in conjunction with the Secretary of Interior to determine the need and validity for continuation. Recommend revocation of those no longer needed. Complete the review by October 21, 1991.
345	FP	IV-37	2	Initiate withdrawals from mineral and other forms of entry for administrative sites, developed public recreation areas, special interest areas, national natural landmarks, wetlands, and areas highly valued for use by the public.
346	SNFPA	66	123	*Determine which critical aquatic refuges or areas within critical aquatic refuges are suitable for mineral withdrawal. Propose these areas for withdrawal from location and entry under U.S. mining laws, subject to valid existing rights, for a term of 20 years*
347	SNFPA	66	124	*Approve mining-related plans of operation if measures are implemented that contribute toward the attainment or maintenance of aquatic management strategy goals*
348				**38. Rights-of-Way**
349	FP	IV-37	1	Acquire rights-of-way for roads, trails, or utilities where those of State, county, municipal, or special service jurisdictions are inadequate for Forest Service use.
350	FP	IV-37	2	Obtain full public access except in the few instances where administrative access will be sufficient.
351				**39. Property Boundary Location**
352	FP	IV-37	1	Maintain corner and boundary markers.
353	FP	IV-37	2	Maintain land title and survey records.
354				**40. Cooperative Technical Assistance**

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
355	FP	IV-37	1	Serve as part of the Advisory Planning Commission of the Tahoe Regional Planning Agency.
356	FP	IV-37	2	Serve on all technical review teams involving wildland resource management in the basin.
357				**41. Landownership Adjustment - L&WCF and other Authority**
358	FP	IV-38	1	Expand national forest land ownership in the basin through purchase, donation and/or exchange in order to achieve the balance of long term public benefits sought in this plan and that of the TRPA Regional Plan.
359	FP	IV-38	2	Allow national forest land in the basin to be exchanged for other lands that serve higher public use. In such exchanges, preference will be given to other public agencies which devote land to public use.
360	FP	IV-38	3	Insure that recreation capacity acquired through acquisition will be considered an increase to the national forest "fair share".
361				**42. Land Acquisition Santini-Burton Act 96-586**
362	FP	IV-38	1	Acquire tracts of land that are eligible because of environmental sensitivity. These lands are: stream environment zone; land capability class 1, 2 and 3; unimproved man modified land causing unacceptably high rates of sedimentation; and shorezone classes 1, 2 and 3. For details, reference the 63 Land Acquisition Program maps.
363	FP	IV-38	2	Coordinate the Forest Service acquisition program with the similar programs in California and Nevada so as not to duplicate effort. Offers to purchase will be made to any willing seller.
364	FP	IV-38	3	Decide transfers to state or local jurisdiction on a case-by-case basis until criteria are developed. The Act authorizes the Forest Service to transfer parcels to units of state and local governments where such parcels are found unsuitable for national forest administration.
365				**Soils**
366				**43. Soil Resource**

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
367	FP	IV-39	1	Maintain surface litter, duff, and adequate coarse woody debris to maintain organic matter reserves and recycle nutrients.
368	FP	IV-39	2	Maintain protective groundcover (duff, litter, or slash) or vegetative cover to minimize soil erosion. Areas in which the soil resource is continuously impacted by recreation use will be considered an ongoing priority.
369	FP	IV-39	3	Minimize soil displacement when grading slopes or when piling brush or slash.
370	FP	IV-39	4	Where past management activities have reduced soil productivity, improve soil productivity by respreading displaced topsoil, by using tillage to increase porosity, by increasing nutrient supplies through the addition of fertilizer (utilizing the TRPA guidelines for fertilizer use), or by increasing nutrient holding capacity through the addition of organic matter.
371	FP	IV-39	5	Where soils are susceptible to compaction and puddling, minimize the area covered by heavy equipment or operate when soils are least susceptible to damage.
372	SNFPA	52	13	*Design projects to reduce potential soil erosion and the loss of soil productivity caused by loss of vegetation and ground cover. Examples are activities that would: (1) provide for adequate soil cover in the short term; (2) accelerate the dispersal of coarse woody debris; (3) reduce the potential impacts of the fire on water quality; and (4) carefully plan restoration/salvage activities to minimize additional short-term effects*
373	SNFPA	66	122	*Recommend restoration practices in: (1) areas with compaction in excess of soil quality standards, (2) areas with lowered water tables, or (3) areas that are either actively down cutting or that have historic gullies. Identify other management practices, for example, road building, recreational use, grazing, and timber harvests, that may be contributing to the observed degradation*
374				**Facilities**
375				**44. Road Construction and Reconstruction**
376	FP	IV-40	1	Prohibit road building in areas of high mass soil instability. Areas of moderate instability will be engineered to protect water quality and scenic value. Site specific geotechnical analysis will be used to provide recommendations for road building.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
377	FP	IV-40	2	Integrate parking facilities with a road system at wilderness and other trailheads, viewpoints, special attractions, and recreation sites.
378	FP	IV-40	3	Limit construction to slopes of less than 30% except for short segments where necessary to bridge steep terrain within otherwise moderately sloped areas. Allow reconstruction of roads on slopes exceeding 30% where BMP are fully utilized to mitigate impacts.
379	FP	IV-40	4	Prioritize forest system road reconstruction in following order:1. Public safety - elimination of known hazards; 2. Correction of water quality problems; a. Reduce or eliminate impacts in stream environment zones; b. Installation of drainage; c. Stabilize road surface, ditches, cuts and fills; 3. Protect road investment; 4. Produce planned outputs; 5. Improve quality of recreation and administrative services; 6. Expand recreation service.
380	FP	IV-40	5	Stabilize soils along the existing transportation system, obliterate and stabilize unneeded roads.
381	FP	IV-40	6	Share construction and reconstruction costs on roads serving both special use sites and general public use sites or areas on a basis proportionate to use.
382	FP	IV-40	7	Roads that are managed to provide OHV opportunities will be reconstructed to provide a challenging experience for recreationists while providing resource protection. In some cases roads presently passable to passenger cars will be reconstructed so they are passable only to four-wheel drive or high clearance vehicles.
383	SNFPA	59	70	*To protect watershed resources, meet the following standards for road construction, road reconstruction, and road relocation: (1) design new stream crossings and replacement stream crossings for at least the 100-year flood, including bedload and debris; (2) design stream crossings to minimize the diversion of streamflow out of the channel and down the road in the event of a crossing failure; (3) design stream crossings to minimize disruption of natural hydrologic flow paths, including minimizing diversion of streamflow and interception of surface and subsurface water; (4) avoid wetlands or minimize effects to natural flow patterns in wetlands; and (5) avoid road construction in meadows.*
384	SNFPA	61	82	*Mitigate impacts where there is documented evidence of disturbance to the nest site from existing recreation, off highway vehicle route, trail, and road uses (including road maintenance). Evaluate proposals for new roads, trails, off highway vehicle routes, and recreational and other developments for their potential to disturb nest sites.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
385	SNFPA	61	83	*Apply a limited operating period, prohibiting vegetation treatments and road construction within ¼ mile of an active great gray owl nest stand, during the nesting period (typically March 1 to August 15) . The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be reduced.*
386	SNFPA	62	87, 89	*Mitigate impacts where there is documented evidence of disturbance to the den site from existing recreation, off-highway vehicle route, trail, and road uses (including road maintenance). Evaluate proposals for new roads, trails, off-highway vehicle routes, and recreational and other developments for their potential to disturb den sites.*
387				**45. Temporary Road Construction**
388	FP	IV-40	1	Construct temporary roads when there is only a one-time need for a transportation facility. Obliterate the road and return to resource production within one year of the use when the one-time need is fulfilled.
389	FP	IV-40	2	Locate and design temporary roads with the least amount of cut and fill, and the fewest stream or water channel crossings, so that the land can be restored with no permanent impact.
390				**46. Road Maintenance**
391	FP	IV-40	1	Give priority for maintenance the following order:1. Public safety - elimination of known hazards. 2. Correction of water quality problems. a. Reduce or eliminate impacts in stream environment zones. b. Installation of drainage. c. Stabilize road surface, ditches, cuts and fills. 3. Protect road investment. 4. Produce planned outputs. 5. Improve quality of recreation and administrative services. 6. Expand recreation service.
392	FP	IV-41	2	Stabilize cut and fill slopes; protect drainage structures and drainage ways; provide sediment trapping devises; install infiltration trenches.
393	FP	IV-41	3	Obilterate and stabilize unneeded roads.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
394	FP	IV-41	4	Share maintenance costs on roads serving both special use sites and general public use sites and areas on a basis proportionate to use. Develop agreements with individual permittees, or associations of permittees, to perform the maintenance required.
395				**47. Trail Construction/Reconstruction**
396	FP	IV-41	1	All trails receiving significant use will be managed as part of the trail system according to the Trails Management Handbook, or closed and rehabilitated. Trails not meeting construction standards will be reconstructed. Special use permittees will be allowed to use only system trails. Where construction or reconstruction of trails is required for uses under permit, permittee will bear cost of required work.
397	FP	IV-41	2	Increase the trail system outside of wilderness for recreation use.
398	FP	IV-41	3	Construct the Rim Trail to encircle the Lake Tahoe Basin approximately on the hydrographic boundary as described in concept within a Decision Notice and EA dated July 1983. The trail and primary feeders will be all-purpose design class. Construction and maintenance will be through the Tahoe Rim Trail Association, a volunteer group.
399	FP	IV-41	4	The Summer Off Highway Vehicle Management Map shall provide general guidance on where and in what priority OHV routes will be studied for construction. Zones 1 and 2 will normally provide no summer OHV opportunities and no new routes will be considered. Zone 3 presently provides OHV opportunities and the construction of short segments designed to enhance existing routes by the creation of loops will be considered. Though existing roads and trails may be designated for OHV use, no major new OHV routes will be constructed. Zone 4 presently provides OHV opportunities and may have the potential for constructing major OHV systems after study. In this zone, trail relocation and construction will have highest priority to be considered as part of system planning during the first decade. In zones 3 and 4, many routes presently being used will be closed and revegetated where unacceptable social or environmental affects are occurring and cannot be mitigated. The Summer OHV Management Map will be updated when completed transportation system planning results in changes in management strategy.
400	FP	IV-41	5	Determine priorities and establish a schedule to rehabilitate system trails to include water quality standards applicable in the basin. The standard requires more cross-drains and protective surfacing than would be typical on system trails.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
401	FP	IV-41	6	OHV trails will be designed and managed to ensure that trails will not exceed 48" in design width to only accomodate ATV, quad or smaller sized OHVs. OHV trails will be designated away from urban areas and away from foot trails whenever possible to avoid conflicts with residents. OHV trails shall be signed to a level that clearly identifies the route as designated throughout its length. Unauthorized trails that feed into existing designated routes will be identified and closed to OHV use.
402	FP	IV-41	7	OHV trails will be designed when appropriate and environmentally feasible, to form "loops," to enhance user enjoyment. Access to OHV trail systems shall be through designated trailheads with opportunities for limited parking where appropriate. OHV trail systems will require bridges or similar structures when designated over streams. Fencing and similar barriers will be constructed as appropriate to minimize random access to the OHV trail system.
403	FP	IV-41	8	OHV trails will be monitored for resource impacts, especially concerning soil and water quality. Trails will be closed if user impacts create resource impacts that cannot be mitigated.
404	FP	IV-41	9	Trails constructed through unstable terrain will utilize geologic evaluation and geotechnical design to minimize potential impacts.
405				**48. Trail Maintenance**
406	FP	IV-42	1	Use the LTBMU Trail Management Plan, Nov. 25, 1980, as a guide for short and long range direction for maintenance of trails.
407	FP	IV-42	2	Define each system trail by design class (All-purpose, Principal Wilderness, Primitive Hiker-Horse, Primitive Hiker, or Special Purpose) and assign a maintenance level from 1 to 5. Existing trails not presently in the system will be evaluated individually to determine appropriateness of inclusion. Existing non-system trails determined to not meet standards for inclusion in the system shall be closed and rehabilitated to prevent resource degradation.
408	FP	IV-42	3	Manage the Hawley Grade Trail and the Pope-Baldwin Bicycle Trail as National Recreation Trails.
409	FP	IV-42	4	Manage the Pacific Crest Trail as described in the Pacific Crest Trail Maintenance Plan, LTBMU and Eldorado National Forest, September 1981.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
410	FP	IV-42	5	OHV system trails will be managed in accordance with standards and guidelines as found in FSH 7709 Trails Handbook. OHV trails must be carefully maintained to ensure that signing is well maintained throughout the system. Vandalized or weathered signs will be replaced as a priority maintenance element whenever they are discovered. During maintenance inspections unauthorized OHV trail routes will be identified should they develop, and will be closed as appropriate. Emphasis will be placed on limiting average OHV trail width to 48". Reverse grading will be encouraged over the installation of waterbars on OHV trail systems to divert water runoff. Logs of sufficient diameter to form a "backstop" will be used to stabilize deep banking turns on OHV routes. Areas where the tread has been displaced by OHV activity will be stabilized where appropriate using cinder blocks or similar tread stabilizing materials. Routes will be rerouted as appropriate to change grade or slope where OHV activity is creating adverse resource impacts.
411	FP	IV-42	6	Trails that are developed and used primarily by special use permittees will be maintained to Forest Service standards by the permittees. Where special use permittees and the general public share the use of trails, expense of maintenance will be shared proportionate to use.
412				**49. Facility Construction/Reconstruction**
413	FP	IV-42	1	Comply with state energy efficiency standards; install TRPA approved woodburning stoves and other appliances; and encourage the use of solar energy opportunities.
414	FP	IV-42	2	Confine developments to land capability classes 4-7 except where the nature of the improvement requires development in environmentally sensitive areas (class 1, 2 and 3 and SEZ).
415	FP	IV-42	3	Locate, design and maintain structures, signs, and lighting to harmonize with surrounding natural features or to enhance the characteristics of the manmade environment where such is dominant.
416				**50. Facility Operation and Maintenance**
417	FP	IV-42	1	Utilize appropriate BMP to provide soil stability, runoff infiltration, and revegetation.
418	FP	IV-42	2	Retrofit facilities to comply with State energy efficiency standards where feasible; install TRPA approved woodburning stoves and other appliances when existing units are replaced; and encourage the use of solar energy.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
419	FP	IV-42	3	Retrofit all administrative sites to incorporate BMP's when construction or reconstruction occurs, or by the year 2000, whichever occurs first.
420				**Protection**
421				**51. Fire Prevention**
422	FP	IV-43	1	Manage vegetation and plan uses with full recognition of the need to provide reasonable protection from wildfire.
423	FP	IV-43	2	Give priority to fireproofing and fuel reduction measures in developed recreation sites, areas of concentrated public use, areas adjacent to urbanized development, and areas of fuel concentration that exceed established standards.
424				**52. Fire Detection and Suppression**
425	FP	IV-43	1	The wildfire response strategy for areas within or adjacent to urbanized areas with associated high values at risk is "Control" of all wildfires at Fire Intensity Level (FIL) 1 with a maximum size objective of 1/4 acre or less and at FIL 2-5 control of all fires at 2 acres or less.
426	FP	IV-43	2	The wildfire response strategy for areas of forested lands outside of urbanized areas, but not including high elevation alpine areas, is "Containment" of fires at all FIL's with a maximum size objective of 10 acres.
427	FP	IV-43	3	The wildfire response strategy for high elevation alpine areas exhibiting non-continuous fuels and natural barriers is "Confinement" of all fires at all FIL with a maximum size objective of 25 acres.
428	FP	IV-43	4	Fire intensity, fire spread potential, the probability of adverse resource effects and air quality considerations will dictate the maximum wildfire size and response strategy on forested lands outside of urbanized areas and on high elevation alpine areas.
429	FP	IV-43	5	Use all types of firefighting equipment in emergencies when there is threat to human life and property or where the resource value saved is clearly greater than the damage done through its use. In other than these conditions, disturbance to soil and stream environment zones and to visual quality, will be minimized.
430	FP	IV-43	6	Coordinate fire management with other protection agencies and districts.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
431	FP	IV-43	7	Take prompt measures after forest fires to reduce adverse effects on water quality, scenic quality, recreation use, wildlife, and timber health.
432	FP	IV-43	8	Encourage all private development within the national forest to be in a fire protection district.
433	FP	IV-43	9	Respond to structural fires in situations involving threat to life, property, or national forest resources when local suppression forces are inadequate or non existent. Otherwise structural fire suppression is the responsibility of local fire service agencies.
434	FP	IV-43	10	Follow federal, state, and local air quality rules and regulations when burning buildings planned for disposal. Utilize BACT to assure that air quality effects are kept to a low level.
435				**53. Fuel Treatment**
436	FP	IV-44	1	Assist in maintaining the clear, clean air important to the aesthetic enjoyment of the area and the health of the people through the regulation of open burning.
437	FP	IV-44	2	Adhere to Federal, State, regional and local guidelines regarding air quality including the LTBMU Smoke Management Plan.
438	FP	IV-44	3	Employ techniques for managing the generation of smoke including achievement of complete combustion, and proper timing for venting to highest elevation and dispersal from the basin. Fuels will normally not be burned for one summer season after cutting to allow sufficient time for drying.
439	FP	IV-44	4	Use nonburning techniques, such as lopping and scattering, whenever residual fuel loads will be acceptable, especially where the slash will help to protect the soil.
440	FP	IV-44	5	Leave at least two slash piles per acre for wildlife cover.
441	FP	IV-44	6	Treat activity fuels in the near view of high use travel corridors, recreation sites, and urbanized areas. Cleanup need not be 100%. The debris, after two year of deterioration or utilization for campfires, should not appear dominant in the landscape. Scattering of fuels will be preferable, but unburned piles at a density of five per acre or less would normally be acceptable where a forest canopy remains.
442	FP	IV-44	7	Slash will not normally be buried.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
443	FP	IV-44	8	Locate activity fuel burning beyond 50 feet of any stream channel or standing water.
444	SNFPA	49	1	*Strategically place area fuels treatments across the landscape to interrupt fire spread and achieve conditions that: (1) reduce the size and severity of wildfire and (2) result in stand densities necessary for healthy forests during drought conditions. Complete a landscape-level design of area treatment patterns prior to project-level analysis. Develop treatment patterns using a collaborative, multi-stakeholder approach. Determine the size, location, and orientation of area fuels treatments at a landscape-scale, using information about fire history, existing vegetation and fuels condition, prevailing wind direction, topography, suppression resources, attack times, and accessibility to design an effective treatment pattern. The spatial pattern of the treatments is designed to reduce rate of fire spread and fire intensity at the head of the fire.*
445	SNFPA	49	1	*Strategic placement of fuels treatments should also consider objectives for locating treatment areas to overlap with areas of condition class 2 and 3, high density stands, and pockets of insect and disease. Avoid PACs to the greatest extent possible when locating area treatments. Incorporate areas that already contribute to wildfire behavior modification, including timber sales, burned areas, bodies of water, and barren ground, into the landscape treatment area pattern. Identify gaps in the landscape pattern where fire could spread at some undesired rate or direction and use treatments (including maintenance treatments and new fuels treatments) to fill identified gaps.*
446	SNFPA	50	4	*Vegetation within treatment areas should be modified to meet desired surface ladder, and crown fuel conditions as well as stand densities necessary for healthy forests during drought conditions. Site specific prescriptions should be designed to reduce fire intensity, rate of fire spread, crown fire potential, mortality in dominant and co-dominant trees, and tree density. Managers should consider such variables as the topographic location of the treatment area, slope steepness, predominant wind direction, and the amount and arrangement of surface, ladder, and crown fuels in developing fuels treatment prescriptions*
447	SNFPA	49	2	*Design mechanical treatments in brush and shrub patches to remove the material necessary to achieve the following outcomes from wildland fire under 90th percentile fire weather conditions: (1) wildland fires would burn with an average flame length of 4 feet or less and (2) fire line production rates would be doubled. Treatments should be effective for more than 5 to 10 years*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
448	SNFPA	50	5	*Design a sequence of fuel reduction treatments in conifer forest types (including 3x plantation types) to achieve the following standards within the treatment area:• an average of 4-foot flame length under 90th percentile fire weather conditions. • surface and ladder fuels removed as needed to meet design criteria of less than 20 percent mortality in dominant and co-dominant trees under 90th percentile weather and fire behavior conditions. •tree crowns thinned to meet design criteria of less than 20 percent probability of initiation of crown fire under 90 th percentile weather conditions.*
449	SNFPA	59	71	*Within the assessment area or watershed, locate fuels treatments to minimize impacts to PACs. PACs may be re-mapped during project planning to avoid intersections with treatment areas, provided that the re-mapped PACs contain habitat of equal quality and include known nest sites and important roost sites. Document PAC adjustments in biological evaluations.*
450	SNFPA	60	72	*When treatment areas must intersect PACs and choices can be made about which PACs to enter, use the following criteria to preferentially avoid PACs that have the highest likely contribution to owl productivity.* ***Lowest contribution to productivity****: PACs presently unoccupied and historically occupied by territorial singles only; PACs presently unoccupied and historically occupied by pairs, PACs presently occupied by territorial singles; PACs presently occupied by pairs.* ***Highest contribution to productivity****: PACs currently or historically reproductive. Historical occupancy is considered occupancy since 1990. Current occupancy is based on surveys consistent with survey protocol (March 1992) in the last 2-3 years prior to project planning. These dates were chosen to encompass the majority of survey efforts and to include breeding pulses in the early 1990s when many sites were found to be productive. When designing treatment unit intersections with PACs, limit treatment acres to those necessary to achieve strategic placement objectives and avoid treatments adjacent to nest stands whenever possible.*
451	SNFPA	60	72	*If nesting or foraging habitat in PACs is mechanically treated, mitigate by adding acreage to the PAC, equivalent to the treated acres, using adjacent acres of comparable quality, wherever possible.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
452	SNFPA	60	72	*Mechanical treatments may be conducted to meet fuels objectives in protected activity centers (PACs) located in WUI defense zones. In PACs located in WUI threat zones, mechanical treatments are allowed where prescribed fire is not feasible and where avoiding PACs would significantly compromise the overall effectiveness of the landscape fire and fuels strategy. Mechanical treatments should be designed to maintain habitat structure and function of the PAC.*
453	SNFPA	60	73	*While mechanical treatments may be conducted in protected activity centers (PACs) located in WUI defense zones and, in some cases, threat zones, they are prohibited within a 500-foot radius buffer around a spotted owl activity center within the designated PAC. Prescribed burning is allowed within the 500-foot radius buffer. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted prior to burning as needed to protect important elements of owl habitat. Treatments in the remainder of the PAC use the forest-wide standards and guidelines for mechanical thinning.*
454	SNFPA	60	74	*In PACs located outside the WUI, limit stand-altering activities to reducing surface and ladder fuels through prescribed fire treatments. In forested stands with overstory trees 11 inches dbh and greater, design prescribed fire treatments to have an average flame length of 4 feet or less. Hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), may be conducted prior to burning as needed to protect important elements of owl habitat.*
455	SNFPA	60	75	*For California spotted owl PACs: Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the activity center during the breeding season (March 1 through August 31), unless surveys confirm that California spotted owls are not nesting. Prior to implementing activities within or adjacent to a California spotted owl PAC and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location of the nest or activity center*
456	SNFPA	60	76	*For northern goshawk PACs: Maintain a limited operating period (LOP), prohibiting vegetation treatments within approximately ¼ mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. If the nest stand within a protected activity center (PAC) is unknown, either apply the LOP to a ¼- mile area surrounding the PAC, or survey to determine the nest stand location*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
457	SNFPA	60	77	*The LOP may be waived for vegetation treatments of limited scope and duration, when a biological evaluation determines that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing and specific location. Where a biological evaluation concludes that a nest site would be shielded from planned activities by topographic features that would minimize disturbance, the LOP buffer distance may be modified.*
458	SNFPA	61	78	*Breeding season limited operating period restrictions may be waived, where necessary, to allow for use of early season prescribed fire in up to 5 percent of California spotted owl PACs per year on a forest.*
459	SNFPA	61	79	*Breeding season limited operating period restrictions may be waived, where necessary, to allow for use of early season prescribed fire in up to 5 percent of northern goshawk PACs per year on a forest.*
460	SNFPA	61	80	*For California spotted owl PACs: Conduct vegetation treatments in no more than 5 percent per year and 10 percent per decade of the acres in California spotted owl PACs in the 11 Sierra Nevada national forests. Monitor the number of PACs treated at a bioregional scale.*
461	SNFPA	61	81	*For northern goshawk PACs: Conduct mechanical treatments in no more than 5 percent per year and 10 percent per decade of the acres in northern goshawk PACs in the 11 Sierra Nevada national forests.*
462	SNFPA	60	85	*Protect fisher den site buffers from disturbance with a limited operating period (LOP) from March 1 through June 30 for vegetation treatments as long as habitat remains suitable or until another Regionally-approved management strategy is implemented. The LOP may be waived for individual projects of limited scope and duration, when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location.*
463	SNFPA	60	86	*Avoid fuel treatments in fisher den site buffers to the extent possible. If areas within den site buffers must be treated to achieve fuels objectives for the urban wildland intermix zone, limit treatments to mechanical clearing of fuels. Treat ladder and surface fuels to achieve fuels objectives. Use piling or mastication to treat surface fuels during initial treatment. Burning of piled debris is allowed. Prescribed fire may be used to treat fuels if no other reasonable alternative exists.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
464	SNFPA	62	88	*Protect marten den site buffers from disturbance from vegetation treatments with a limited operating period (LOP) from May 1 through July 31 as long as habitat remains suitable or until another Regionally-approved management strategy is implemented. The LOP may be waived for individual projects of limited scope and duration, when a biological evaluation documents that such projects are unlikely to result in breeding disturbance considering their intensity, duration, timing, and specific location.*
465				**54. Prescribed Fire**
466	FP	IV-44	1	Do not use unplanned ignition prescribed fire.
467	FP	IV-44	2	Adhere to Federal, Regional, State and local guidelines regarding air quality including the LTBMU Smoke Management Plan.
468	FP	IV-44	3	Employ techniques for managing the generation of smoke including achievement of complete combustion and proper timing for venting to highest elevation and dispersal from the basin.
469	FP	IV-44	4	Design prescribed fire activities to avoid adverse affect on soil and water resources and minimize charring of downed woody material retained for wildlife. Flame height will not exceed two feet within 50 feet of stream courses or on wetlands unless higher intensities are required to achieve specific objectives.
470	SNFPA	64	109	*Within CARs, in occupied habitat or "essential habitat" as identified in conservation assessments for threatened, endangered, or sensitive species, evaluate the appropriate role, timing, and extent of prescribed fire. Avoid direct lighting within riparian vegetation; prescribed fires may back into riparian vegetation areas. Develop mitigation measures to avoid impacts to these species whenever ground-disturbing equipment is used*
471	SNFPA	64	110	*Use screening devices for water drafting pumps. (Fire suppression activities are exempt during initial attack.) Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, from aquatic habitats*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
472	SNFPA	64	111	*Design prescribed fire treatments to minimize disturbance of ground cover and riparian vegetation in RCAs. In burn plans for project areas that include, or are adjacent to RCAs, identify mitigation measures to minimize the spread of fire into riparian vegetation. In determining which mitigation measures to adopt, weigh the potential harm of mitigation measures, for example fire lines, against the risks and benefits of prescribed fire entering riparian vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could be damaging to habitat or long-term function of the riparian community*
473	SNFPA	64	112	*Post-wildfire management activities in RCAs and CARs should emphasize enhancing native vegetation cover, stabilizing channels by non-structural means, minimizing adverse effects from the existing road network, and carrying out activities identified in landscape analyses. Post-wildfire operations shall minimize the exposure of bare soil*
474	SNFPA	64	113	*Allow hazard tree removal within RCAs or CARs. Allow mechanical ground disturbing fuels treatments, salvage harvest, or commercial fuelwood cutting within RCAs or CARs when the activity is consistent with RCOs. Utilize low ground pressure equipment, helicopters, over the snow logging, or other non-ground disturbing actions to operate off of existing roads when needed to achieve RCOs. Ensure that existing roads, landings, and skid trails meet Best Management Practices. Minimize the construction of new skid trails or roads for access into RCAs for fuel treatments, salvage harvest, commercial fuelwood cutting, or hazard tree removal*
475	SNFPA	65	114	*As appropriate, assess and document aquatic conditions following the Regional Stream Condition Inventory protocol prior to implementing ground disturbing activities within suitable habitat for California red-legged frog, Cascades frog, Yosemite toad, foothill and mountain yellow-legged frogs, and northern leopard frog*
476	SNFPA	65	115	*During fire suppression activities, consider impacts to aquatic- and riparian-dependent resources. Where possible, locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of RCAs or CARs. During pre-suppression planning, determine guidelines for suppression activities, including avoidance of potential adverse effects to aquatic-and riparian-dependent species as a goal*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
477	SNFPA	65	116	*Identify roads, trails, OHV trails and staging areas, developed recreation sites, dispersed campgrounds, special use permits, grazing permits, and day use sites during landscape analysis. Identify conditions that degrade water quality or habitat for aquatic and riparian-dependent species. At the project level, evaluate and consider actions to ensure consistency with standards and guidelines or desired conditions*
478				**55. Law Enforcement**
479				Review and amend the LTBMU Law Enforcement Action Plan annually through an interdisciplinary process. Forest Supervisors orders issued to provide specific restrictions beyond the general provisions of the Code of Federal Regulations will be reviewed annually.
480				**56. Forest Pest Management**
481	FP	IV-45	1	Follow an Integrated Pest Management (IPM) approach during the planning and implementation of resource management activities, particularly those influencing the vegetation. Under this IPM approach, a full range of pest management alternatives, including cultural, biological, mechanical and chemical methods, will be considered and analyzed on a site-specific, project level basis. The treatment method(s) will be selected through the environmental analysis process which will consider the environmental effects, treatment efficacy and cost effectiveness of each alternative. Monitoring and enforcement plans to implement specific measures will be determined during this site and project-specific process. Pest detection, surveillance, evaluation, prevention, suppression, and post-action evaluation are integral components of the integrated pest management approach (36 CFR 219.27 (a) (3)).
482				**57. Geologic Inventory & Evaluation, Geotechnical Investigation**
483	FP	IV-45	1	Identify and give priority to areas that need more detailed geologic hazard information. Complete the Forest Geologic Resource Inventory, including landslide hazards and risk assessment, earthquake and volcanic hazard assessment, snow avalanche hazard assessment, and geologic special interest area inventory and analysis.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
484	FP	IV-45	2	Use the Geologic Resource Inventory, when completed, or other available geologic hazard and resource information for preliminary assessment of projects which impact unstable land or snow avalanche areas, disturb the land surface, or develop geologic resources. Provide geologic and geotechnical evaluation of projects with a potential to initiate or accelerate landslide or snow avalanche. Avoid or provide special treatment on unstable areas to avoid triggering mass movement.
485	FP	IV-45	3	Allow no land disturbing activities on highly unstable areas.
486	FP	IV-45	4	Avoid earthquake fault zones whenever possible when designing roads and other facilities.
487	FP	IV-45	5	Develop site-specific mitigation measures where potential slope instability is identified.
488				**58. Riparian and Stream Environment Zone (SEZ) Management**
489	SNFPA	62	91	*Designate riparian conservation area (RCA) widths as described in Part B of this appendix. The RCA widths displayed in Part B may be adjusted at the project level if a landscape analysis has been completed and a site-specific RCO analysis demonstrates a need for different widths.*
490	SNFPA	62	92	*Evaluate new proposed management activities within CARs and RCAs during environmental analysis to determine consistency with the riparian conservation objectives at the project level and the AMS goals for the landscape. Ensure that appropriate mitigation measures are enacted to (1) minimize the risk of activity-related sediment entering aquatic systems and (2) minimize impacts to habitat for aquatic- or riparian-dependent plant and animal species.*
491	SNFPA	62	93	*Identify existing uses and activities in CARs and RCAs during landscape analysis. At the time of permit reissuance, evaluate and consider actions needed for consistency with RCOs.*
492	SNFPA	62	94	*As part of project-level analysis, conduct peer reviews for projects that propose ground-disturbing activities in more than 25 percent of the RCA or more than 15 percent of a CAR.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
493	SNFPA	63	95	*For waters designated as "Water Quality Limited" (Clean Water Act Section 303(d)), participate in the development of Total Maximum Daily Loads (TMDLs) and TMDL Implementation Plans. Execute applicable elements of completed TMDL Implementation Plans.*
494	SNFPA	63	96	*Ensure that management activities do not adversely affect water temperatures necessary for local aquatic- and riparian-dependent species assemblages.*
495	SNFPA	63	97	*Limit pesticide applications to cases where project level analysis indicates that pesticide applications are consistent with riparian conservation objectives.*
496	SNFPA	63	99	*Prohibit storage of fuels and other toxic materials within RCAs and CARs except at designated administrative sites and sites covered by a Special Use Authorization. Prohibit refueling within RCAs and CARs unless there are no other alternatives. Ensure that spill plans are reviewed and up-to-date.*
497	SNFPA	63	100	*Maintain and restore the hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features by identifying roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths. Implement corrective actions where necessary to restore connectivity.*
498	SNFPA	63	101	*Ensure that culverts or other stream crossings do not create barriers to upstream or downstream passage for aquatic-dependent species. Locate water drafting sites to avoid adverse effects to in stream flows and depletion of pool habitat. Where possible, maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows, wetlands, and other special aquatic features.*
499	SNFPA	63	102	*Prior to activities that could adversely affect streams, determine if relevant stream characteristics are within the range of natural variability. If characteristics are outside the range of natural variability, implement mitigation measures and short-term restoration actions needed to prevent further declines or cause an upward trend in conditions. Evaluate required long-term restoration actions and implement them according to their status among other restoration needs.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
500	SNFPA	63	103	*Prevent disturbance to streambanks and natural lake and pond shorelines caused by resource activities (for example, livestock, off-highway vehicles, and dispersed recreation) from exceeding 20 percent of stream reach or 20 percent of natural lake and pond shorelines. Disturbance includes bank sloughing, chiseling, trampling, and other means of exposing bare soil or cutting plant roots. This standard does not apply to developed recreation sites, sites authorized under Special Use Permits and designated off-highway vehicle routes.*
501	SNFPA	63	104	*In stream reaches occupied by, or identified as "essential habitat" in the conservation assessment for, the Lahontan and Paiute cutthroat trout and the Little Kern golden trout, limit streambank disturbance from livestock to 10 percent of the occupied or "essential habitat" stream reach. (Conservation assessments are described in the record of decision.) Cooperate with State and Federal agencies to develop streambank disturbance standards for threatened, endangered, and sensitive species. Use the regional streambank assessment protocol. Implement corrective action where disturbance limits have been exceeded.*
502	SNFPA	64	105	*At either the landscape or project-scale, determine if the age class, structural diversity, composition, and cover of riparian vegetation are within the range of natural variability for the vegetative community. If conditions are outside the range of natural variability, consider implementing mitigation and/or restoration actions that will result in an upward trend. Actions could include restoration of aspen or other riparian vegetation where conifer encroachment is identified as a problem.*
503	SNFPA	64	106	*Cooperate with Federal, Tribal, State and local governments to secure in stream flows needed to maintain, recover, and restore riparian resources, channel conditions, and aquatic habitat Maintain in stream flows to protect aquatic systems to which species are uniquely adapted. Minimize the effects of stream diversions or other flow modifications from hydroelectric projects on threatened, endangered, and sensitive species.*
504	SNFPA	64	107	*For exempt hydroelectric facilities on national forest lands, ensure that special use permit language provides adequate in stream flow requirements to maintain, restore, or recover favorable ecological conditions for local riparian- and aquatic-dependent species.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
505	SNFPA	64	109	*Within CARs, in occupied habitat or "essential habitat" as identified in conservation assessments for threatened, endangered, or sensitive species, evaluate the appropriate role, timing, and extent of prescribed fire. Avoid direct lighting within riparian vegetation; prescribed fires may back into riparian vegetation areas. Develop mitigation measures to avoid impacts to these species whenever ground-disturbing equipment is used.*
506	SNFPA	64	110	*Use screening devices for water drafting pumps. (Fire suppression activities are exempt during initial attack.) Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, from aquatic habitats.*
507	SNFPA	64	111	*Design prescribed fire treatments to minimize disturbance of ground cover and riparian vegetation in RCAs. In burn plans for project areas that include, or are adjacent to RCAs, identify mitigation measures to minimize the spread of fire into riparian vegetation. In determining which mitigation measures to adopt, weigh the potential harm of mitigation measures, for example fire lines, against the risks and benefits of prescribed fire entering riparian vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could be damaging to habitat or long-term function of the riparian community.*
508	SNFPA	64	112	*Post-wildfire management activities in RCAs and CARs should emphasize enhancing native vegetation cover, stabilizing channels by non-structural means, minimizing adverse effects from the existing road network, and carrying out activities identified in landscape analyses. Post-wildfire operations shall minimize the exposure of bare soil.*
509	SNFPA	64	113	*Allow hazard tree removal within RCAs or CARs. Allow mechanical ground disturbing fuels treatments, salvage harvest, or commercial fuelwood cutting within RCAs or CARs when the activity is consistent with RCOs. Utilize low ground pressure equipment, helicopters, over the snow logging, or other non-ground disturbing actions to operate off of existing roads when needed to achieve RCOs. Ensure that existing roads, landings, and skid trails meet Best Management Practices. Minimize the construction of new skid trails or roads for access into RCAs for fuel treatments, salvage harvest, commercial fuelwood cutting, or hazard tree removal.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
510	SNFPA	64	114	*As appropriate, assess and document aquatic conditions following the Regional Stream Condition Inventory protocol prior to implementing ground disturbing activities within suitable habitat for California red-legged frog, Cascades frog, Yosemite toad, foothill and mountain yellow-legged frogs, and northern leopard frog.*
511	SNFPA	65	115	*During fire suppression activities, consider impacts to aquatic- and riparian-dependent resources. Where possible, locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of RCAs or CARs. During pre-suppression planning, determine guidelines for suppression activities, including avoidance of potential adverse effects to aquatic-and riparian-dependent species as a goal.*
512	SNFPA	65	116	*Identify roads, trails, OHV trails and staging areas, developed recreation sites, dispersed campgrounds, special use permits, grazing permits, and day use sites during landscape analysis. Identify conditions that degrade water quality or habitat for aquatic and riparian-dependent species. At the project level, evaluate and consider actions to ensure consistency with standards and guidelines or desired conditions.*
513	SNFPA	65	117	*Assess the hydrologic function of meadow habitats and other special aquatic features during range management analysis. Ensure that characteristics of special features are, at a minimum, at Proper Functioning Condition, as defined in the appropriate Technical Reports (or their successor publications): (1) "Process for Assessing PFC" TR 1737-9 (1993), "PFC for Lotic Areas" USDI TR 1737-15 (1998) or (2) "PFC for Lentic Riparian-Wetland Areas" USDI TR 1737-11 (1994).*
514	SNFPA	65	118	*Prohibit or mitigate ground-disturbing activities that adversely affect hydrologic processes that maintain water flow, water quality, or water temperature critical to sustaining bog and fen ecosystems and plant species that depend on these ecosystems. During project analysis, survey, map, and develop measures to protect bogs and fens from such activities as trampling by livestock, pack stock, humans, and wheeled vehicles. Criteria for defining bogs and fens include, but are not limited to, presence of: (1) sphagnum moss (Spagnum spp.), (2) mosses belonging to the genus Meessia, and (3) sundew (Drosera spp.) Complete initial plant inventories of bogs and fens within active grazing allotments prior to re-issuing permits.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
515	SNFPA	65	119	*Locate new facilities for gathering livestock and pack stock outside of meadows and riparian conservation areas. During project-level planning, evaluate and consider relocating existing livestock facilities outside of meadows and riparian areas. Prior to re-issuing grazing permits, assess the compatibility of livestock management facilities located in riparian conservation areas with riparian conservation objectives.*
516	SNFPA	65	120	*Under season-long grazing:For meadows in early seral status: limit livestock utilization of grass and grass-like plants to 30 percent (or minimum 6-inch stubble height). For meadows in late seral status: limit livestock utilization of grass and grass-like plants to a maximum of 40 percent (or minimum 4-inch stubble height). Determine ecological status on all key areas monitored for grazing utilization prior to establishing utilization levels. Use Regional ecological scorecards and range plant list in regional range handbooks to determine ecological status. Analyze meadow ecological status every 3 to 5 years. If meadow ecological status is determined to be moving in a downward trend, modify or suspend grazing. Include ecological status data in a spatially explicit Geographical Information System database. Under intensive grazing systems (such as rest-rotation and deferred rotation) where meadows are receiving a period of rest, utilization levels can be higher than the levels described above if the meadow is maintained in late seral status and meadow-associated species are not being impacted. Degraded meadows (such as those in early seral status with greater than 10 percent of the meadow area in bare soil and active erosion) require total rest from grazing until they have recovered and have moved to mid- or late seral status.*
517	SNFPA	66	121	*Limit browsing to no more than 20 percent of the annual leader growth of mature riparian shrubs and no more than 20 percent of individual seedlings. Remove livestock from any area of an allotment when browsing indicates a change in livestock preference from grazing herbaceous vegetation to browsing woody riparian vegetation.*
518	SNFPA	66	122	*Recommend restoration practices in: (1) areas with compaction in excess of soil quality standards, (2) areas with lowered water tables, or (3) areas that are either actively down cutting or that have historic gullies. Identify other management practices, for example, road building, recreational use, grazing, and timber harvests, that may be contributing to the observed degradation.*
519				**59. Forest-Wide Noxious Weed Management**

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
520	SNFPA	54	36	*Inform forest users, local agencies, special use permittees, groups, and organizations in communities near national forests about noxious weed prevention and management.*
521	SNFPA	54	37	*Work cooperatively with California and Nevada State agencies and individual counties (for example, Cooperative Weed Management Areas) to: (1) prevent the introduction and establishment of noxious weed infestations and (2) control existing infestations.*
522	SNFPA	55	38	*As part of project planning, conduct a noxious weed risk assessment to determine risks for weed spread (high, moderate, or low) associated with different types of proposed management activities. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy to develop mitigation measures for high and moderate risk activities.*
523	SNFPA	55	39	*When recommended in project-level noxious weed risk assessments, consider requiring off-road equipment and vehicles (both Forest Service and contracted) used for project implementation to be weed free. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy.*
524	SNFPA	55	40	*Minimize weed spread by incorporating weed prevention and control measures into ongoing management or maintenance activities that involve ground disturbance or the possibility of spreading weeds. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy.*
525	SNFPA	55	41	*Conduct follow-up inspections of ground disturbing activities to ensure adherence to the Regional Noxious Weed Management Strategy.*
526	SNFPA	55	42	*Encourage use of certified weed free hay and straw. Cooperate with other agencies and the public in developing a certification program for weed free hay and straw. Phase in the program as certified weed free hay and straw becomes available. This standard and guideline applies to pack and saddle stock used by the public, livestock permittees, outfitter guide permittees, and local, State, and Federal agencies.*
527	SNFPA	55	43	*Include weed prevention measures, as necessary, when amending or re-issuing permits (including, but not limited to, livestock grazing, special uses, and pack stock operator permits.*

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
528	SNFPA	55	44	*Include weed prevention measures and weed control treatments in mining plans of operation and reclamation plans. Refer to weed prevention practices in the Regional Noxious Weed Management Strategy. Monitor for weeds, as appropriate, for 2 years after project implementation (assuming no weed introductions have occurred).*
529	SNFPA	55	45	*Conduct a risk analysis for weed spread associated with burned area emergency rehabilitation (BAER) treatments. The BAER team is responsible for conducting this analysis. Monitor and treat weed infestations for 3 years after the fire.*
530	SNFPA	55	46	*Consult with American Indians to determine priority areas for weed prevention and control where traditional gathering areas are threatened by weed infestations.*
531	SNFPA	55	47	*Complete noxious weed inventories, based on regional protocol. Review and update these inventories on an annual basis.*
532	SNFPA	55	48	*As outlined in the Regional Noxious Weed Management Strategy, when new, small weed infestations are detected, emphasize eradication of these infestations while providing for the safety of field personnel.*
533	SNFPA	55	49	*Routinely monitor noxious weed control projects to determine success and to evaluate the need for follow-up treatments or different control methods . Monitor known weed infestations, as appropriate, to determine changes in weed population density and rate of spread.*
534	Blackwood	IV-58		Expand Kaspian campground by 50 PAOT.
535	Blackwood	IV-58		Restrict OHV use in this management area to roads and designated routes. Inform OHV users of the sensitivity of the watershed.
536	Blackwood	IV-58		Keep management area open to over-the-snow vehicle use. Issue no winter motorized outfitter guide permits.
537	Blackwood	IV-58		Protect suitable habitat for goshawk and spotted owl.
538	Blackwood	IV-58		Improve the ability for fish to migrate in this stream past the concrete diversion structure, and improve limited habitat.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
539	Blackwood	IV-58		Prohibit livestock grazing for at least the duration of this plan. Continue to allow sheep crossing from the Tahoe NF to a truck loading site in Blackwood in the fall, provided that no watershed damage occurs as a result.
540	Blackwood	IV-58		Intensive timber management activities will not occur during this plan period.
541	Blackwood	IV-58		Allow this practice where necessary to prevent insect and disease outbreaks from escalating into epidemic proportions.
542	Blackwood	IV-58		The Barker Pass road will be utilized as a major log haul route from the Tahoe National Forest. However, it will not be realigned or upgraded to a standard that could make it a new trans-Sierra highway. Existing OHV roads will be managed to preserve or enhance quality OHV opportunities.
543	Desolation	IV-64		Maintain closure to OHV use and mountain bicycles. Issue no new outfitter guide permits or competitive recreation events permits.
544	Desolation	IV-64		Use the Desolation Wilderness Management Plan except for the fire management portion to specifically guide management activities for the area.
545	Desolation	IV-64		Evaluate major emission sources which might affect the Class I airshed, including sources not on Federal land. Inventory and assess identified air quality related values (AQRV) of visibility, bryoria lichen species and acidity of water.
546	East Shore Beaches	IV-69		Construct a boat-in day use site at Skunk Harbor, with capacity of 25 PAOT.
547	East Shore Beaches	IV-69		Provide parking and associated improvements for 850 PAOT at suitable locations off Highway 28 to eliminate the roadside parking. Plan parking nodes with Nevada Department of Transportation and the Division of Parks and Recreation.
548	East Shore Beaches	IV-69		Designate scenic vista points along Highway 28.
549	East Shore Beaches	IV-69		Assure that not all the parking is used by beach users, but that some is reserved for emergency roadside stops and for scenic viewing.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
550	East Shore Beaches	IV-69		Prohibit overnight camping and OHV use. Emphasize management programs to minimize littering along the beaches and trails. Regularly maintain trail improvements to protect fragile soils and vegetation from heavy public use.
551	East Shore Beaches	IV-69		Maintain closure to over-the-snow vehicles north of Skunk Harbor. No permits for winter motorized outfitter guides will be issued.
552	East Shore Beaches	IV-69		Restore the highway foreground view with nodal parking.
553	East Shore Beaches	IV-69		Evaluate and interpret the Newhall house and outbuilding at Skunk Harbor. Manage as appropriate through recordation, interpretation, and/or preservation. Evaluate significance of Slaughterhouse Canyon railroad grade, and interpret grade if desirable.
554	East Shore Beaches	IV-69		Maintain roads for administrative purposes and allow for access to the private homes at Secret Harbor.
555	East Shore Beaches	IV-69		Install barriers or other devices to prevent roadside parking where it has been determined to be a visual, safety and water quality management problem.
556	Echo Lakes	IV-75		Develop an Echo Summit vista with a capacity of 50 PAOT.
557	Echo Lakes	IV-75		Expansion will not exceed 40 PAOT above the current level for Echo Lake and Echo Summit parking.
558	Echo Lakes	IV-75		Recreation residences, organization camps, and resorts will not be enlarged in capacity or in land coverage.
559	Echo Lakes	IV-75		A single future use determination will be made for all the private sector improvements in this management area since all term permits expire on January 31, 1991, and their continuance substantially determines the character of the area for the future.
560	Echo Lakes	IV-75		Manage the old Camp Harvey West site at the west end of Upper Echo Lake as a dispersed recreation area. Maintain use at a level that allows natural watershed and vegetation rehabilitation to progress.
561	Echo Lakes	IV-75		Maintain the closure to OHV activity. Vehicles may travel on forest development roads.
562	Echo Lakes	IV-75		Maintain the camping closure.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
563	Echo Lakes	IV-75		Maintain the closure to over-the-snow vehicles. Owners of private land and recreation residences may travel on the forest development roads when they are snow covered to gain access, but not for recreational purposes. No permits for winter motorized outfitter guides will be issued.
564	Echo Lakes	IV-75		Cooperate with El Dorado County on their ordinance that closes avalanche prone areas along Highway 50 to over-the-snow travel (motorized or nonmotorized).
565	Echo Lakes	IV-75		Maintain the camping closure.
566	Echo Lakes	IV-75		Continue to work with CalTrans to improve the appearance of the maintenance yard on Echo Summit to enhance the highway entry corridor to Lake Tahoe.
567	Echo Lakes	IV-75		Develop cost sharing arrangements with cabin and resort owners for the road to Echo Lake that was removed from county maintenance in 1984.
568	Echo Lakes	IV-75		No sewer collection line will be constructed to serve the recreation residences around Echo Lake.
569	Emerald Bay	IV-81		Maximum expansion of developed facilities will be limited to 25 PAOT over present at Inspiration Point. At the same time, upgrade the interpretation at the site, reduce environmental impacts and make it safer.
570	Emerald Bay	IV-81		Plan the future use of the Emerald Bay recreation residence tract prior to the expiration of the permits in 1991.
571	Emerald Bay	IV-81		Recreation residences will not be enlarged in capacity or in land coverage.
572	Emerald Bay	IV-81		This area is closed to OHV use.
573	Emerald Bay	IV-81		Overnight camping is permitted only in designated Forest Service and State Park campgrounds. No new outfitter guide permits will be issued.
574	Emerald Bay	IV-81		This area is closed to over-the-snow vehicle use. No new winter outfitter guide permits will be issued.
575	Emerald Bay	IV-81		Continue to explore efficient and effective ways to restore the large landslide area to visual quality objectives.
576	Emerald Bay	IV-81		Cut trees if necessary to maintain or improve the view from Inspiration Point.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
577	Emerald Bay	IV-81		Support CalTrans' efforts to explore effective, efficient and visually acceptable ways to stabilize the highway cuts and fills and the landslide area.
578	Emerald Bay	IV-81		Work with the California Department of Parks and Recreation and CalTrans to plan for the mix of uses in this management area.
579	Emerald Bay	IV-81		Evaluate the national forest lands around the bay in this planning period to determine if they warrant classification as a Special Interest Area. These lands will also be studied for potential inclusion into the State Park's National Natural Landmark registry.
580	Emerald Bay	IV-81		Explore opportunities to improve management through land exchanges with the State Parks.
581	Fallen Leaf	IV-87		Increase recreation capacity by the following amounts:
582	Fallen Leaf	IV-87		Camp Richardson Campground 770 PAOT
583	Fallen Leaf	IV-87		Fallen Leaf Boat Launch 43 PAOT
584	Fallen Leaf	IV-87		Fallen Leaf Picnic/Vista 72 PAOT
585	Fallen Leaf	IV-87		Expand capacity beyond the present level of use at trailhead parking sites to:
586	Fallen Leaf	IV-87		Angora Ridge Winter 15 PAOT
587	Fallen Leaf	IV-87		Mt Tallac 48 PAOT
588	Fallen Leaf	IV-87		Glen Alpine 50 PAOT
589	Fallen Leaf	IV-87		Consider opportunities for use of public transit, or other alternatives, before constructing or reconstructing parking sites.
590	Fallen Leaf	IV-87		Proposed new development will include: Washoe Cultural Center 118 PAOT
591	Fallen Leaf	IV-87		New organization camp 360 PAOT
592	Fallen Leaf	IV-87		Manage Camp Richardson Resort under the terms of the decision notice dated May 28,1982.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
593	Fallen Leaf	IV-87		Plan the future use of the recreation residences prior to the expiration of their permits. The permits at Spring Creek, Alpine Falls, Stanford, and Fallen Leaf Lodge tracts expire in 2001. Those at Lily Lake, Fish Hatchery, Angora Lakes, and part of Fallen Leaf tract expire in 1991.
594	Fallen Leaf	IV-87		Because of the high cost and environmental effects of sewering the remote, fragile area, the unsewered tracts will not be connected to the STPUD system. If sewering should someday be required, and if alternate technological solutions are unacceptable, residences in those affected tracts will be terminated. Enforce the conditions of the existing waiver.
595	Fallen Leaf	IV-87		Electrical service will not be extended to Lot 6 of Fish Hatchery Tract because it is so remote from other development.
596	Fallen Leaf	IV-87		Manage Camp Richardson Corral under terms of the special use permit. Work with the permittee to develop a plan for shared management and maintenance of the trails used by the permittee.
597	Fallen Leaf	IV-87		Implement the plan for the Tallac Historic Site approved in 1980, to provide for public use and enjoyment, while preserving the historically significant aspects of the estates. Where it doesn't conflict with public access the structures and grounds will be made available for a variety of adaptive uses to help generate restoration and maintenance funds. Valhalla's main house will be used as a community resource, managed by the Tahoe Tallac Association, to accomo- date non-profit cultural and educational events, ceremonies, performances, meetings or exhibits appropriate to its scale and harmonious with the ambient atmosphere desired for the complex. Encourage the Tahoe Tallac Association to evaluate the feasibil- ity of converting the boathouse into a small community theater. Begin restoring and refurnishing the Pope main house and kitchen to portray an interpretive example of a 1920's summer resort at Lake Tahoe in such a manner that it may also be used for a variety of adaptive uses. The outbuildings may be used for interpretation, public demonstration and exhibition, storage, office space, bath- rooms, or barracks. The Baldwin/McGonagle Estate main house will contain the Tallac Museum, collections curation, and office and work space for interpretive and museum specialists. The outbuildings will be used for educational, interpretive, historical, residential, facilities maintenance or storage purposes.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
598	Fallen Leaf	IV-87		Visitor information and interpretive services in this area will be focused at the Lake Tahoe Visitor Center and will include programs and activities throughout the area. The environmental education program will be expanded to year round.
599	Fallen Leaf	IV-87		Maintain the existing parking at Pope and Baldwin beaches for the duration of this plan. Consider opportunities for use of shuttle service that might lead to a reduction in parking on the barrier beach.
600	Fallen Leaf	IV-87		Vehicle use will be limited to Forest Service system roads, subject to other closures. No OHV routes or trails will be designated in this management area. Camping will be prohibited except in developed campgrounds and designated dispersed campsites.
601	Fallen Leaf	IV-87		This management area is open to over-the-snow vehicles except north of Highway 89; at Angora Lakes; from Fallen Leaf Road east to South Lake Tahoe and north of Tahoe Mountain; and west of Lily Lake. No outfitter guide permits for winter motorized use will be issued.
602	Fallen Leaf	IV-87		Protect the Washoe Cemetery from damage that could occur as a result of intensive recreation use and other activities.
603	Fallen Leaf	IV-87		Complete National Register Nominations for Glen Alpine Springs Resort, Camp Richardson, and Angora Lookout. Evaluate the significance of Fredericks House, the Old Mill, the prehistoric sites, and the Tallac Resort site. Manage these sites and the three estates in a manner appropriate to their historic significance through recordation, research, interpretation, rest- oration, preservation and/or appropriate levels of maintenance. Work with cooperating associations such as the Tahoe Tallac Association, the Lake Tahoe Historical Society, and the Historic Preservation of Glen Alpine Springs Incorporated to accomplish necessary work on these buildings.
604	Fallen Leaf	IV-87		Assist the Washoe Tribe in reestablishing their ties with the Lake Tahoe area.
605	Fallen Leaf	IV-87		Preserve the Washoe cultural resource values along Taylor Creek, for 1/2 mile south of Highway 89, for potential interpretation.
606	Fallen Leaf	IV-87		Manage the bald eagle winter forage area at Taylor Creek for low human disturbance from mid-October to February. Maintain large dominant trees and snags for perching, especially those near water.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
607	Fallen Leaf	IV-87		Evaluate the suitability of the two storied stands near Fallen Leaf Lake for bald eagle nest sites.
608	Fallen Leaf	IV-87		Restrict recreation use in the Pope and Baldwin wildlife sanctuaries during goose nesting season.
609	Fallen Leaf	IV-87		Implement the Pope Marsh Management Prescription, approved on September 17, 1982, which calls for installation of nesting islands or platforms and other devices to enhance water- fowl habitat. Develop similar plans for Taylor Creek and Baldwin marshes.
610	Fallen Leaf	IV-87		Seek modifications in the MOU with the Fallen Leaf Protection Association on regulation of Fallen Leaf Lake outflow if monitoring indicates that proper conditions are not being maintained in Taylor Creek for Kokanee salmon spawning and egg and fry survival and habitat for brown trout.
611	Fallen Leaf	IV-87		Maintain the fish barrier between Taylor Creek and Fallen Leaf Lake to prevent transmittal to Lake Tahoe of a whirling disease caused by Myxosoma cerebralis parasite prevalent in Fallen Leaf Lake.
612	Fallen Leaf	IV-87		Continue management efforts to protect existing and potential habitat of Rorippa subumbellata on the lakeshore. Prohibit mechanical raking and cleaning of the beaches on these habitat sites.
613	Fallen Leaf	IV-87		Consider the long term effects on the marsh ecosystem before approving any discharge of water into Pope Marsh from the Tahoe Keys treatment plant.
614	Fallen Leaf	IV-87		The Tallac Historic Site would be designated a Special Interest Area and Taylor Creek Wetlands would be evaluated for future SIA designation in this planning period.
615	Fallen Leaf	IV-87		Enlarge the Baldwin employee mobile home park.
616	Fallen Leaf	IV-87		Manage the reservoir at Fallen Leaf Lake to fulfill four objectives. In descending order, the objectives are: 1) abide by rules set forth in our Memorandum of Understanding with the Fallen Leaf Protection Association, 3/6/72; 2) provide for instream flow in Taylor Creek; 3) provide for flood protection; and 4) provide for other specific water levels desired by the protection association. No objective of lower order will be met until the higher ones are fulfilled.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
617	Fallen Leaf	IV-87		Supporting documents are: EA for Low Water Management 5/3/81; Minimum Flow needs for Taylor Creek 6/81; Hydrologic Analysis and Operating Plan for Fallen Leaf Lake 6/81.
618	Freel	IV-97		Proposed expansion is 65 PAOT for Fountain Place Trailhead.
619	Freel	IV-97		OHV activity is allowed on designated system roads and trails. Existing designated roads include the Fountain Place Road, and Hell Hole Jeep Trail. Armstrong Pass Trail (18E09), Tucker Flat Trail (18E02), Hell Hole Trail (18E12), Star Lake Trail (18E01) and the Tahoe Rim Trail will be managed for non-motorized summer recreation. Expansion of summer OHV opportunities will be considered only in the area managed for timber stand maintenance.
620	Freel	IV-97		The area north of Fountain Place road is closed to over-the-snow vehicles. The area south of Fountain Place road, including the trail to Armstrong Pass, is open to over-the-snow vehicles.
621	Freel	IV-97		Maintain option to introduce Lahontan cutthroat trout into upper reaches of Saxon and Trout Creek.
622	Genoa	IV-102		Provide trailhead parking for approximately 35 PAOT, in the vicinity of Daggett Pass.
623	Genoa	IV-102		Allow OHV activity on designated routes only. Maintain the Genoa Peak Road for high clearance and four wheel drive use only. Add roughness and challenge to the road while protecting water quality.
624	Genoa	IV-102		Allow over-the-snow vehicles throughout the entire area. Issue no new outfitter guide permits for motorized winter use.
625	Genoa	IV-102		Enhance the mule deer habitat with vegetation management.
626	Heavenly Valley	IV-107		Revise the 1966 Heavenly Valley Ski Area Master Development Plan to incorporate the requirements of the revised forest plan and the revised TRPA Regional Plan.
627	Heavenly Valley	IV-107		Allow an aerial tramway or other conveyance from the casino core area to East Peak or to the California base facilities to be considered for skier access to the mountain.
628	Heavenly Valley	IV-107		Maximum enlargement of the ski area will be 5,400 SAOT over the present level inside the basin and 3,600 SAOT outside the basin.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
629	Heavenly Valley	IV-107		Use the "Summer Site Operation Plan", 1984 and as annually amended, as a guide for administration of erosion control projects, visual rehabilitation, run improvements, and lift construction or reconstruction.
630	Heavenly Valley	IV-107		Use the "Operation and Avalanche Plan", 1973, as amended, as a guide for administration of winter activities within the ski area.
631	Heavenly Valley	IV-107		Explore opportunities to make the area more accessible for non-motorized dispersed recreation.
632	Heavenly Valley	IV-107		Maintain the OHV closure.
633	Heavenly Valley	IV-107		Maintain the camping closure.
634	Heavenly Valley	IV-107		Maintain the OHV closure.
635	Heavenly Valley	IV-107		Defer tree removal for visual enhancement until there is substantial groundcover of vegetation on ski trails in the areas planned for visual treatment.
636	Heavenly Valley	IV-107		Use a test section to determine effectiveness of visual restoration techniques before employing on all trails.
637	Heavenly Valley	IV-107		Structures and improvements will be attractive and harmonious with a rural mountain ski development setting as viewed in the foreground.
638	Heavenly Valley	IV-107		Assure that the major mule deer migration corridor is not obstructed.
639	Heavenly Valley	IV-107		Aerial techniques or over-the-snow skidding will be the standard method for yarding.
640	Heavenly Valley	IV-107		Obtain water rights sufficient to irrigate stabilization projects and for snowmaking.
641	Heavenly Valley	IV-107		Continue to treat the sources of soil erosion.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
642	Heavenly Valley	IV-107		Emphasize use of native drought-tolerant species in revegetation projects.
643	Heavenly Valley	IV-107		Assure that use of fertilizer, snow augmenta- tion chemicals and irrigation water is not excessive.
644	Heavenly Valley	IV-107		Activities designed to enhance the quality of skiing, such as run widening and terrain modification, will proceed in concert with stabilization of disturbed areas.
645	Lower Truckee River	IV-113		Coordinate the development of recreational facilities and uses on the 64 Acres with local governments and citizen groups and with the State Parks, CalTrans, and TRPA. Development of the 64 Acres will accommodate no more than 245 PAOT of new public recreation use.
646	Lower Truckee River	IV-113		Recreation residences will not be allowed to enlarge in capacity or in land coverage.
647	Lower Truckee River	IV-113		No overnight camping in this management area. No permits for winter outfitter guides will be issued.
648	Lower Truckee River	IV-113		Use the EIS prepared for the 64 Acre tract by the Bureau of Reclamation and the Forest Service EA "A Plan for the Sixty-four Acre Tract" (Nov. 1986) as a guide for site development on the tract.
649	Lower Truckee River	IV-113		Allow the "chimney" portion of the 64 Acres tract north of the river to be utilized for public services.
650	Lower Truckee River	IV-113		Title to national forest and private lands along the river had been clouded by the "Lanfar Deed", which claimed for Sierra Pacific Power Company (SPP) title to lands within 100 feet of the river. In a suit and appeal filed by Sierra Pacific (May & June 1985) the courts found that SPP Company's rights consist of no more than an easement for water and power purposes.
651	Marlette	IV-118		Proposed expansion is 200 PAOT in the vicinity of Spooner Lake. Present plans call for campgrounds, visitor center, trailhead and snow play area.
652	Marlette	IV-118		Direct overnight camping to areas outside the Marlette Lake watershed.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
653	Marlette	IV-118		Maintain the OHV closure. Vehicles may travel on forest development roads west of Highways 50 and 28.
654	Marlette	IV-118		Provide parking for winter access at Spooner Summit including a snowmobile staging area.
655	Marlette	IV-118		The management area is closed to over-the-snow vehicles except the Slaughterhouse Canyon area. No new outfitter guide permits will be issued.
656	Marlette	IV-118		Continue to improve the visual appearance of the Spooner Summit Fire Station.
657	Marlette	IV-118		In cooperation with the Nevada State Parks, evaluate the significance of the historic Slaughterhouse Canyon and associated railroad grade, and provide interpretation of the grade.
658	Marlette	IV-118		Assure that activities occurring within the Marlette Lake watershed are not detrimental to the domestic water supply of Carson City.
659	Marlette	IV-118		Seek withdrawal of the Marlette Lake watershed from mineral prospecting and development.
660	Marlette	IV-118		Work with the State of Nevada toward public ownership of the entire Marlette Lake watershed to protect the domestic water supply.
661	Marlette	IV-118		Cooperatively plan and implement land exchanges with the Nevada State Park System to improve each agency's ability to serve the public.
662	Marlette	IV-118		Cooperate with the State of Nevada in the maintenance of a forest road system adequate for administrative purposes. Keep vehicular travel, such as to Snow Valley Peak electronic site (Toiyabe National Forest), at a low level so as not to detract from the nonmotorized recreation experience.
663	Marlette	IV-118		Reconstruct the abandoned road from Highway 28 to Marlette Lake Dam as a nonmotorized hiking and riding trail.
664	Marlette	IV-118		Develop a historic/recreation trail from Highway 28 into Slaughterhouse Canyon.
665	Marlette	IV-118		Either construct a new fire station at Spooner Summit administrative site or move to co-locate with the Tahoe-Douglas Fire District Station nearby if the opportunity is provided.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
666	Martis	IV-125		Recreation capacity is proposed to increase by 750 PAOT. Precise location and nature of facilities will be determined in project level planning. Potential sites will be managed to preserve options for future development.
667	Martis	IV-125		The Kings Beach OHV area should be managed as described in that Environmental Assessment Report. The Kings Beach OHV area will be limited to 75 PAOT, and Brockway Summit Trailhead parking will be limited to 90 PAOT.
668	Martis	IV-125		The Rim Trail and associated staging area, feeder trails, and trailheads will be given full consideration in planning this area but should not overly constrain other activities such as wildlife habitat improvement, watershed restoration or timber harvest.
669	Martis	IV-125		A system of summer OHV routes will be designated to provide high quality opportunities away from residential areas where resource concerns can be mitigated. Most routes will be designated on existing roads, however short segments may be constructed to complete loops and avoid highly sensitive areas.
670	Martis	IV-125		The area is open to over-the-snow vehicles. Issue no new outfitter guides for winter motorized use.
671	McKinney	IV-130		Maximum capacity for facilities on national forest land will not exceed 650 PAOT.
672	McKinney	IV-130		Approval of new skiing improvements will be through a master development plan.
673	McKinney	IV-130		Recognize the national significance of the McKinney-Rubicon Road in making decisions for the road standard. OHV use will be limited to system roads. Develop an OHV staging area for the McKinney-Rubicon Road.
674	McKinney	IV-130		Maintain area open to over-the-snow vehicles. Issue no motorized outfitter guide permits.
675	McKinney	IV-130		Upgrade McKinney Creek to excellent condition for migratory fish habitat.
676	McKinney	IV-130		Coordinate with the Tahoe National Forest in administration of the Miller Lake Allotment to assure BMP and compliance with water quality standards.
677	McKinney	IV-130		Follow up as necessary until the revegetation is established to ensure that road closures are maintained.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
678	Meeks	IV-134		Design and construct trailhead parking for the Meeks Creek trail into Desolation. Parking should be off of the highway to improve the scenic corridor.
679	Meeks	IV-134		Maintain closure to OHV use.
680	Meeks	IV-134		Maintain closure to over-the-snow vehicles.
681	Meeks	IV-134		Evaluate the historical significance of the older structures at Meeks Bay Resort and the cabins across Highway 89 from the resort, and manage them appropriately.
682	Meeks	IV-134		Evaluate potential for managing a portion of the area for bald eagle nesting.
683	Meeks	IV-134		Create openings throughout the Meeks Creek meadow to improve waterfowl and other riparian habitat needs.
684	Meeks	IV-134		Remove barriers to fish migration along Meeks Creek.
685	Meeks	IV-134		Construct water impoundments in Meeks Creek meadow to enhance waterfowl nesting and foraging.
686	Meeks	IV-134		Install a structure in Meeks Creek below the highway bridge to aid fish migration.
687	Meeks	IV-134		Use this practice to create wildlife openings and to utilize the timber in Meeks Creek meadow.
688	Meeks	IV-134		Obtain the necessary water rights to water impoundments for waterfowl habitat.
689	Meeks	IV-134		Install water quality improvement measures at the resort and on roads.
690	Meeks	IV-134		Maintain the road closure to Lost Lake.
691	Meeks	IV-134		Obtain an unrestricted administrative right-of-way along the south side of Meeks Creek meadow for resource management.
692	Meeks	IV-134		Work with the California State Parks and Recreation Department to achieve improved management through land adjustments.
693	Meiss	IV-140		Establish capacities for use in areas that attract visitation beyond the physical capability of the land or the ability of the land to produce a quality experience.
694	Meiss	IV-140		Closed to all vehicles.

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695	Meiss	IV-140		Closed to all vehicles. Issue no new winter outfitter guide permits.
696	Meiss	IV-140		Provide for management and protection of the historic Meiss Meadow cabin and barn while still allowing its use by the range permittee and outfitter guide.
697	Meiss	IV-140		Protect or improve wildlife habitat in meadow areas.
698	Meiss	IV-140		Assist the California Department of Fish and Game in the reintroduction of the Lahontan cutthroat trout.
699	Meiss	IV-140		Improve fish habitat in meadow areas.
700	Meiss	IV-140		Limit timber management activities to prevention of catastrophic losses in the forest.
701	Mt. Rose	IV-144		Provide parking for dispersed recreation facilities in the vicinity of Tahoe Meadow, not to exceed 100 PAOT.
702	Mt. Rose	IV-144		Open to OHV activities on system roads only.
703	Mt. Rose	IV-144		Open to over-the-snow vehicles except within designated wilderness. Issue no permits for winter motorized outfitter guides.
704	Mt. Rose	IV-144		Assure that dispersed recreation use does not reach a level damaging to sensitive plants in high elevation areas.
705	Roundhill	IV-149		Expansion of the Nevada Beach recreation area will be limited to an additional 500 PAOT. Expansion of Zephyr Cove Resort will be limited to an additional 560 PAOT. Amount of expansion for Round Hill Pines Resort is to be determined in a master development plan. Development at the Zephyr Cove North site near Skyland is proposed at 130 PAOT.
706	Roundhill	IV-149		Require the permittee to reconstruct, maintain, and operate the Zephyr Cove Resort in accordance with the direction in the future use determination, January 1987.
707	Roundhill	IV-149		Allow the Zephyr Cove Resort permittee to prepare and submit a master plan for expansion of the resort within the standards of this and the TRPA Regional Plan.
708	Roundhill	IV-149		Work with the Zephyr Cove Resort permittee to develop a plan for shared management and maintenance of trails used as part of the stable operation.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
709	Roundhill	IV-149		Maintain closure to OHV activity. Maintain closure to overnight camping outside the developed sites.
710	Roundhill	IV-149		Snowmobile activities are allowed except in Rabe Meadow and the vicinity of Round Hill Pines Resort. Issue no outfitter guide permits for motorized winter use.
711	Roundhill	IV-149		Evaluate the historical significance of the Round Hill Pines Resort. Nominate Zephyr Lookout to the National Register of Historic Places, and preserve, maintain, and interpret its historical values.
712	Roundhill	IV-149		As part of the water use evaluation and resolution, consider reducing instream diversions to increase stream flows for fish. Obtain domestic water supply from the lake instead.
713	Roundhill	IV-149		Reintroduce Rorippa subumbellata populations to historic sites such as at Nevada Beach and Zephyr Cove.
714	Roundhill	IV-149		Utilize TRPA Instream Flow Study data to set flow levels for one study stream within this area. File for appropriate water rights.
715	Roundhill	IV-149		Study the feasibility of interconnecting public recreation sites with trails.
716	Tahoe Valley	IV-158		Recreation expansion is proposed to add an additional 545 PAOT in developed facilities. Develop project level plans to determine the precise nature, location and size of facilities at the Saxon Creek site. Work closely with other agencies in providing appropriate information programs and facilities for travelers entering the Tahoe Basin on Highway 50.
717	Tahoe Valley	IV-158		Construct parking and other facilities to accommodate 315 PAOT (46 PAOT of which are an expansion over present use outside of an improved facility).
718	Tahoe Valley	IV-158		Based upon the analysis conducted by the Forest Service, as documented in the Environmental Assessment for the proposed Rainbow Tract land exchange, August 31, 1979, the subject area will remain in public ownership and will continue to be managed by the Forest Service. Permits will authorize continued recreation use through 1999. The new permits will be subject to modifications or mitigating measures that may be required to protect the environment or to conform to then current Forest Service policies.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
719	Tahoe Valley	IV-158		Conduct a future use determination (FUD) for Bridge Recreation Residence Tract before the permits terminate in 1991, and for Upper Truckee Tract before the permits terminate in 1989.
720	Tahoe Valley	IV-158		Recreation residences will not be allowed to enlarge in capacity or land coverage.
721	Tahoe Valley	IV-158		OHVs are permitted on designated roads and trails only. Routes will not be designated where conflicts between existing residential areas and users may be exacerbated. Resource monitoring and law enforcement programs will be expanded. OHV trails will be accessed from designated system roads and trailheads only; random access from residential streets will be discouraged. Maintain closures of Christmas Valley, Harootunian tract, and Al Tahoe to Ski Run areas to summer OHV use.
722	Tahoe Valley	IV-158		Camping permitted in developed campgrounds and designated dispersed sites only.
723	Tahoe Valley	IV-158		The area is open to over-the-snow vehicles except for Grass Lake, the north slopes of Waterhouse Peak, the western side of Christmas Valley, and in the vicinity of Pioneer Trail and Black Bart.
724	Tahoe Valley	IV-158		Continue to allow cross country skiing on Grass Lake Moss Bog when the area is designated as a Research Natural Area as long as the bog is not suffering adversely from this activity.
725	Tahoe Valley	IV-158		Cooperate with El Dorado County and the local community in Meyers on the preparation and implementation of the Highway 50 corridor scenic restoration plan.
726	Tahoe Valley	IV-158		Interpret the historic Hawley Grade Trail. Evaluate the historical significance of the Upper Truckee Ranger Station, and protect and interpret its historic values.
727	Tahoe Valley	IV-158		Improve conditions on the Upper Truckee River for migratory and resident trout.
728	Tahoe Valley	IV-158		Waterfowl nesting islands and tubs at Pope Marsh will be maintained. Tubs will be replaced by nesting islands in cooperation with the California Department of Fish and Game.
729	Tahoe Valley	IV-158		Maintain the Upper Truckee Ranger Station pasture and the Cookhouse Meadow pasture primarily for Forest Service administrative use. Develop and implement plans to rehabilitate both pastures to improve forage and watershed condition.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
730	Tahoe Valley	IV-158		Assist the Regional Research Natural Area committee in preparing a specific plan for management of Grass Lake Moss Bog when the area is included in the Research Natural Area System by the Chief. In the meantime, manage the area as if it were an RNA.
731	Tahoe Valley	IV-158		Evaluate Osgood Bog in this planning period for potential Special Interest Area designation.
732	Urban Lots	IV-164		Closed to OHV activities. Vehicles may travel on system roads designated open.
733	Urban Lots	IV-164		Closed to overnight camping.
734	Urban Lots	IV-164		Closed to over-the-snow vehicle activity.
735	Urban Lots	IV-164		Closed to overnight camping.
736	Urban Lots	IV-164		Limit tree cutting to those posing an identified threat to life or property, or to those that threaten the health of the adjoining forest until a management plan is prepared for the community forest.
737	Urban Lots	IV-164		Where case-by-case analysis identifies a parcel to be transferred to local or State government, other nearby parcels should also be transferred as a package.
738	Ward	IV-169		Development of new recreation facilities is projected at 280 PAOT over present level.
739	Ward	IV-169		Expansion of winter parking at Page Meadows will be 14 PAOT over present level.
740	Ward	IV-169		A vista point and trailhead parking for access along Stanford Rock ridge will be provided in the SE 1/4 of Section 23, and will be served by the road 15N47.
741	Ward	IV-169		Approve new skiing improvements for the Alpine Meadows/Deer Park expansion into this area through a master development plan meeting Forest Service and TRPA standards. Maximum capacity for new facilities on national forest land at the site will be 5,000 PAOT. Base facilities will be limited to warming huts, food service, first aid, and equipment storage. Construction of new lodges, public parking lots, or ticket sales offices will not be allowed within the basin.
742	Ward	IV-169		OHV use is allowed only on designated system roads. All trails are closed to motorized use.

Reference Number	Source (Forest-Wide, Mgmt Area, SNFPA)	Page	S&G number	Standard/Guideline
743	Ward	IV-169		Until ski area expansion occurs, Stanford Ridge will be managed for semi-primitive nonmotorized forms of recreation.
744	Ward	IV-169		Allow over-the-snow vehicles except in Page Meadow.
745	Ward	IV-169		Remove barriers to migratory fish in Ward Creek.
746	Ward	IV-169		Road 15N47 to Stanford Rock will remain closed until an adequate stream crossing is constructed over Ward Creek. Upon completion of the stream crossing and improvement of the road, public access will be allowed to a vista point and trailhead parking near the 1/4 corner for Sections 23 and 24. From this point to Stanford Rock the road will be for administrative use only.
747	Watson	IV-175		Development is projected at 425 PAOT at Cedar Flat and at 750 PAOT at Kings Beach.
748	Watson	IV-175		10 PAOT expansion at Watson Lake undeveloped campground is planned.
749	Watson	IV-175		Expansion of Northstar ski area is limited to 1,000 PAOT.
750	Watson	IV-175		This management area is open to overnight camping; however, some areas may be closed following project level planning. Demand for OHV use will be provided on existing roads and trails. No new OHV trails will be constructed.
751	Watson	IV-175		The area is open to over-the-snow vehicles. Coordinate public and outfitter guide dispersed winter sports opportunities to prevent conflict between motorized and nonmotorized activities.

Appendix K – Previous Decisions That Remain in Place

The following decisions remain in place. Projects and activities in all alternatives must remain consistent with the direction listed here.

1. Eight East-Side Rivers Wild and Scenic River Study Report, Record of Decision and FEIS. Published Feb. 1999. USDA Forest Service, Tahoe NF and LTBMU.

2. Desolation Wilderness Management Guidelines, Final Environmental Impact Statement and Record of Decision. Published Nov. 1998, USDA Forest Service, Eldorado NF and LTBMU.

3. Cave Rock Management Direction Record of Decision and FEIS. Published Aug. 2003, USDA Forest Service, LTBMU.

4. Tallac Historic Site Master Plan, FEIS and Record of Decision. Published July 14, 1994, USDA Forest Service, LTBMU.

5. Existing designated communication sites, 1988 Forest Plan, as amended, and are depicted on DEIS Map 8. Existing communication sites are as follows:

    a. East Peak
    b. Angels Roost
    c. Ward Peak
    d. Spooner Summit
    e. Brockway Summit
    f. Zephyr Heights Lookout
    g. Meeks water tank
    h. Tahoe Mountain
    i. Angora Lookout

6. Land Acquisition Plan for the Lake Tahoe Basin Final EIS, January 1982, as amended.

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Appendix L – References Cited

The material listed throughout this section refers to documents and other sources of information that may be obtained from the government entities listed (see location codes listed in table below), online (when listed), at the public libraries in the Lake Tahoe area (South Lake Tahoe, CA; Zephyr Cove and Carson City, NV) or by writing directly to the publisher.

Table L1. Specific common locations of materials published by government entities

Location Codes:	Information may be obtained at:
LTBMU -	U.S. Forest Service, Lake Tahoe Basin Management Unit office. 35 College Drive, South Lake Tahoe, CA 96150. http://www.fs.usda.gov/ltbmu
Region 5 (R5) -	U.S. Forest Service, Pacific Southwest Regional Office (National Forests in California), 1323 Club Drive, Vallejo, CA 94592. http://www.fs.fed.us/r5/
PSW -	U.S. Forest Service, Pacific Southwest Research Station, 800 Buchanan Street, West Annex Building, Albany, CA 94710-0011. http://www.fs.fed.us/psw/
FSM & FSH -	U.S. Forest Service Manual (FSM) and Forest Service Handbooks (FSH) - Office of the Chief of the Forest Service, 1400 Independence Ave., SW Washington, D.C. 20250-0003. http://www.fs.fed.us/im/directives/
SWRCB -	State of California Water Resources Control Board office, 1001 I Street, Sacramento, CA 95814 http://www.waterboards.ca.gov/
TRPA -	Tahoe Regional Planning Agency office, 128 Market Street, PO Box 5310, Stateline, NV 89449. http://www.trpa.org/

Publishers of professional journal articles (e.g, *Society of American Foresters, Journal of Wildlife Management*) offer article abstracts and topic summaries from third-party online database services (and may require organizational subscriptions or purchase of individual articles). These databases of available journal articles are commonly called "science citation" and "social science citation" indexes. Two popular online sources to access professional journal articles are:

- JSTOR (Journal Storage) database - http://www.jstor.org/
- Thomson-Reuters Web of Science - http://ip-science.thomsonreuters.com/mjl/

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Appendix M – Glossary of Acronyms and Terms

M.1. Common Abbreviations and Undefined Acronyms

ac.	acres
C	Celsius (centigrade)
Cal-IPC	California Invasive Plant Council
CARB	California Air Resources Board
CDFA	California Department of Food and Agriculture
cm	Centimeter
cu	Cubic
dv	Deciview
e.g.	exempli gratia [for example]
Ed(s)	Editor(s)
Et al	et alii [and others]
F	Farenheit
FS	Forest Service
gen.	general
govt.	government
i.e.	id est [that is]
in.	inch(es)
lb.	pound (libra)
kg	kilogram(s)
km	kilometer(s)
LTBWCG	Lake Tahoe Basin Weed Coordinating
LWRQCB	Regional Water Quality Control Board, Lahontan Region
m	meters
mi.	miles
mm	millimeters
NDA	Nevada Department of Agriculture
pub.	published
rev.	revised

R5 (Region 5)	US Forest Service headquarters office managing national forests in California and the Pacific
RSL	Remote Sensing Laboratory
S&PF-FHP	State and Private Forestry, Forest Health Protection
sq.	square
TRPA	Tahoe Regional Planning Agency
unk.	unknown
USDA	United States Department of Agriculture
yd.	yard

M.1. Defined Acronyms

CAR — **Critical aquatic refuge:** Forest Plan land allocation from the Sierra Nevada Forest Plan Amendment to designate areas for management emphasis on aquatic resources.

CASQA — **California Stormwater Quality Association:** Assists the State Water Resources Control Board (SWRCB) and municipalities throughout the state of California in implementing the National Pollutant Discharge Elimination System (NPDES) stormwater mandates of the Federal Clean Water Act.

CWD — **Coarse woody debris**: Material usually 12 inches or larger in diameter within stream channels or floodplains. Provides fish habitat and floodplain roughness.

CWHR — **California Wildlife Habitats Relationships computer program:** Functions as a predictive model of habitat suitability for wildlife species, describing vegetation conditions through metrics such as tree size classes and canopy closure.

EIP — **Environmental Improvement Program:** An interagency partnership among the public land management entities of the Lake Tahoe Basin, to manage projects needed to stem the degradation of Lake Tahoe, funded by Federal, California, Nevada, and local jurisdictions.

EIS **Environmental Impact Statement**: The document required by the NEPA for disclosing to the public the activities and effects of an action by a federal agency.

FMP **Fire Management Plan:** A plan, which identifies and integrates all wildland fire management and related activities within the context of approved land/resource management plans.

FMU **Fire Management Unit:** May be any land management area definable by objectives, management constraints, topographic features, access, values to be protected, political boundaries, fuel types, major fire regime groups, and so on, that set it apart from the management characteristics of an adjacent FMU. The FMUs may have dominant management objectives and pre-selected strategies assigned to accomplish these objectives.

HRCA **Home range core area:** Approximately 1,000 acre area designated as the area surrounding the protected activity center (PAC) to be maintained as foraging and PAC replacement habitat for CA spotted owls.

HUC **Hydrologic unit code**: Designation by the United States Geologic Survey (USGS) that labels watersheds based on their relative size (from 1, being major river systems, to 12 (being very small subwatersheds of only a few acres).

LEED ™ **Leadership in Energy and Environmental Design:** National standard rating system for what constitutes a "green building." Through the Green Building Council's use as a design guideline and third-party certification tool, it aims to improve occupant well-being, environmental performance and economic returns of buildings.

LOP **Limited operating period:** A restriction placed on a management action within a specific defined area, as to when during the year an event can take place; a management strategy to reduce disturbance to wildlife species and habitats.

LTRA **Lake Tahoe Restoration Act:** Public Law 106-506, Nov. 13, 2000 (at time of publication, the renewal bill has been introduced in Congress as "S. 432: Lake Tahoe Restoration Act of 2011"), States that the Lake Tahoe Basin Management Unit shall be administered by the Secretary of Agriculture, acting through the Chief of the Forest Service, in accordance with this Act and the laws applicable to the National Forest System, in cooperation with the Tahoe Regional Planning Agency.

LTRA Provisions include:

- Developing an environment restoration priority list for the Lake Tahoe Basin. Sets forth project areas, including: (1) erosion and sediment control; (2) acquisition of environmentally sensitive land; (3) fire risk reduction; (4) cleaning up methyl tertiary butyl ether contamination; and (5) parking and traffic management
- Authorizing appropriations for priority projects.
- Coordinating fire risk reduction activities with State and local agencies, including local fire departments and volunteer groups.

ML **Maintenance level**: Roads are classified into maintenance levels 1-5 depending on the use of the road. Level 1 roads are project roads generally closed to public access, while level 5 roads are paved two-land roads accessible by passenger cars for public use.

MOU **Memorandum of understanding:** A document describing a bilateral or multilateral agreement between parties, to include management actions carried out by the Forest Service, Tribal governments, U.S. government agencies at all levels, and private business entities.

MVUM **Motor Vehicle Use Map:** A single-purpose, black-and-white paper map that displays those roads, trails, and areas designated for motor vehicle use. Routes not designated for motor vehicle use (such as non-motorized trails, single-purpose roads and trails, unauthorized roads and trails, and temporary roads and trails) will not be shown on a Motor Vehicle Use Map. Motor vehicle use is allowed only on designated roads and trails and in designated areas. The Motor Vehicle Use Map does not replace visitor maps, travel maps, or other maps intended to convey visitor information.

NEPA **National Environmental Policy Act:** Law that requires federal agencies to disclose major actions and their environmental consequences to the public.

NFS **National Forest System:** Federally owned reserves of 191 million acres (77.4 million hectares), administered by the Forest Service of the U.S. Dept. of Agriculture. The system is made up of 155 national forests and 19 national grasslands in 41 states and Puerto Rico (USDA et al 1984).

NVUM **National Visitor Use Monitoring:** U.S. Forest Service national monitoring and reporting system that provides estimates of the volume of recreation visitation to National Forests and Grasslands, and includes descriptive information about that visitation, including activity participation, demographics, visit duration, measures of satisfaction, and trip spending connected to the visit.

OHV **Off-Highway Vehicle (OHV):** Any motor vehicle designed for or capable of crosscountry travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 CFR 212.1).

OSVUM **Over Snow Vehicle Use Map (Snowmobile Guide):** A single-purpose, paper map that displays those areas which contain routes and areas designated for over snow vehicle (e.g. snowmobile) use. The map identifies restrictions or prohibitions on over-snow vehicle use within defined geographic areas Over-snow vehicle use other than in accordance with the restrictions or prohibitions of the Snowmobile Guide is prohibited (36 CFR 261.14).

PAC **Protected activity center**: Approximately 300 acre area designated as centered on a nest tree to be managed as nesting habitat for CA spotted owls.

PSW

1) **Pacific Southwest Research Station:** US Forest Service Research & Development office responsible for natural resources research within the states of California and Hawaii and the US-affiliated Pacific islands. PSW Research Station headquarters office is located in Albany, CA. http://www.fs.fed.us/psw/

2) **Pacific Southwest Regional Office:** US Forest Service regional office with the responsibility for management of national forests and grassland within California, Hawaii, and the US-affiliated Pacific islands (including the LTBMU), commonly referred to as "Regions 5 (or R5"). R5 Headquarters office is located on Mare Island in Vallejo, CA. http://www.fs.usda.gov/main/r5/about-region/overview. *see also Region*

RAWS **Remote Automated Weather Stations:** A network of stand-alone dispersed stations on Forest Service and BLM managed lands that monitor the weather and provide weather data assists land management agencies with a variety of projects such as monitoring air quality, rating fire danger, and providing information for research applications. RAWS stations are powered by battery, solar energy, or generator, and broadcast atmospheric and system data at regular intervals.

RCA **Riparian conservation area**: A buffer for streams, special aquatic features and other hydrological depressions as defined by the Sierra Nevada Forest Plan Amendment (SNFPA 2004)

ROD **Record of decision**: A concise public record of decision is required by the Forest Service at the time the responsible official makes a formal environmental impact statement (EIS) decision, (§1506.10). The record, which may be integrated into any other record prepared by the Forest Service, will include:

> (a) The decision made; (b) Identification of all alternatives considered by the Forest Service in reaching the decision, specifying the alternatives which were considered to be environmentally preferable (which may include factors for economic and technical considerations that were balanced in the decision making, stating how those considerations entered into the decision); and (c) Stating whether all practicable means to avoid or minimize environmental harm from the alternative selected have been adopted, and if not, why they were not. A monitoring and enforcement program shall be adopted and summarized where applicable for any mitigation.

RNWMS **Regional Noxious Weed Management Strategy:** Management strategy for the U.S. Forest Service in California, developed to address this threat, and to work cooperatively with partners check the spread of weeds statewide. Published in August 2000. Reference: http://www.fs.fed.us/r5/noxiousweeds/

SEZ **Stream Environment Zone**: Biological communities, as defined by TRPA and the Lahontan Water Board, that owe their characteristics to the presence of surface water or a seasonally high groundwater table. The criterion for defining SEZs includes indicators of vegetation, hydrology, and soil type (State of CA WQCP 2005).

SIA **Special Interest Areas:** Geographically defined federally protected management area consisting of archaeological, botanical, geological, historical, scenic, paleontological and zoological or other special characteristics or unique values.; recreation or cultural significance; or historic importance.

SNFPA **Sierra Nevada Forest Plan Amendment**: Amendment to the Forest Plans of 11 national forests in the Sierra Nevada mountain range, including the LTBMU. Published in January, 2004 by the Pacific Southwest Region (National Forests in California), Vallejo, CA.
Reference: http://www.fs.fed.us/r5/snfpa/final-seis/index.html

SNYLF **Sierra Nevada (mountain) yellow-legged frog *(Rana sierra):*** a candidate species for listing under the Endangered Species Act (ESA), and as Sensitive on the Region 5 Regional Forester's Sensitive Species List. See the Aquatic Wildlife section in Chapter 3.

SPLAT **Strategically placed area treatment**: Fuel reduction treatments placed in a pattern to interrupt fire progression such that the fire reduces in intensity and becomes a surface fire in these areas. The overall pattern impedes fire spread.

TOC **Threshold of Concern**: Watersheds have a natural sensitivity, or threshold, to absorb disturbance, human or natural, specific to geology, soil, and slope.

WUI **Wildland urban interface (intermix)**: An area where human habitation is mixed with areas of flammable wildland vegetation. It extends out from the edge of developed private land into Federal, private, and State jurisdictions.

M.2. Glossary of Terms

Access

A function of the transportation system on Forest Service lands managed by the LTBMU to provide for safe travel that reflects appropriate access, considers needs of adjacent landowners, and meets public demand. This occurs through the management of Recreation and Engineering resources, to include: dispersed/developed parking and trailhead facilities, snow removal, and proper signage.

Aggradation

Aggradation involves the raising of the streambed elevation, an increase in width/depth ratio, and a corresponding decrease in channel capacity. Over-bank flows occur more frequently with less-than-high-water events. Excess sediment deposition in the channel and on floodplains is characteristic of the aggrading river. Often, the cause of aggradation is an increase in upstream sediment load and/or size of sediment exceeding the transport capacity of the channel. (US EPA: http://water.epa.gov/scitech/datait/tools/warsss/sedsource_index.cfm).

Alternatives

Alternatives to the proposed action have been Identified and explored.

Comments received have been considered in preparation of the draft environmental impact statement. The listed range of alternatives are considered after public comments have been received and analyzed. One of those considered will be a ``No Action'' alternative.
(36 CFR 219.12(f))

Aquatic Ecosystem

An ecosystem in a body of water. Communities of organisms that are dependent on each other and on their environment live in aquatic ecosystems. Aquatic ecosystems are categorized in freshwater ecosystem types (e.g. Lake Tahoe) as well as marine ecosystem types.

There are three basic types of freshwater ecosystems:

- Lentic: slow-moving water, including pools, ponds, and lakes.
- Lotic: rapidly-moving water, for example streams and rivers.
- Wetlands: areas where the soil is saturated or inundated for at least part of the time.

Basal area

The cross-sectional area of a single stem, including the bark, measured at breat height (4.5 feet above the ground). Also, the cross-sectional area of all stems of a species or all stems in a stand measured at breast height and expressed per unit of land area. (Helms 1998)

Backing fire

A fire spreading, or ignited to spread, into (against) the wind, in the absence of wind, or downslope.

Bog

A wet, poorly drained, highly acid, nutrient poor, peat-accumulating wetland with surface vegetation of acidophilic mosses (particularly Sphagnum) and possibly some shrubs or trees.

Climate

Climates – and climate change – are mentioned explicitly in the management principles chapter of the [agency's FY 2007–2012] strategic plan. Strategic goals would directly or indirectly contribute toward enhancing the resilience of forest and grassland resources to the impacts of climate change. (USDA Forest Service Strategic Plan, FY 2007–2012 Climate Change Companion Document, Oct. 14, 2008).

Collaboration

A structured manner in which a collection of people with diverse interests share knowledge, ideas, and resources while working together in an inclusive and cooperative manner toward a common purpose. Collaboration, in the context of this part, falls within the full spectrum of public engagement described in the Council on Environmental Quality's publication: Collaboration in NEPA—A Handbook for NEPA Practitioners. The Forest Service retains decisionmaking authority and responsibility for all decisions throughout the process.

Composition

The proportion of each tree species in a [forest] stand expressed as a percentage of the total number, basal area, or volume of all tree species in the stand. *(Helms 1998)*

Connectivity

Pertaining to the extent to which conditions exist or should be provided between separate national forest or grassland areas to ensure habitat for breeding, feeding, or movement of wildlife and fish within their home range or migration areas.

Danger Tree

See *Hazard Tree*

Deciview

An index of atmospheric haziness based on the logarithm of the light extinction coefficient. A given change in deciviews is assumed to be perceived approximately the same by a human observer, independent of the absolute level of the haziness (Air Resource Specialists, 1993).

Desired basal area

The spacing or stocking levels used to guide thinning in order to leave a desired density in developing stands.

Dead fuels (Fire Behavior and Fuels)

Estimating the moisture content of dead woody fuels is critical when predicting fire behavior. Dead fuels are divided into four size classes: 1 hour (flashy fuels), 10 hour (1/2-inch diameter), 100 hour 3-inch diameter) and 1,000 hour (8-inch diameter). In general, the larger fuels take longer to absorb or lose moisture.

In general, drier fuels increase the rate of fire spread, fireline intensity, and fuel consumption. Prescribed burns are used to meet a number of resource management objectives. Fire managers rely on fire behavior prediction to determine the optimum conditions for prescribed burning.

Disturbance

Any relatively discrete event in time that disrupts ecosystem, watershed, community, or species population structure and/or function and changes resources, substrate availability, or the physical environment.

Ecosystem Diversity

The variety and relative extent of ecosystem types, including their composition, structure, and processes.

Ecosystem Services

Benefits people obtain from ecosystems, including:

1) ***Provisioning services,*** such as clean air and fresh water, as well as energy, fuel, forage, fiber, and minerals;
2) ***Regulating services,*** such as long term storage of carbon; climate regulation; water filtration, purification, and storage; soil stabilization; flood control; and disease regulation;
3) ***Supporting services,*** such as pollination, seed dispersal, soil formation, and nutrient cycling; and
4) ***Cultural services,*** such as educational, aesthetic, spiritual, and cultural heritage values, as well as recreational experiences and tourism opportunities.

Endlining

Moving logs using cables where the log is in full or partial contact with the ground

Ephemeral stream

A stream or portion of a stream that flows only in direct response to precipitation, receiving little or no water from springs and no long-continued supply from snow or other sources, and whose channel is at all times above the water table.

Fen	A peat-accumulating wetland that receives some drainage from surrounding mineral soils and usually supports marshlike vegetation including sedges, rushes, shrubs, and trees. Fens are less acidic than bogs, and derive most of their water from groundwater rich in calcium and magnesium.
Fire Management Plan (FMP)	A plan, which identifies and integrates all wildland fire management and related activities within the context of approved land/resource management plans. It defines a program to manage wildland fires (wildfire, prescribed fire, and wildland fire use). The plan is supplemented by operational plans, including but not limited to preparedness plans, preplanned dispatch plans, and prevention plans. Fire Management Plans assure that wildland fire management goals and components are coordinated.
Fire Management Unit (FMU)	May be any land management area definable by objectives, management constraints, topographic features, access, values to be protected, political boundaries, fuel types, major fire regime groups, and so on, that set it apart from the management characteristics of an adjacent FMU. The FMUs may have dominant management objectives and pre-selected strategies assigned to accomplish these objectives. (USDA & USDI 2004)
Flag and avoid	The hanging of flagging in order to identify for the purpose of avoidance of a special feature in an area.
Forest	an ecosystem characteriszed by a more or less dense and extensive tree cover, often consisting of stands varying in characteristics such as species, composition, structure, age class, and associated processes, and commonly including meadows, streams, fish, and wildlife. *(Helms 1998)*
Forest Development Road	See Road Categories
Forest Health	The perceived condition of a forest derived from concerns a bout such factors as its age, structure, composition, function, vigor, presensce of unusual levels of insects or disease, and resilience to disturbance. *(Helms 1998).* See also *Resilience*.
Forest Land	Land that is at least 10 percent stocked by forest trees of any size, including land that formerly had such tree cover and that will be naturally or artificially regenerated (Helms 1998).

Forest Transportation Atlas

A display of the system of roads, trails, and airfields of an administrative unit, including: a. Road and trail management objectives; b. Identification of needed and unneeded NFS roads;

c. Travel management decisions; and d. Road management priorities (FSM 7700 – Travel Management).

Forest-wide Scale

The greatest, most expansive spatial management scale, incorporating management emphasis areas, and may incorporate multiple uses and resources within the NFS lands managed by the Lake Tahoe Basin Management Unit.

Grapple piling

Use of a track-laying low-ground pressure excavator with a with a thumb and claw, typically mounted on articulating arm. This machine is capable picking up created slash or other material to pile on slopes up to 30%.

Hand removal or thinning

Consists of removing trees with chain saws or lopping shears and piling or scattering the debris in open areas for later burning.

Hazard Tree

A tree that has been identified as a potential risk for failure that would cause injury to a person or damage to property.

Heterobasidion (annosus) root disease

Annosus root disease, caused by Heterobasidion annosum, is found in many temperate coniferous forests around the world. It is an endemic pathogen that is common and widely distributed in North America. (FSH 3409.11, Ch. 60, R5 Supplement No.: 3409.11-2010-1).

Common symptoms of annosus root disease are the same as for many other root diseases and include yellowing or thinning of crowns, reduction in tree height and lateral branches, and stress cone crops (Rippy et al, 2005, p. 11).

Heterogeneity

Biometrics term related to Forest Vegetation structure and composition: the state of being not identical in some or all parameters in one or more samples or populations (Helms 1998).

Hot piling

Placing and consolidating unburned fuel into an already burning pile for the purpose of isolating or localizing a prescribed fire.

Hydrophobicity

Resistance to water absorption by severely burned soils.

Intermittent stream

A stream or portion of a stream, that does not flow year-round but only when it (a) receives base flow solely during wet periods, or (b) receives groundwater discharge or protracted contributions from melting snow or other erratic surface and shallow subsurface sources

Integrated Weed Management

An interdisciplinary pest management approach for selecting methods for preventing, containing, and controlling noxious weeds in coordination with other resource management activities to achieve optimum management goals and objectives. Methods include: education, preventive measures, herbicide, cultural, physical or mechanical methods, biological control agents, and general land management practices, such as manipulation of livestock or wildlife grazing strategies, which accomplish vegetation management objectives. (FSM 2900 – Noxious Weed Management)

Invasive Species

An alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. (Executive Order 13112)

Inventoried Roadless Area

The formal process for Inventoried Roadless Area designation varies by state; In general, geographic areas qualify for placement on the inventory to be designated if they meet one or more of the following criteria:

1. They contain 5,000 acres or more.
2. They contain less than 5,000 acres, but
    a. Due to physical terrain, natural conditions can be preserved.
    b. They are self-contained ecosystems, such as an island, that can be effectively managed as a separate unit of the National Wilderness Preservation System.
    c. They are contiguous to existing wilderness, primitive areas, Administration-endorsed wilderness, or potential wilderness in other federal ownership, regardless of their size.
3. They do not contain improved roads maintained for travel by standard passenger-type vehicles, except as permitted in areas east of the 100th meridian.

Lacustrine

Lake ecosystem; includes the lake and lake shore.

Landscape Character

A combination of physical, biological, and cultural images that gives an area its visual and cultural identity and helps to define a ‘‘sense of place.’’ Landscape character provides a frame of reference from which to determine scenic attractiveness and to measure scenic integrity.

Lentic

Stream ecosystem; includes the stream and stream bank.

Lotic

Stream ecosystem; rapidly-moving water, for example streams and rivers.

Maintenance Levels (Road management)

Level 5 – Roads that provide a high degree of user comfort and convenience. These roads are normally double-lane, paved facilities.
Level 4 – Roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane.
Level 3 – Roads open and maintained for travel by prudent drivers in a standard passenger cars. User comfort and convenience are low priorities.
Level 2 – Roads open for use by high-clearance vehicles . Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses.
Level 1 – Intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resources to an acceptable level and to perpetuate the road to facilitate future management activities.

(Forest Service Handbook (FSH) 7709.58,10,12.3)

Managed Wildfire

The management of naturally ignited fires to achieve resource desired conditions and objectives where fire is a major component of the ecosystem.

Management Area

A land area identified within the planning unit that has the same set of applicable plan components. A management area does not have to be spatially contiguous.

Management Direction

The Forest Plan provides management direction that governs the design and conduct of human activities throughout the forest boundary. Management direction is provided at three different scales depending on the location of a proposed activity and its potential impact on resources (addressed within the appropriate plan components).

1) **Forest-wide scale.** (Vision/Desired Future Condition/Standards & Guides)
2) **Resource Overlays** (Desired Future Condition/Standards & Guides)
3) **Management Area Scale** (Desired Future Condition/Standards & Guides, Suitability, unique local conditions).

Mesic

Of sites or habitats characterized by intermediate moisture conditions, i.e., neither decidedly wet nor dry.

Monitoring

A systematic process of collecting information over time and space to evaluate effects of actions or changes in conditions or relationships.

National Forest System

A nationally significant system of Federally owned units of forest, range, and related land consisting of national forests, purchase units, national grasslands, land utilization project areas, experimental forest areas, experimental range areas, designated experimental areas, other land areas, water areas, and interests in lands that are administered by the USDA Forest Service or designated for administration through the Forest Service. (USDA Forest Service FS-383 2012)

National Wild and Scenic River

Area designated by Congress as part of the National Wild and Scenic River System. (USDA Forest Service FS-383 2012)

Native plant species

A plant species which occurs naturally in a particular region, state, ecosystem and habitat without direct or indirect human actions. (FSM, 2070 Vegetation Ecology)

Noxious Weed

A plant species designated as a noxious weed by the Secretary of Agriculture pursuant to the Plant Protection Act of 2000 or by the responsible State official. Noxious weeds generally possess one or more of the following characteristics: aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and being non-native or new to or not common to the United States or parts thereof. (FSM, 2070 Vegetation Ecology)

Objection

The written document filed with a reviewing officer by an individual or organization seeking pre-decisional administrative review of a plan, plan amendment, or plan revision.

Over-snow Vehicle

A motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow. *(36 CFR Part 212 Sec. 1)*

Potential Wilderness Area

All areas within the National Forest System lands that satisfy the definition of wilderness found in section 2(c) of the 1964 Wilderness Act. Inventory criteria are listed in Forest Service Handbook 1909.12—Land Management Planning Handbook, Chapter 70—Wilderness Evaluation.

Perennial stream

A creek or river that flows all year (see intermittent and ephemeral).

Plant Material

Seeds, spores, parts of plants or whole plants. (FSM, 2070 Vegetation Ecology)

Prescription

Direction given for land and resource management in a given area.

Proposed Action

A proposal made by the Forest Service that is a project or activity implementing a land and resource management plan on National

Forest System lands and is subject to the notice and comment provisions of 36 CFR 215.5 and opportunity 36 CFR 215.6, respectively. (36 CFR Part 215.2)

Reference Conditions

The range of historic (or natural) variability in ecological structures and processes, reflecting recent evolutionary history and the dynamic interplay of biotic and abiotic conditions and disturbance patterns that form the basis for comparison with contemporary ecosystem processes and structures and are a frame of reference for designing ecological restoration treatments and conservation plans (adapted from Fulé et al. 1997).

Region

An administrative area containing units of the National Forest System. There are nine NFS Regions: The Lake Tahoe Basin Management Unit is administered by the Pacific Southwest Regional Office (R5), also referred to as the "National Forests in California". (USDA Forest Service FS-383 2012)

Rehabilitation

Reparation of ecosystem processes, productivity and services based on functioning pre-existing or existing ecosystems, but allowing for adaptation of sites to specific current or future uses. (FSM, 2070 Vegetation Ecology)

Resilience The capacity of a community or ecosystem to maintain or regain normal function and development following disturbance. (Helms 1998). See also Forest Health.

Restoration Assisting the recovery of an ecosystem that has been degraded, damaged or destroyed including the re-establishment of the pre-existing biotic integrity in terms of species composition and community structure. (FSM, 2070 Vegetation Ecology)

Revegetation Re-establishment of plants on a site. (FSM, 2070 Vegetation Ecology)

Riparian areas Referring to the interface between freshwater habitats and the terrestrial landscape. (Environmental Management Glossary).

Ripping A process to mitigate soil compaction. Using equipment with a toothed blade or set of heavy tines mounted at the front or rear of the equipment to break up hard ground or to tear out stumps and boulders; can be synonymous with subsoiling and tilling.

Risk A combination of the likelihood that a negative outcome will occur and the severity of the subsequent negative consequences.

Riverine Pertaining to rivers and river bank environments.

Road activity

Road Construction – Supervising, inspecting, building, and all expenses incidental to the construction or reconstruction of a forest development transportation facility, including: location, surveying, and mapping (including the establishment of temporary and permanent geodetic markers in accordance with the specifications of the Coast and Geodetic Survey in the Department of Commerce), costs of rights-of way, and elimination of hazards. (36 CFR 212.1(h)).

Road Maintenance – The upkeep of the entire forest development transportation facility including surface and shoulders, parking and side area structures, and such traffic-control devices as are necessary for its safe and efficient utilization. (36 CFR 212.1(I)).
Road Reconstruction - Activities that result in betterment, restoration, or realignment of a road as defined below.

1. Betterment – Investment in construction activity that raises the traffic-service level of a road or improves its safety or operating efficiency.

2. Restoration – Investment in construction activity required to rebuild a road to its approved traffic-service level.

3. Realignment – Investment in construction activity that results in the new location of an existing road or portion thereof.

Road categories

Forest Development Road – A road wholly or partially within or adjacent to NFS boundary that the Forest Service has authorized and maintains jurisdiction over and that is necessary for the protection, administration, and use of lands under the agency's jurisdiction.

Temporary road – A road associated with timber sale contracts, fire activities, or other short-term access needs that are unnecessary for future resource management and not intended to be part of the forest development transportation plan.

Unclassified road – A road that is not constructed, maintained, or intended for long-term highway use. Such roads include all temporary access construction and other remnants of short-term use roads associated with fire suppression, timber harvest, and oil, gas, or mineral activities as well as travel ways resulting from off-road vehicle use.

Roadless Area

See *Inventoried Roadless Area*

Special Area

Areas of National Forest System pulic lands designated by law, or administratively, and managed to emphasize recreational and other specific related values. Other uses are permitted in the areas to the extent that these uses are in harmony with the purpose for which the area was designated. The law or order designating each area provides area specific management objectives and guidelines. An area may be nominated locally (at the unit level), and then designated for management under one of the following Special Area categories:

National Recreation Areas – Areas that have outstanding combinations of outdoor recreation opportunities, aesthetic attractions, and proximity to potential users. They may also have cultural, historical, archaeological, pastoral, wilderness, scientific, wildlife, and other values contributing to public enjoyment.

National Monuments – Areas of unique ecological, geologic, historical, prehistorical, cultural, and scientific interest.

National Scenic Areas – Areas that contain outstanding scenic characteristics, recreational values, and geologic, ecologic, and cultural resources.

National Scenic Research Areas – Areas that contain outstanding scenic values for research, scientific, and recreational purposes.

National Management Emphasis Areas – All other areas that contain unique or outstanding physical features and that contain specific physical, cultural, or political characteristics receiving specific emphasis in the legislation. (FSM 1920 and FSM 1950).

Special Interest Area (SIA)

Geographically defined federally protected management area, consisting of archaeological, botanical, geological, historical, scenic, paleontological and zoological or other special characteristics or unique values. SIAs are designated to protect and manage for public use and enjoyment and may include the protection and management of threatened, endangered or sensitive species and other elements of biological diversity; recreation or cultural significance; or historic importance.

Special Place

In the context of Social and Economic Sustainability, phrases such as "sense of place" and "place attachment" are increasingly used to

characterize the complex connections people have with the environments they encounter (Cantrill 1998; Williams and Stewart 1998).

Special Use Permit

A locally administered special use authorization to occupy National Forest System lands for Recreation Use (such as Outfitter and Guide, campground or resort operations or commercial filming) and Recreation Resident Use. The laws, regulations, and policies governing the use and maintenance of recreation residences are those necessary to comply with federal, state, and county ordinances, building, and sanitation codes to safeguard the national forests' resources. Restrictions and special rules are designed to fit local conditions. The Forest Service generally is required to obtain fees that reflect fair market value for the rights and privileges authorized by the permits (Forest Service Manual [FSM] 2705, Forest Service Handbook [FSH] 2709.11).

Stand

A contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit. (Helms 1998)

Stand Structure

The horizontal and vertical distribution of componenets of a forest stand including the height, diameter, crown layers, and stems of trees, shrubs, herbaceous understory, snags, and down woody debris. This is based on development stages rather than absolute age. (Helms 1998).

Susceptibility

The probability that a tree or stand will be attacked by, or incur an outbreak of, an insect or pathogen. (Helms 1998)

Sustainability

Capability of meeting the needs of the present generation without compromising the ability of future generations to meet their needs.

Sustainable Recreation

The set of recreational opportunities, uses and access that, individually and combined, are ecologically, economically, and socially sustainable, allowing the responsible official to offer recreation opportunities now and into the future. Recreational opportunities can include non-motorized, motorized, developed, and dispersed recreation on land, water, and air.

Terrestrial Ecosystems

A community of organisms and their environment that occurs on the land. Four primary terrestrial ecosystems exist: tundra, taiga, temperate deciduous forest, and grassland.

Trail Management Class

The prescribed scale of development for a trail, representing its intended design and management standards. Trail prescriptions describe the desired management of each trail, based on Forest Plan direction. These national 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) ***Trail Class 1 –*** Minimal/Undeveloped Trail
2) ***Trail Class 2 –*** Simple/Minor Development Trail
3) ***Trail Class 3 –*** Developed/Improved Trail
4) ***Trail Class 4 –*** Highly Developed Trail
5) ***Trail Class 5 –*** Fully Developed Trail

(Ref. FSH 2309.18 – Trail Management Handbook – Trial Class Matrix, http://fsweb.wo.fs.fed.us/rhwr/ibsc/docs/trails/trail-class-matrix-2005-01-31.doc).

Trail Type

A category that reflects the predominant trail surface and general mode of travel accommodated by a trail.

a. ***Standard Terra Trail*** – A trail that has a surface consisting predominantly of theground and that is designed and managed to accommodate use on that surface.

b. ***Snow Trail –*** A trail that has a surface consisting predominantly of snow or ice and that is designed and managed to accommodate use on that surface.

c. ***Water Trail –*** A trail that has a surface consisting predominantly of water (but may include land-based portages) and that is designed and managed to accommodate use on that surface.

(FSH 2309.18 – Trails Management Handbook)

Trails (Standards)

National Quality Standards for Trails. National criteria that establish the level of quality in terms of health and cleanliness, resource setting, safety and security, responsiveness, and condition of facilities for National Forest System trails managed at a full-service level. (FSH 2309.18 – Trails Management Handbook).

Travel Management	A decision-making process that includes significant public involvement and will result in the publication of a Motor Vehicle Use Map (MVUM) that identifies the roads, trails and areas open to public motor vehicle use on every national forest. http://www.fs.fed.us/r5/routedesignation/.
Treatment	A specified method for the purpose of reaching or bringing land and/or resource conditions towards a desired condition or goal.
Ultraoligotrophic	The low biological productivity character of Lake Tahoe: High water transparency due to a low amount of suspended particles and free-floating microscopic plants (phytoplankton) and animals (zooplankton).
Underburn	Fire in the forest understory; a prescribed or wildfire that consumes surface fuels but not trees
Undesirable Plants	Plant species that are classified as undesirable, noxious, harmful, exotic, injurious, or poisonous pursuant to State or Federal laws. Species listed as threatened or endangered by the Secretary of the Interior according to the Endangered Species Act of 1973 are not classified as undesirable plants. (FSM 2900 Noxious Weed Management)
Universal access	Civil rights practice in which programs and facilities are free of barriers to participation or access for persons with disabilities.
Urban Lot Management	The Forest Service initiated the Urban Lot Management Program in 1991 to address management issues on urban intermix parcels acquired through the Santini-Burton Purchase Program. The Forest Service manages these lands with an emphasis on protecting water quality conditions and community open space. Follow the link listed above, for more information.
Vernal pool	A contained basin depression lacking a permanent above ground outlet. An ephemeral (temporary) pool that fills with snowmelt and spring run-off.
Viable populations	A population of a species that continues to persist over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments.
Wild and Scenic River	See *National Wild and Scenic River*

Wilderness

Any area of land designated by Congress as part of the National Wilderness Preservation System that was established in the Wilderness Act of 1964. (16 U.S.C. 1131– 1136).

Wilderness (Qualities of Wilderness)

Untrammeled – Wilderness is unhindered and free from modern human control or manipulation.

Natural – Wilderness ecological systems are substantially free from the effects of modern civilization.

Undeveloped – Wilderness is substantially without permanent improvements or modern human occupation.

Outstanding opportunities for solitude or a primitive and unconfined type of recreation – Wilderness provides opportunities for people to experience solitude or primitive and unconfined recreation, including the values of inspiration and physical and mental challenge
(1964 Wilderness Act, Section 2(c)).

Wildland Urban Interface (WUI)

An area where human habitation is mixed with areas of flammable wildland vegetation. It extends out from the edge of developed private land into Federal, private, and State jurisdictions. The WUI is comprised of two zones, the Defense Zone and the Threat Zone:

> ***WUI Defense Zone*** – the buffer in closest proximity to communities, areas with higher densities of residences, commercial buildings, and/or administrative sites with facilities. Defense zones generally extend roughly ¼ mile out from these areas; however, actual defense zone boundaries are determined at the project level following national, regional and forest policy.
>
> ***WUI Threat Zone*** – typically buffers the defense zone; however, a threat zone may be delineated in the absence of a defense zone under certain conditions, including situations where the structure density and location do not provide a reasonable opportunity for direct suppression on public land, but suppression on the private land would be enhanced by fire behavior modification on the adjacent public land.

Threat zone boundaries are determined at the project level following national, regional and forest policy. Threat zones generally extend approximately 1¼ miles out from the defense zone boundary; however, actual extents of threat zones are based on fire history, local fuel conditions, weather, topography, existing and proposed fuel treatments, and natural barriers to fire.

Woody biomass The wood product obtained (usually) from in-woods chipping of all or some portion of trees including limbs, tops, and unmerchantable stems, usually for energy production