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Land Management Plan

Lake Tahoe Basin Management Unit

Forest Service

Pacific Southwest Region

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This document is the final revision of the Land Management Plan.

It incorporates the instructions from the pre-decisional objection period.

Cover photo:
View over Homewood on Lake Tahoe's west shore, looking toward South Lake Tahoe.

Land Management Plan

Lake Tahoe Basin Management Unit

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Land Management Plan

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Introduction to the Land Management Plan

Purpose

The purpose of this Land Management Plan—also known as the Forest Plan—is to provide strategic guidance to the Lake Tahoe Basin Management Unit (LTBMU) for forest management over approximately the next 15 years. This plan guides the restoration or maintenance of the health of the land, to promote a sustainable flow of uses, benefits, products, services, and visitor opportunities.

The plan provides a framework for informed decision making, while guiding resource management programs, practices, uses, and projects. It does not include specific project and activity decisions. Those decisions are made separately, after more detailed analysis and public involvement.

The Forest Plan is adaptive in that it can be amended when appropriate, to update the management direction based on new knowledge and information. The Forest Plan is strategic in nature and does not attempt to prescribe detailed management direction to cover every possible situation. While all components necessary for resource protection and restoration are included, the plan also provides flexibility needed for the responsible official to respond to uncertain or unknown future events and conditions such as fires, floods, climate change, changing economies, and social changes that may be important to consider at the time decisions are made for projects or activities.

The Lake Tahoe Basin Management Unit (LTBMU)

The Lake Tahoe Basin is situated on the eastern side of the Sierra Crest and extends across the state line between California and Nevada (Figure 1). Lake Tahoe is 12 miles wide and 22 miles long, with a maximum depth of 1,645 feet. The lake is fed by 63 streams, but only one stream, the Truckee River, flows out. Elevation ranges from approximately 6,225 feet at lake level to 10,881 feet at Freel Peak. The basin topography is dominated by steep mountainsides with smaller areas of relatively flat land near the lake.

The LTBMU was established in 1973, to facilitate consistent management of National Forest System (NFS) lands within the Lake Tahoe Basin watershed. These lands were previously managed by three separate national forests: the Tahoe, the Eldorado, and the Toiyabe.

While the LTBMU is small in comparison to most National Forests, as the Tahoe Basin's largest land manager, its issues, resources and values are (in comparison) very large. The Forest Service manages 78% of all lands in the Lake Tahoe Basin; National Forest ownership in the Lake Tahoe Basin has grown from 35,000 acres in the 1950s to 154,850 acres. NFS lands include 3,366 urban forest parcels on sensitive lands acquired through the Santini-Burton Act.

The Lake Tahoe Basin is a mix of forested landscapes and urban communities surrounding the deep clear waters of Lake Tahoe. The work of the Forest Service is accomplished in conjunction with many partners. Other federal, state, and local agencies, and members of the public, work together with the LTBMU to conserve and restore natural and cultural resources, and enhance the recreational values of Lake Tahoe.

Lake Tahoe is a destination of regional, national and international significance, with over 5.7 million annual visits. Visitors are primarily from California and Nevada (76%), with the remaining 24% from other parts of the United States and abroad. Recreation and sightseeing opportunities are available in a wide range of alpine settings, from highly urbanized to remote Wilderness environments. But while it is

possible to find solitude, the LTBMU as a whole is far from isolated – approximately 5 million people live within a 4-hour drive, 25 million live within a 1-day drive, and public air and ground transportation is also available.

The recreation-based economy of the Tahoe Basin relies on the setting of snow-covered mountains, forests, streams, lakes, meadows, wetlands, and beaches managed by the LTBMU. Approximately 56,000 permanent residents choose to live at Tahoe because of the breathtaking scenery and wealth of outdoor recreation opportunities. The LTBMU contributes to the tourist-based economy through provision of recreation opportunities including downhill skiing, cross-country/backcountry skiing, snowshoeing, hiking, beach access, camping, and sightseeing. Ongoing conservation education programs inform residents and visitors of all ages about the natural environment in which they live, work, and play.

Partnerships continue to be important. Numerous groups provide their assistance in such activities as trail maintenance and construction, historic building maintenance, and interpretive programs. Many of the resorts, campgrounds, and the Tallac Historic Site are operated by private enterprises under special use permits – these partnerships support the local economy by providing jobs.

Natural values and benefits provided by the lands and waters under LTBMU management include clean water that flows to Lake Tahoe, clean fresh air, and habitat for a multitude of plant and animal species. Although extensive timber harvest, stream channel alteration, and other land uses in the late 19th and early 20th centuries disturbed the natural balance of the Tahoe Basin, much restoration work has already been accomplished. Nonetheless, most of our natural resource management activities focus on restoring and enhancing forest health, watershed processes and water quality, and a diversity of wildlife habitats, as well as providing community wildfire protection. Restoring the balance of natural systems will help them adjust more easily to a changing climate. Management activities are undertaken to benefit both humans and the many other species that share these mountains. Many common forest activities such as mining, grazing, and timber harvesting are either not a part of LTBMU management or play a very small role.

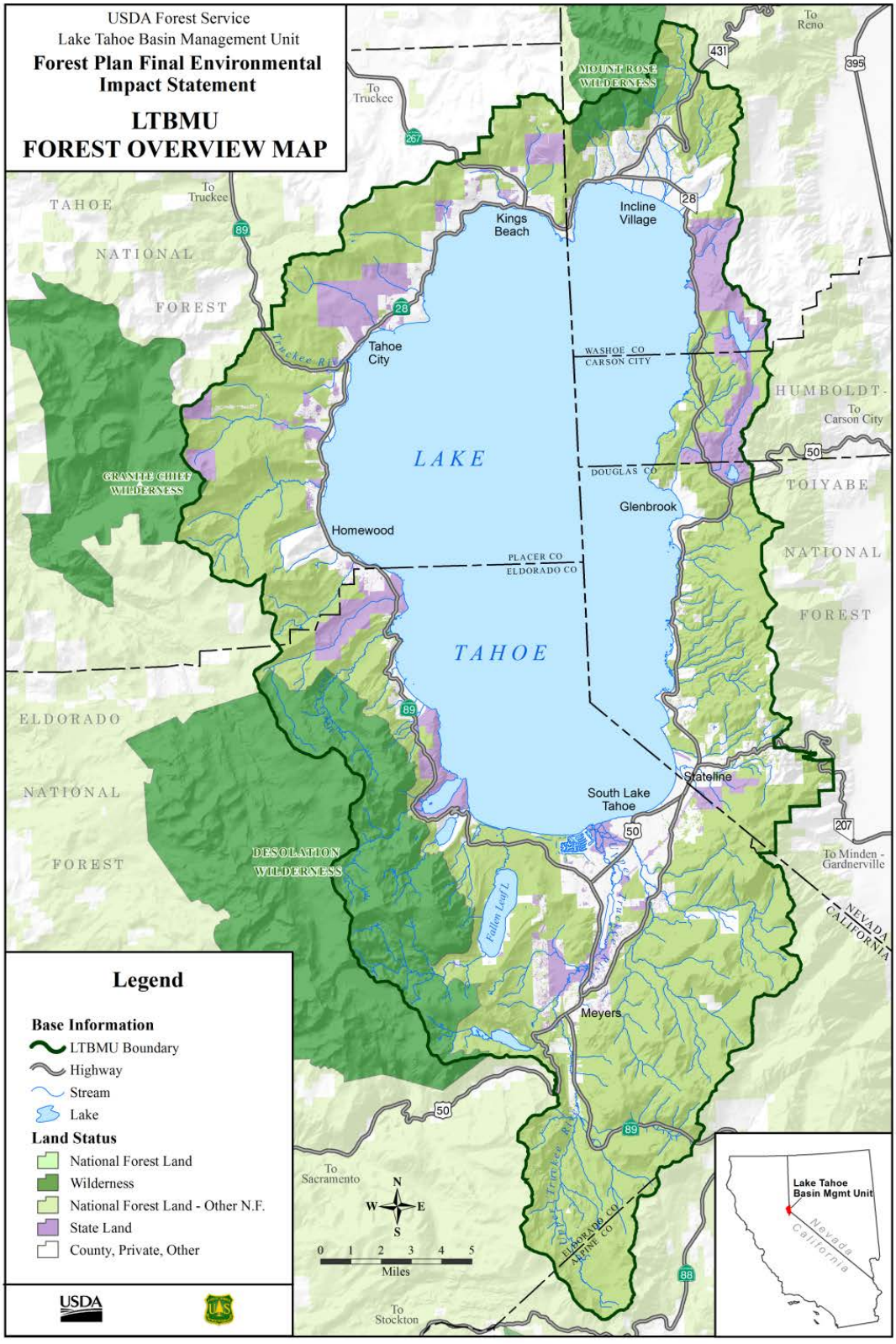


Figure 1. Lake Tahoe Basin Management Unit

Planning for Sustainability

The mission of the Forest Service is to sustain the health, diversity, and productivity of the Nation's forests and grasslands to meet the needs of present and future generations. On the LTBMU, planning for sustainability is accomplished by integrating landscape systems with social and economic values. Management strategies and activities applied to the landscape are designed not just to "sustain" existing conditions but to improve the functionality of the landscape in support of desired settings and ecosystem services. Forest plan components are presented in terms of "ecological sustainability", addressing desired outcomes for biological and physical aspects of NFS lands in the Lake Tahoe Basin, and in terms of "social and economic sustainability", addressing desired outcomes related to societal benefits.

Ecological, social, and economic systems are interdependent and cannot be ranked in order of importance. However, there is a difference in how the Forest Plan approaches these elements. Forest Plan management direction provides guidance to *maintain or restore* elements of ecological sustainability, and *guide the LTBMU's contribution* to social and economic sustainability. This is because the Forest Service has more influence over the factors that impact ecological sustainability on NFS lands (biodiversity, forest health, water quality, etc.) than it does for social and economic sustainability (employment, income, community well-being, etc.). National Forest System lands can provide valuable contributions to economic and social sustainability, but that contribution is just one in a broad array of factors that influence the sustainability of social and economic systems.

Climate change will influence local natural resource management and the ecological, social, and economic environments, and is thus a factor considered in planning for sustainability. Ecosystems will be managed for resiliency to prepare for uncertain future outcomes with approaches that support adaptation to changing future conditions.

The Forest Service is developing national policy for addressing the uncertainties associated with management in the face of a changing climate. The LTBMU climate change assessment and strategy will be updated as additional guidance is provided by the agency. If we actively manage ecosystems before climate-related effects induce change, long term management goals may be attained more effectively with fewer resources. Short term adaptations build resistance and resilience so that ecosystems are better able to withstand change, while long term adaptations are needed to avoid thresholds being crossed where one ecosystem abruptly transitions into another.

The six adaptation or mitigation management strategies that are current focus areas for Forest Service response to climate change (USFS 2008, 2011) are: (1) building adaptive capacity of ecosystems through ecological restoration, (2) enhancing watershed health, (3) sequestering forest carbon, (4) reducing existing stresses, (5) sustainable operations, and (6) fostering science-management partnerships and public education. All six of these actions are addressed in this Forest Plan.

Plan Format and Content

This plan was prepared under the National Forest Management Act of 1976 (NFMA, 16 U.S.D. 1604, et seq.) and the provisions of the 1982 planning regulations (36 CFR Part 219, 1982). The 2012 planning regulations currently in effect allow use of the previous regulations for plan revisions initiated before the 2012 regulations took effect (36 CFR 219.17 (b) (3), 2012).

While this Forest Plan was drafted to comply with the 1982 NFMA planning regulations, nothing in the Forest Plan (or EIS) should be construed as incorporating any portion of the regulations themselves.

This Forest Plan does not grant, withhold, or modify any contract, permit or other legal instrument, and does not authorize projects or activities. Decisions to approve or authorize specific projects are

considered separately from the plan when the time is ripe to make such decisions. Project decisions must be consistent with the applicable plan management direction.

The Forest Plan – not the FEIS – is the guiding document for determining Forest commitments, intentions, etc., and to the extent the two documents are inconsistent on what the Plan may require, the Plan language governs.

NEPA compliance is required for any project level decision that may have an impact on the environment. Project level decisions must be informed by site-specific analysis through an open, public process. This allows the latest science and public input to be employed at the time decision is to be made.

Three-Part Format of the Forest Plan

One of the goals of this revision process is to create a strategic plan that is in step with contemporary planning theories and practices while adhering to the provisions of the 1982 planning regulation.

The Forest Plan includes management direction (36 CFR 219.3, 1982), and explanatory material. The management direction is the Plan content that must be followed in planning and implementing management activities, and is also referred to as the Plan components. Management direction in the Forest Plan includes:

- Desired Conditions
- Objectives
- Management Areas and Suitable Uses
- Designated and Recommended Special Area guidance
- Standards and Guidelines

The explanatory material includes introductory text, definitions (glossary), and other material. It also includes the Program Strategies, which describe the preferred means of accomplishing work to move the Plan area toward the desired conditions.

This Plan applies only to NFS lands within the LTBMU administrative boundary. While some of the management direction applies to all NFS lands within the Lake Tahoe Basin, other direction applies only to specific areas, such as designated special areas or areas shown on the resource overlay maps. Relevant laws and regulations always take precedence over any Forest Plan direction.

The Forest Plan is organized in three parts, described below.

Part 1: Vision

This section describes the aspirational picture for the future of the LTBMU. The **Desired Conditions (DCs)** comprise the multiple-use goals (36 CFR 219.11(b), 1982). A desired condition is a description of specific ecological, social, and/or economic attributes toward which management of the land and resources should be directed. Desired conditions are specific enough to allow progress toward their achievement to be determined, but do not include completion dates.

It is important to recognize that the Forest Service has multiple reasons for taking actions and some of those reasons may conflict with other goals. Individual projects may not be able to support a given DC, or may in fact appear to be in conflict with it. For example, a habitat connectivity DC is not supported by a proposed project that would reduce connectivity. At any point in time, there are multiple goals at play, and achieving all those goals simultaneously is generally not possible for every project. In some instances, achieving a long term goal may require moving in the opposite direction in the short term. Conflicts among goals are inherent in multiple use planning; this is recognized in the planning regulations (36 CFR 219.27(a), 1982).

Part 2: Strategy

The Strategy section describes how the Forest intends to move the Plan area toward the desired conditions. This part of the Plan includes the Program Strategies and Objectives, the Management Emphasis Areas and Suitable Uses, and descriptions of the Designated and Recommended Special Areas on the LTBMU.

The **Objectives** are specific goals to be accomplished in a specified time period (36 CFR 219.11 (b), 1982). Objectives represent milestones on the path to achievement of the desired conditions. Objectives are based on reasonably foreseeable budgets.

The **Management Area** and **Suitability of Areas** sections provide broad guidance about the kinds of activities and uses that are appropriate in a given area. Resource Overlays (see Forest Plan maps), such as the Wildland Urban Interface (WUI) or the Protected Activity Centers (PACs) for goshawks and California Spotted Owls focus the scope of appropriate activities and uses while Standards and Guidelines provide more specific boundaries and constraints on activities and uses. This body of prescriptive direction (36 CFR 219.11(c), 1982) guides management towards attainment of objectives and desired conditions.

This section is the first place a project manager looks to determine whether a proposed project would be consistent with the Plan. The Management Area descriptions provide general guidance about the existing and desired character of the lands, while the suitability table and accompanying descriptions provide more specific guidance about suitable uses and activities. The Resource Overlays are described in this section; these maps inform project planners about the kinds of resources which may be present in a proposed project area. Standards and Guidelines related to the Resource Overlays supply information on the kinds of resource management limitations that may be imposed in the proposed project area.

Designated and Recommended Special Areas are lands within the National Forest System that receive special management consideration because of their unique or special characteristics, such as wilderness, research natural areas, historic sites, or national scenic and recreation trails. While most of the management direction for these areas is found in the Forest Service Manual, Handbooks, and site-specific management plans, the Forest Plan also includes specific management direction (desired conditions, objectives, standards and guidelines) that applies to designated special areas.

In addition to the above management direction, the LTBMU Forest Plan also includes **Program Strategies,** which describe the principal management approaches the responsible official is inclined to use in implementing the Forest Plan. This explanatory material provides clarification and informs the project managers and decision makers about the intent of the Plan.

Part 3: Design Criteria

Design criteria are the sideboards and safeguards that guide activities and uses. Standards and guidelines (36 CFR 219.11(c), 1982) establish constraints and boundaries for management activities.

A **Standard** is a mandatory constraint on project and activity decision making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

A **Guideline** is a constraint on project and activity decision making that allows for departure from its terms, so long as the intent of the guideline is met. The rationale for any deviation, however, must be documented in the project record. Guidelines are established to help achieve a desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

It is important to note that the Design Criteria are not intended to cover every management circumstance, but provide a basic set of resource protections. Individual projects or activities often require additional resource protection measures in the decision document, contract provisions, or special use permit requirements to account for unique or site-specific conditions and maintain consistency with the Forest Plan, and applicable laws, regulations, and policies.

Some of the most frequently used management direction found in public laws, regulations, Forest Service manuals, and handbooks is referenced in this section as "Other Sources of Information," but the direction itself is generally not repeated in this Plan, nor does this section provide and exhaustive list of all applicable law and regulation.

Monitoring and Evaluation Plan

The Forest Plan Monitoring and Evaluation Plan (Appendix A) utilizes status and trend monitoring and effectiveness monitoring to measure the degree to which on-the-ground management is maintaining or making progress toward the desired conditions and objectives for the plan. The monitoring plan will be adjusted as needed to respond to new information and unanticipated changes in conditions. The Forest Plan Monitoring and Evaluation Plan is a subset of the monitoring for the LTBMU. Additional, project-specific monitoring may be required for some projects.

Forest Plan Consistency

As required by NFMA and the planning regulations, all projects and activities authorized by the Forest Service must be consistent with the Forest Plan (16 USC 1604 (i); 36 CFR 219.10(e), 1982). A Forest Plan consistency analysis is completed for each project and activity during the planning process. The following paragraphs describe how a project or activity is consistent with Forest Plan management direction.

Management Areas and Suitable Uses: The project or activity must be suitable for the proposed location as follows:

1. A project or activity would occur in an area that the Plan identifies as suitable for that type of project or activity, or for which the plan is silent with respect to its suitability for that type of project or activity.
2. The project or activity must be compatible with the management area description.

Standards: The project or activity complies with applicable standards.

Guidelines: The project or activity:

- Is designed to comply with applicable guidelines as set out in the plan; or
- Is designed in a way that is equally effective in carrying out the intent of the applicable guidelines.

Previous Decisions: Previous decisions incorporated in this plan are identified below and in Appendix K. Projects and activities must be consistent with these decisions.

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 in Forest Plan Map 11. 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

7. Sierra Nevada Forests Management Indicator Species Amendment FEIS and Record of Decision. Published December 2007 U.S. Forest Service, Pacific Southwest Region. R5-MB-159.

Ensuring Project or Activity Consistency with the Forest Plan: Where a project or activity as proposed would not be consistent with the Forest Plan as described above, the Responsible Official has the following options:

1. Modify the proposal so that the project or activity will be consistent;
2. Reject the proposal or terminate the activity;
3. Amend the plan contemporaneously with the approval of the project or activity so that the project or activity is consistent with the plan as amended. The amendment may be specific to the project or activity or may apply more broadly to a portion of the plan.

Consistency Requirements for Management Indicator Species (MIS) and Species Viability: MIS status and species viability are monitored at the bioregional level. There is no requirement for monitoring or evaluation of MIS and species viability at the project level. A project or activity is consistent with the Forest Plan with respect to MIS and species viability if it is consistent with the Standards and Guidelines.

Relationship to Plans of Other Agencies

Tahoe Regional Planning Agency, Regional Plan

The Tahoe Regional Planning Agency (TRPA) is a land use planning and regulatory entity that works toward the achievement of environmental thresholds within the context of a regional plan and corresponding code of ordinances. TRPA policies cross political boundaries and encompass the entire watershed within the Lake Tahoe Basin. The TRPA regional plan is available online at www.trpa.org.

Public Law 96-551, the revised Tahoe Regional Planning Compact, established the TRPA. Often referred to as the Bi-State Compact, it is the agreement between the States of Nevada and California on goals for the Lake Tahoe Basin. Findings in the Compact reaffirmed that the Lake Tahoe region has outstanding environmental and recreational values that are being threatened by increasing urbanization. Congress originally gave consent to the compact through PL 91-148 in 1969. Weaknesses in that agreement brought about the revision in 1980.

Directed by the compact, the TRPA established Environmental Threshold Carrying Capacities (Thresholds) for the Basin. The Compact defines Thresholds as “an environmental standard necessary to maintain a significant scenic, recreational, educational, scientific or natural value of the region or to maintain public health and safety within the region.” (Article V.b.) The TRPA has established Thresholds for nine resource areas: water quality, air quality, scenic resources, soil conservation, fish habitat, vegetation, wildlife habitat, noise, and recreation. The Compact also directs the TRPA to prepare a Regional Plan implemented through agency ordinances, rules and regulations that “achieves and maintains the adopted Thresholds.” (Article V.c.)

Under Article X. Sec. 2 of the Compact, "The Secretary of Agriculture and the heads of other appropriate agencies are authorized, upon request of the Tahoe Regional Planning Agency, to cooperate with the Tahoe Regional Planning Agency in all respects compatible with carrying out the normal duties of their agencies." The Federal role in the Lake Tahoe Basin is further defined by Executive Order 13057 (July 26, 1997) and the subsequent *Agreement of Federal Departments and Agencies on Protection of the Environmental and Economic Health of the Lake Tahoe Region* and *A Memorandum of Agreement Between the Federal Interagency Partnership on the Lake Tahoe Ecosystem, the States of California and Nevada, the Washoe Tribe of Nevada and California, and the Tahoe Regional Planning Agency*. This Executive Order directs federal agencies having principal management or jurisdictional authorities in the Lake Tahoe Region to establish a Partnership that will, among other things, "support appropriate regional programs and studies needed to attain environmental threshold standards." E.O. 13057 Section 1-101, 103(d).

The Executive Order also directs the Forest Service (as a party to the Tahoe Federal Interagency Partnership) to establish a Memorandum of Agreement (also referred to as a Memorandum of Understanding (MOU)) with the TRPA that facilitates coordination and documents areas of mutual interest and concern and opportunities for cooperation, support or assistance. The current MOU defines, at the project analysis level, the cooperative framework between the Forest Service and the TRPA and how findings regarding Threshold attainment will be applied. The 1988 MOU (as amended in 2009) will remain in effect until a revised MOU is adopted that reflects this Forest Plan and the TRPA Regional Plan.

The Forest Service will continue to work cooperatively with the TRPA in the attainment and maintenance of applicable thresholds. The Forest Service expects that over time, the achievement of the desired conditions through the application of the strategies and management direction identified in the Forest Plan will contribute to the attainment and maintenance of applicable thresholds.

Lahontan Water Quality Control Board, Basin Plan

The primary responsibility for the protection of water quality in California rests with the *State Water Resources Control Board* (State Water Board) and nine *Regional Water Quality Control Boards* (Regional Boards). The State Water Board sets statewide policy for the implementation of state and federal water quality laws and regulations. The Lahontan Regional Board (LRWQCB) adopts and implements water quality standards and control measures for surface and ground water, including the *Water Quality Control Plan for the Lahontan Region* (Lahontan Basin Plan). The Lahontan Basin Plan outlines water quality conditions, actual and potential beneficial uses, and water quality problems associated with human activities, including those within the Lake Tahoe Basin.

The Basin Plan designates beneficial uses for water bodies and establishes water quality objectives, waste discharge prohibitions, and other implementation measures to protect those beneficial uses. Water quality control measures include *Total Maximum Daily Loads* (TMDLs), which may be adopted as Basin Plan amendments. The Forest Service's Land Management Plan is consistent with the Basin Plan and addresses TMDLs established in the Lake Tahoe Basin, including the California Lake Tahoe TMDL, approved by EPA on August 16, 2011.

Nevada Division of Environmental Protection, Nevada Administrative Code

The *Nevada Administrative Code* outlines the responsibilities of the Nevada Division of Environmental Protection (NDEP) for cooperating with federal agencies in managing public land and quantifying existing water rights, monitoring water use, distributing water, reviewing water availability for new development, reviewing the construction and operation of licensed facilities, reviewing flood control

projects, monitoring water resource data and records, and providing technical assistance to the public and governmental agencies. The Forest Service cooperates with NDEP on projects in Nevada. The Forest Service's Land Management Plan is consistent with the Basin Plan and addresses TMDLs established in the Lake Tahoe Basin, including the Nevada Lake Tahoe TMDL Report, approved by EPA on August 16, 2011.

Pathway Regional Vision Statement

An interagency and public collaborative process called Pathway 2007 (Pathway) was initiated in 2004 to develop a common vision for the Lake Tahoe Basin and to coordinate planning efforts of the Forest Service (Forest Plan revision), the TRPA (Regional Plan Update), and the Lahontan Regional Water Quality Control Board/ Nevada Department of Environmental Protection (Lake Tahoe TMDL).

The Pathway process led to a regional vision statement for the Lake Tahoe Basin. Desired conditions and vision statements quoted and adapted from *Pathway* in this Forest Plan are shown in *italics.*

A Look into the Future *– The Lake Tahoe Basin is an exceptional place where communities thrive in harmony with the natural environment. The overwhelming presence of nature is apparent. The Lake is blue and clear, the air is clean, the region's ecosystem health, and natural sounds evident. Within communities, the economy is strong and sustainable; the population diverse and vital, the richness of everyday life is obvious. Based on mutual respect and the integration of human and natural communities, a balance exists that inspires and motivates residents, businesses, visitors, and governments alike to work together to maintain the Lake's value as a national and international treasure. Lake Tahoe is a truly unique and special place.*

Air Quality *– Air quality in the Lake Tahoe Basin is healthful for residents, visitors, ecosystems, and supports excellent visibility.*

Noise *– Noise levels provide for community and neighborhood serenity, abundant quiet recreational areas, and are not harmful to wildlife.*

Recreation *– The Lake Tahoe Basin's unique natural, cultural, and human environments provide sustainable recreation opportunities consistent with public desires and natural resource capacities. Recreation is linked to irreplaceable natural assets, the regional economy, and social well-being.*

Scenic Quality *– The Lake Tahoe Basin is internationally recognized for its outstanding natural beauty and is a resource of national significance. Characteristic views within the Basin are of the natural appearing forest, meadows, mountains, and expansive blue lake. The built environment harmonizes with this natural appearing setting in a sustainable manner that supports a vibrant community and healthy economy.*

Socio-Economics *(Social and Economic Systems) – There is a sustainable balance between environmental protection and conservation practices that provide the basis for the region's unique natural characteristics, a base recreation and tourism economy, other diverse economic sectors, attractively built communities, diverse social populations, and an exceptional quality of life. The Lake Tahoe Basin is an international model for sustainable alpine communities that apply the best-known practices in economic development, environmental protection, regulatory and planning process, community design, and inclusive resident and visitor communities.*

Soil Conservation *– Soil resources are conserved for the betterment of the environment and public. Soils function naturally, and land-use activities are assigned to suitable soils and landscape settings. Risks to life and property from natural hazards are reduced to acceptable levels.*

Stream Environment Zones (SEZ) *– SEZs function at natural levels within the context of the watershed, and provide values commensurate with their functions. Societal and beneficial uses of SEZs, such as water management, cultural and scientific purposes, limited agriculture and recreation, are compatible with the naturally functioning conditions of SEZ lands.*

Transportation *– An innovative multimodal transportation system is in place that gives priority to viable alternatives to the private automobile, appeals to users, and serves mobility needs, while improving the environmental and socioeconomic health of the Lake Tahoe Basin.*

Vegetation *– Vegetation in the Lake Tahoe Basin is healthy and dynamic with the full complement of native plant communities, wildlife habitats, and ecological processes.*

Water Quality *– Exceptional water quality provides restored clarity, environmental and human health, and human enjoyment of Lake Tahoe waters.*

Wildlife and Fisheries *– Environmental conditions in the Lake Tahoe Basin support healthy and sustainable native terrestrial and aquatic animal populations and vegetation communities.*

Figure 2. Northeast shore of Lake Tahoe, south of Incline Village

1 Part 1: Vision

Desired conditions (DCs) are long term goals, expressed as a state of being. The desired conditions form the base of the Plan and help to shape the other Plan components. They express the sustainable ecological, social, and economic management goals towards which the LTBMU directs management activities.

Some resources may currently be at or near the state described in the desired condition, requiring little more than maintenance, while achievement of the desired conditions for other resources may require many decades.

The desired conditions in this Plan were developed either as part of the Pathway process (those shown in *italics*), or specifically for the LTBMU. The Pathway desired conditions are more general than most of the desired conditions developed specifically for the LTBMU.

The integration of these management goals will help the LTBMU improve the overall sustainability of ecological and socioeconomic systems. Integration of multiple resource goals and a planning and design approach that optimizes investments to achieve multiple desired outcomes, recognizes the interconnections between ecological and social systems.

1.1 Ecological Sustainability

Desired conditions for natural resources are included in this section, and include the physical resources (air, water, soil, watersheds, climate change, forest vegetation, fuels and fire management, aquatic and terrestrial habitats and species, and invasive species).

Where the term "restoration" is used, it generally means management actions that move ecological conditions towards the desired conditions. Restoration is specifically defined as "the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. Ecological restoration focuses on re-establishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions." This is the definition used by the Forest Service (36 CFR 219.19 (2012)) and by the Society for Ecological Restoration International (2004).

1.1.1 Physical Resources

Physical resources in the Lake Tahoe Basin are a key management emphasis for the Forest Service as well as our partner agencies. Physical resources include air quality, natural hazards, and physical components of watershed health, which include soil quality, surface and ground water quality, and geomorphic and hydrologic watershed processes.

Air quality management direction is found in several places throughout the Plan. Maintenance of air quality in the Class I airshed over Desolation Wilderness is discussed under Special Areas. The degree of darkness of the night sky is partly dependent on air quality – particulates in the air reflect light, making the night sky appear less dark and the stars less visible than under clear conditions. The dark night sky is discussed under Scenic Quality and Built Environment. Direction to mitigate air quality impacts from smoke is found in the Air Quality Strategies section. Human health concerns related to dust from naturally occurring asbestos (NOA) are an air quality issue on many National Forests, but the LTBMU has no mapped rock formations that contain asbestos minerals, so NOA is not discussed in this Plan.

Several kinds of potential natural hazards are present in the Lake Tahoe Basin. Knowledge of the risks associated with these hazards is essential to public safety. The LTBMU has completed a Natural Hazard Study to aid in project planning; including a map showing the approximate locations of various kinds of hazards (see Resource Overlay Maps).

A number of physical and biological elements in the Lake Tahoe Basin influence watershed response to natural or human-caused disturbance events. Watersheds have formed from different geologic materials (granite rock, volcanic rock, and glacial deposits), which have been acted upon by climate, vegetation, and other organisms over time to form particular soils and landforms with distinct ground and surface water drainage patterns.

The LTBMU was created from lands of three National Forests so that the Lake Tahoe Basin watershed could be more consistently managed as a unified whole. Coordinated planning and partnerships are integral to watershed management. Watershed restoration projects are undertaken to restore watershed processes and ecosystem structure, function, and composition impacted by past human disturbances such as:

- Urbanization of watersheds and encroachment of urban development into Stream Environment Zones (SEZs), resulting in a reduction in the size of SEZs and corresponding reductions in SEZ function.

- Grazing of livestock in meadows, resulting in soil compaction, changes in the distribution and composition of wetland, meadow, and riparian vegetation, soil erosion, streambank slope failure, and channel degradation;

- Legacy impacts such as old logging roads and other roads, railways, skid trails, flumes and diversions, which altered stream channel and surface water flow patterns, and resulted in fragmentation of riparian corridors.

- Diversion of stream flows and flood irrigation of certain meadows for pasture resulting in alterations in stream channel conditions, stream flow, and the composition of meadow vegetation;

- Relocation and straightening of stream channels, resulting in channel incision, channel widening, streambank erosion, lowering of groundwater, reduction in frequency of overbank flow, and increased downstream flooding;

- Exclusion of fire, along with altered hydrology (i.e., lowered groundwater tables), resulting in the encroachment of conifers into meadows, subsequently resulting in the drying out of these areas; and

- Breaching of barrier beaches, resulting in reduced functionality of SEZs close to the Lake.

The desired conditions for air quality, water quality, and soil quality are all interrelated and contribute to watershed health. Air quality can affect water quality; the Lake Tahoe TMDL includes requirements to reduce fine sediment and nutrient loading from atmospheric sources, and acid deposition from air-borne particles is monitored in high-elevation lakes throughout the Sierra Nevada. Ozone may damage vegetation. Adequate soil cover (vegetation, duff, and plant litter) protects soils from wind and water erosion, benefiting air and water quality. Soil and vegetation maintain water quality by processing nutrients and contaminants through uptake, retention, and chemical transformations. Soils improve water quality by retaining sediment and filtering water (precipitation, surface runoff, and overbank flows).

In addition to ecosystem benefits, physical resources provide social and aesthetic benefits that are recognized in the desired conditions for air quality and the clarity of Lake Tahoe. Similarly, social systems are enhanced through the maintenance of stream flows that support water-related recreation and groundwater levels that support groundwater-dependent ecosystems such as meadows and aspen stands that provide highly valued scenic backdrops. Soils contribute to scenic and recreational values through their role in sustaining healthy vegetation.

Air Quality

DC1. *Air quality in the Lake Tahoe Basin is healthy for humans and ecosystems. (Pathway)*

DC2. *Visibility in the Lake Tahoe Basin is at 2001 – 2003 levels or better. (Pathway)*

Natural Hazards

DC3. *Risks to life and property from natural hazards are reduced to acceptable levels through identification/mapping, avoidance of activities and development in hazardous areas, and modification of existing development to lessen potential impacts. Natural hazards include flooding, mass wasting (landslides, etc.), earthquakes, liquefaction, seiches, avalanches and volcanic hazards. (Pathway)*

Soil Quality

DC4. *Soils function commensurate with their land use to sustain native plant and animal life, regulate water flow, flooding and infiltration, cycle nutrients, and filter pathogens, excess nutrients and other pollutants.(Pathway)*

DC5. *Land coverage does not exceed the capability of the soil resources to offset the effects of impervious cover. The effects of impervious cover and disturbance are fully mitigated on a storm water zone basis. (Pathway)*

DC6. Soils infiltrate, transmit and store water at rates and in quantities commensurate with the soil and ecosystem type.

DC7. Soil productivity sustains healthy populations of native and desired non-native plant communities that are appropriate for the soil type. Surface and subsurface soil organic matter are within the expected range for the soil and ecosystem type.

DC8. Accelerated (human-caused) soil erosion and resultant sediment and nutrient transport to surface waters do not impact soil productivity or water quality.

Water Quality

Forest Service management primarily affects the water quality of Lake Tahoe through effects on other water bodies, especially the streams that drain into Lake Tahoe. Thus, the overall goal of achieving the Pathway DC for Lake Tahoe is directly correlated to achieving all the desired conditions described throughout this section.

DC9. *Lake Tahoe's status as one of the few extremely nutrient-poor (ultraoligotrophic). lakes in the world – with unique transparency, color, and clarity is preserved (adapted from Pathway)*

DC10. *Water quality conditions in the Lake Tahoe Basin protect human and environmental health. (Pathway)*

DC11. Water quality provides for all designated beneficial uses of surface and ground waters and meets the goals of the Clean Water Act and Safe Drinking Water Act; surface waters are fishable and swimmable, and surface and ground waters are suitable for drinking after normal treatment.

Hydrologic and Geomorphic Processes

This section includes desired conditions related to watershed resilience, stream channel geomorphic processes, and physical and chemical attributes of SEZs, as well as surface and ground water levels, groundwater recharge and discharge, and attenuation of peak flows.

Watershed resilience is expected to become increasingly important under a changing climate. Climate projections for the Lake Tahoe Basin include decreasing snowpack, earlier peak snowmelt, higher runoff in the winter and early spring, and decreased summer runoff. Flood potential would increase, principally due to earlier dates of peak daily flows and the increase in the proportion of precipitation falling as rain. Geomorphically stable stream channels and floodplains that exist in a state of dynamic equilibrium are better able to adjust to climate change impacts to hydrology, with fewer adverse impacts to aquatic habitat, water quality, or water quantity.

The term SEZ is specific to the Lake Tahoe Basin. Stream Environment Zones are areas that owe their biological and physical characteristics to the presence of surface or ground water. The SEZ concept includes wetlands as defined by the Army Corps of Engineers, but is broader, encompassing some soil-vegetation communities that are drier than wetlands. It is important to note that SEZs are ecological communities, not simply riparian buffer zones of a designated width. SEZs include lands adjacent to perennial, intermittent, and ephemeral streams, meadows and marshes, other areas of near-surface water influence, and groundwater-dependent ecosystems such as marshes, springs and fens.

Although desired conditions related to watershed function and the physical and chemical functions of SEZs are discussed in this section, while their biological functions are discussed under Biological Resources, the physical and biological characteristics of SEZs are interdependent. For example, desired conditions for fish habitat in streams are inextricably tied to the structural and geomorphic desired conditions for stream channels that also contribute to watershed stability and water quality.

DC12. *SEZ physical and chemical processes function naturally within the constraints and dynamics of the watershed, including, but not limited to, natural hydrologic processes, water quality, and stormwater treatment capacity. (Pathway)*

DC13. *Beneficial uses of SEZ lands for water management, cultural and scientific purposes, limited agriculture, and recreation are compatible with the naturally functioning conditions, as stated by desired conditions for physical, chemical, and biological functioning. (Pathway)*

DC14. *Watershed characteristics, such as hydrologic, fluvial, and littoral geomorphic processes, approximate natural conditions where attainable. (Pathway)*

DC15. Watersheds have the following characteristics:

- **a)** They are resilient and recover rapidly from natural and human disturbances.
- **b)** They exhibit a high degree of connectivity along the stream, laterally across the floodplain and valley bottom, and vertically between surface and subsurface flows.

c) They provide important ecosystem services such as high quality water, recharge of streams and aquifers, the maintenance of riparian communities, and moderation of climate variability and change.

d) They maintain long-term soil productivity.

DC16. Stream processes associated with the geologic setting, valley type, geomorphology, and sediment transport influence erosion and deposition such that streams are in dynamic equilibrium. Channel pattern, profile, dimension, and degree of channel-floodplain connectivity exhibit characteristics consistent with valley types. Sediment regimes are close as possible to those with which aquatic and riparian biota evolved. Coarse woody debris forms and maintains pool and cover habitats. Streams do not exhibit signs of chronic sediment overloading (aggradation) or accelerated (human-caused) bank and bed erosion (incision and gully formation).

DC17. The physical structure and condition of streambanks and shorelines minimizes erosion and sustains desired habitat diversity. Healthy streambank and shoreline vegetation aid in streambank and shorezone stabilization, limit erosion, and provide channel and floodplain stability.

DC18. Groundwater levels and stream flow volume and timing sustain surface water-dependent and groundwater-dependent ecosystems. Groundwater recharge and discharge, and water tables, are not adversely impacted by management activity, and soil infiltration capacity is unimpaired in most areas. Levels of base flow during low-flow periods support flow-dependent baseline values and functions, including, but not limited to, riparian vegetation, water for wildlife groundwater recharge, wetlands, native and sport-fish habitats, recreation use, and aesthetics of flowing water.

Figure 3. Stream channel restoration in Cookhouse Meadow

Climate Change

DC19. Ecologic and socioeconomic systems are resilient and have the capacity to adapt to climate change.

1.1.2 Forest Vegetation, Fuels, and Fire Management

Comstock-era logging, fire exclusion, livestock grazing, and other past management practices have significantly altered ecological conditions throughout the Lake Tahoe Basin. These practices have contributed to increased forest vulnerability to drought, disease, and insect outbreaks, as well as high severity, stand-replacing wildfire, increasing risks to communities, natural resources, and scenic quality. In addition, fire exclusion has resulted in encroachment of shade-tolerant conifers into meadows and aspen stands, and their ecological and scenic values are at risk. As our understanding of ecosystem processes has improved, it has become apparent that a more complete integration of restoration efforts is necessary to successfully restore natural ecological processes and enhance and maintain the scenic quality for which the Lake Tahoe Basin is renowned, while reducing wildfire hazard to communities and key wildlife habitats.

Climate change is expected to bring rising air temperatures and changes in precipitation patterns, leading to an increased risk of high severity fire and shifts in species ranges, presenting complex challenges for management in the Lake Tahoe Basin. Perhaps chief among these challenges is how to sustainably balance restoration of fire-adapted ecosystems and fuels reduction projects to protect public and private assets, with the legal and biological necessity of preserving habitat for species that require dense canopy, late seral conditions.

Compared to pre-Comstock conditions, forest types are structurally much more homogeneous, and stand densities have increased in the montane and upper montane zones. Late seral conifer forests are under-represented compared to pre-Comstock conditions, and post-fire early seral conditions are found in large contiguous blocks rather than in scattered patches. Overall, these changes have had a negative effect on biodiversity, and forest resilience to fire, drought, insects, and pathogens has been compromised.

Where it is possible to achieve, reestablishment of fundamental ecosystem processes (fire, hydrology, propagule dispersal, etc.) will enhance the ability of Lake Tahoe Basin ecosystems to achieve dynamic equilibrium with changing climates. Since almost all predictions suggest a warmer and drier future, replication of forest composition and pattern based on historic (pre-Comstock) reference conditions is probably not optimal. However, since pre-Comstock conditions are seen as a waypoint on the trajectory to sustainable conditions under projected future climate conditions, they are appropriate interim goals for forest stands in the Lake Tahoe Basin. Achieving approximate pre-Comstock conditions to the proportions outlined in Table 1 (1935 numbers) will help to restore key ecological processes that are currently absent or compromised. Stands that approximate pre-Comstock structure and composition would be better able to adapt to a warmer, drier climate than stands with the current structure and composition.

DC20. *A full range of native species, development stages, habitats, and ecological processes occurs. (Pathway)*

DC21. *Fuel conditions pose low wildfire risk to communities (Pathway).*

DC22. Disturbance processes occur in the ecosystem within the historic range of variability, and, where this is not feasible due to inherent risks, surrogates (e.g., prescribed fire, thinning) are used carefully to effectively mimic natural disturbance. Disturbance processes and/or their surrogates create and maintain forest conditions that are well-adapted to current and future climates.

DC23. Landscape conditions provide a diversity in vegetation types (Table 1), stand structures, and species compositions that resembles patterns (Figure 4) resulting from the interaction of disturbance regimes (e.g., wildland fire, insect and disease outbreaks, landslide and avalanche, windthrow, flooding, pre-Comstock aboriginal manipulations), variations in the physical landscape (e.g., elevation, soils, site

productivity, aspect, slope), and the reigning climate. Forest structure should vary over the landscape in relation to topographic variables of slope, aspect, and slope position.

DC24. The effects of disturbances like wildfire and insect/disease outbreak are similar to those expected under the natural range of variability for different parts of the landscape in the Lake Tahoe Basin, and, compared to the current disturbance regime, are less likely to result in major losses in wildlife habitat quality.

Figure 4. Cross-Section of a Typical Mixed-Conifer Late Seral Forest Ecosystem

Illustration of the structural complexity and spatial patterning (horizontal heterogeneity) typical of high-quality (structural classes 4 and 5) late seral forest ecosystems (drawn by Robert Van Pelt; from Spies et al. 2006).

DC25. Unplanned fires in the Wildland-Urban Interface (WUI) and in Jeffrey pine/mixed conifer forests tend to spread slowly to moderately, depending on winds, and burn as a surface fire. Occasional single-tree or group torching might occur when the fire burns through a dense clump of young trees. This burning thins the stand, promotes rapid growth of surviving trees, and creates occasional large snags by killing adjacent large trees. Unplanned fires occurring outside of the WUI in densely stocked fir or lodgepole pine forests may produce intense, stand-replacing events consistent with natural fire regimes.

DC26. WUI zones (Map 7), are open canopied and dominated primarily by larger, fire-tolerant trees (e.g., thick-barked, self-pruning pine species). The WUI incorporates patterns of fuel condition that modify wildfire behavior by slowing large fire spread and reducing overall fire intensity and severity. Defensible space exists for all structures on Forest Service administrative sites, Forest Service permit authorization sites, and within 100 feet of non-federal structures.

Table 1. Landscape Scale Desired Conditions for Major Forest Vegetation Types Showing Desired Average Percent of Vegetation Type

Vegetation Description	Approx. Percent of Area 1935	Approx. Percent of Area 2003	Early-Seral	Mid-Seral, Closed Canopy	Mid-Seral, Open Canopy	Late-Seral, Open Canopy	Late-Seral, Closed Canopy
White fir mixed conifer	10	21	10-20	5-15	10-15	30-40	20-30
Jeffrey pine	37	19	5-15	5-10	25-30	45-50	5-10
Red fir	15	18	10-20	20-30	5-15	15-25	25-35

Notes:

- 1935 percent of area from Forest Service 1935 Vegetation Type Map (Wieslander); these numbers represent an interim basin-wide desired condition.
- 2003 percent of area from Lake Tahoe Basin Existing Vegetation Map, Version 4.1, updated for the 2007 Angora Fire.
- This table is derived from Historic Reference Condition modeling for major LTB forest types, developed from non-linear forest stand dynamics (state and transition) modeling, using disturbance regimes from pre-Euro-American settlement period. Climate inputs from 20th century. Values cannot be reliably applied to landscape units less than about 10,000 acres in area (Safford and Schmidt 2007).
- Early, mid, and late seral stages represent stand quadratic mean diameters of 0-5", 5-25", and >25" dbh respectively.
- For white fir, and the red fir types, an "open" canopy has less than 50 percent closure while a closed canopy has closure greater than 50 percent; for Jeffrey pine, the open-closed cutoff is 40%. For detailed seral stage definitions, see Historic Reference Condition Mapping, Safford and Schmidt 2007.

Table 2. Desired Conditions for Tree and Snag Density, Coarse Woody Debris (CWD) Loading for Major Forest Types by Stand Development Stage (Seral Stage)

	Stocking (stems)				Basal area (feet^2/acre)			
Forest Type	Early	Mid	Late	Old	Early	Mid	Late	Old
White fir-mixed conifer	300	100	80	25	40	150	200	350
Jeffrey pine	200	70	60	15	30	80	100	250
Red fir	300	100	80	25	50	250	350	700
	Snags (>15" dbh/ acre)				Coarse Woody Debris (tons/ acre)			
Forest Type	Early	Mid	Late	Old	Early	Mid	Late	Old
White fir-mixed conifer	0	3	6	25	0	2	10	150
Jeffrey pine	0	1	3	15	0	1	6	100
Red fir	2	4	7	25	0	10	20	150

Forest Vegetation Types

White fir-mixed conifer, Jeffrey pine, and the red fir types constitute approximately 60% of the land area in the Lake Tahoe Basin. This also includes areas where the majority of vegetation and terrestrial habitat management actions will occur. Therefore, more detailed desired conditions for these major vegetation types on the LTBMU have been developed (Tables 1 and 2, and below, DCs 27-35).

Due to the ecological importance, declining extent and concerns for degrading condition of aspen stands in the basin, desired conditions for aspen also have been included here.

Except where it occurs in the WUI or where there are major insect outbreaks, the lodgepole pine type is not a major focus of land management concerns in the Lake Tahoe Basin. Likewise, the subalpine forest type is not the focus of land management concerns in the Lake Tahoe Basin, and therefore desired conditions are less detailed than for other forest types.

Jeffrey Pine

Structure

DC27. At the scale of the Lake Tahoe Basin as a whole, forest dominated by Jeffrey pine occupies more area than in 2003 and the trend is upward. At the landscape scale, the Jeffrey pine type is a highly heterogeneous mosaic of forest conditions composed of structural stages ranging from young to old trees (Table 2). Forest appearance is variable but generally uneven-aged and open; areas of even-aged structure are rare. Where they are even identifiable, patch sizes are generally extremely small (0.01 to 0.5 acres), and the mixing of trees of different ages and sizes makes identification of stands or seral stages difficult. The Jeffrey pine type is composed predominantly of vigorous trees, but dead and declining trees are a component and provide for snags and coarse woody debris (CWD). Stand basal areas range from 30 to 250 square feet per acre, with most stands falling below 100 square feet per acre. (See Table 2 for tree and snag density, and CWD loading).

Function

DC28. Natural ecological processes occur with little direct human influence. Fire and fire surrogates approximate a fire return interval of 7-20 years in Jeffrey pine stands. Stand-replacing fire occurs on an average of 5% of burned acres, with occasional more severe fires driven by extreme weather. Fires burn primarily on the forest floor and do not spread between canopy trees as active crown fire. Occasional crown torching leads to forest openings and generation of large snags. Except in extremely rare events, contiguous areas of crown mortality after fire are less than 5 acres in size. High severity patches are principally confined to higher density, closed canopy stands and/or warm, upper slopes. Frequent, low severity fires are characteristic in this type; including throughout spotted owl and goshawk protected activity centers (PACs) and home range core areas (HRCAs). Where this type overlaps the WUI, fires occur as surface fire due to fuels treatments.

Composition

DC29. The Jeffrey pine forest type is dominated by Jeffrey pine, with white fir as an associate. At the stand scale, the proportion of Jeffrey pine to shade tolerant species (e.g., white fir, red fir, incense cedar) is 3:1 or greater, except in moist and/or high productivity sites, where the proportion of shade tolerant species may be somewhat higher. Stands of (nearly) pure Jeffrey pine are not uncommon. Other accessory conifer species are present, especially in moist sites (e.g., incense cedar, lodgepole pine), areas of cold air drainage (e.g., lodgepole pine), and in very low productivity sites (e.g., western juniper, western white pine). Shrub cover is generally low to moderate due to frequent fire (or surrogates), but may be high in patches, especially where canopy cover is low, and where rocks, thin soils, and/or low fuel loads provide protection from frequent fire. Montane chaparral species are commonly found in such situations, and include species of manzanita and ceanothus, and bush chinquapin. In some open canopy stands of Jeffrey pine, sagebrush, bitterbrush, and other dryland shrubs may form an almost continuous understory. Diversity and cover of understory grasses and forbs is relatively high. In dense canopy stands, small and medium trees may be relatively dense. Early seral stands may support high levels of shrub cover.

White Fir – Mixed Conifer

Structure

DC30. At the scale of the Lake Tahoe Basin as a whole, forest dominated by white fir occupies less area than in 2003 and the trend is downward. At the landscape scale, the white fir-mixed conifer type is a heterogeneous mosaic of forest conditions composed of structural stages ranging from young to old trees (Table 2). Forest appearance is variable but generally uneven-aged; occasional areas of even-aged structure are present. Many stands on the landscape are open canopied (less than 50% canopy cover) and support a significant component of pines, but denser canopy stands are also common, especially on north slopes, in canyon bottoms, and at higher elevations. Where they are even identifiable, patch sizes are generally small (0.05 to 0.75 acres) and the mixing of trees of different ages and sizes makes identification of stands or seral stages difficult. The white fir-mixed conifer type is composed predominantly of vigorous trees, but dead and declining trees are a component and provide for snags and coarse woody debris (CWD). Stand basal areas range from 40 to 350 square feet per acre, with most stands falling below 250 square feet per acre. (See Table 2 for tree and snag density, CWD loading). In white fir-mixed conifer forest, stand basal areas range from 40 to 350 square feet per acre, with most stands below 50 square feet per acre (See Table 2 for tree and snag density, and CWD loading).

Function

DC31. Natural ecological processes occur with little direct human influence. Fire and fire surrogates approximate a fire return interval of 10-30 years in white fir-mixed conifer stands. Frequent, low to mixed severity fires are characteristic in this type, including throughout spotted owl and goshawk PACs and HRCAs. Stand-replacing fire occurs on an average of 15% of burned acres, with occasional more severe fires driven by extreme weather. Fires burn primarily on the forest floor, rarely spreading between canopy trees as active crown fire. Crown torching leads to forest openings and generation of large snags. Except in rare events, contiguous areas of crown mortality after fire are less than 10 acres in size. High severity patches are principally confined to higher density, closed canopy stands and/or warm, upper slopes. Where this type overlaps the WUI, fires occur as surface fire due to fuels treatments.

Composition

DC32. In the Lake Tahoe Basin, the white fir-mixed conifer forest type is dominated by white fir, with Jeffrey pine, sugar pine, red fir and incense cedar as important associates. At the stand scale, the proportion of white fir to shade intolerant pines (e.g., Jeffrey pine, sugar pine) varies from about 1:1 on drier and warmer sites to 2:1 or greater in moist and/or high productivity sites. Sugar pine is an important member of the forest canopy, and the combination of decreased canopy cover of shade tolerant conifer species (from increased fire and fire surrogates) and the planting of blister rust-resistant seedlings leads to increases in its density and basal area. Shrub cover is generally low, due both to frequent fire (or surrogates) and areas of high tree canopy cover. Shrub cover may be high in patches, especially where rocks, thin soils, and/or low fuel loads provide protection from frequent fire, or in areas where high severity fire has occurred. In open stands, the forest understory is dominated by low shrubs, grasses and forbs. In dense canopy stands, small and medium trees may be of relatively high density. Early seral stands may support high levels of shrub cover.

Red Fir

Structure

DC33. At the landscape scale, the red fir forest type is a heterogeneous mosaic of forest conditions composed of structural stages ranging from young to old trees (Table 2). Forest appearance is variable but primarily composed of small, intergrading patches of even-aged trees. Stands are both closed (greater than 50% canopy cover) and open canopied. Dense canopy conditions are more common at lower elevations, where white fir may share dominance with red fir (red fir-white fir forest), but patches of high canopy cover are also found at higher elevations, usually in areas of deeper soils. Higher elevation red fir stands often share dominance with western white pine (red fir-western white pine forest) and may be very open and patchy, with substantial cover of montane chaparral species. Patch sizes are small to medium (0.05 to 5 acres), but may be larger, especially at lower elevation. The red fir forest type is composed predominantly of vigorous trees, but dead and declining trees are a component and provide for snags and CWD. Most CWD is found in the later stages of decay. In red fir-white fir forest, stand basal areas range from 50 to 700 square feet per acre, with most stands below 350 square feet per acre. In higher elevation red fir-western white pine forest, stand basal areas range from 5-600 square feet per acre, with most stands below 250 square feet per acre. (See Table 2 for tree and snag density, and CWD loading).

Function

DC34. Natural ecological processes occur with little direct human influence. Fire and fire surrogates approximate a fire return interval of 30-75 years in red fir stands, with fire return intervals increasing generally with elevation. Infrequent, low to mixed severity fires are characteristic in this type. Stand-replacing fire occurs on an average of 15-20% of burned acres, with occasional more severe fires driven by extreme weather. Fires are generally small, restricted in size by high fuel moistures and/or the patchy nature of the forest. Fires burn primarily on the forest floor, but crown torching is not uncommon and leads to forest openings and generation of large snags. Except in rare events, contiguous areas of crown mortality after fire are less than 10 acres in size. High severity patches are principally confined to higher density, closed canopy stands and/or warm, upper slopes. Where this type overlaps the WUI, fires occur as surface fire due to fuels treatments.

Composition

DC35. In the Lake Tahoe Basin, the red fir forest type is dominated by red fir, with white fir and Jeffrey pine as important associates at lower elevations, and western white pine, lodgepole pine, and Jeffrey pine at higher elevations. Other conifers include sugar pine, mountain hemlock, and western juniper. At higher elevations, especially in sites of low productivity, western white pine remains an important member of the forest canopy. Where feasible, the planting of blister rust-resistant western white pine seedlings leads to sustainability of its density and basal area. Lodgepole pine density in higher elevation red fir forests is reduced in areas where very dense stands regenerated after 19th century logging. Shrub cover is very heterogeneous. Shrub cover is generally low at lower elevations, except where there are gaps in the tree canopy, but maybe high (but patchy) at higher elevations, depending on the distribution of the tree canopy, soil depths, moisture availability, and other factors. Understory shrubs include gooseberry and snowberry. Montane chaparral shrub species (which occur primarily in openings) include huckleberry oak, bush chinquapin, and species of manzanita and ceanothus. Grass and forb cover is generally low, but can be high in stands with low canopy cover and suitable soil moisture. In dense canopy stands, small and medium trees may be of high density. Early seral stands may support high levels of shrub cover.

Lodgepole Pine

DC36. Tree densities and basal areas are maintained at levels similar to current conditions in most stands. The areal extent of lodgepole pine-dominated forest is slightly reduced from 2009. Wherever possible, ecological processes occur with little direct human influence.

DC37. Stand density, age distribution, and structural heterogeneity promote resilience of lodgepole pine and tree mortality occurs at levels that would typically not exceed a few trees per acre. A heterogeneous pattern of mortality results in the creation of snags and CWD that varies irregularly across the landscape, and does not result in degrading wildlife habitat or scenic character. Levels of dwarf mistletoe are reduced, and infection by mistletoe does not result in stunting growth and/or premature tree mortality. Tree mortality caused by mountain pine beetle, and tree hazards associated with dwarf mistletoe, are limited in recreation areas.

Sub Alpine

DC38. Forest conditions are the result of natural ecological processes, which occur with little direct human influence.

DC39. Stand density, age distribution, and structural heterogeneity promote resilience of whitebark pine, lodgepole pine, red fir, and other sub alpine tree species, and tree mortality does not contribute to substantial deviations from typical patterns of vegetation succession. Tree mortality levels caused by mountain pine beetle do not contribute to an overall decrease in species sustainability.

Aspen

Structure

DC40. The area of aspen-dominated forest in the Lake Tahoe Basin is greater than in 2009 and trending upward. In aspen stands, aspen dominate the overstory, with conifers comprising <25% of the canopy. Overall canopy cover is high (generally greater than 50%), and aspen comprise more than 75% of the overstory. Aspen forest is multi-layered, but sufficient light penetrates the canopy to support abundant undergrowth. Aspen stands are regenerating, restored, and/or maturing through natural disturbances or surrogate activities. In stable stands, aspen perpetuates itself with regular low-level regeneration; in seral stands, aspen regeneration is vigorous after ecological disturbances. Conifer density surrounding aspen stands is low enough that aspen stand expansion may occur if subsurface moisture availability permits. In early and mid-seral aspen stands, fire resistant conifers with late seral characteristics may comprise up to 25% of overstory canopy cover. Based on disturbance history, multiple age cohorts of aspen may be present. Conifer regeneration only rarely successfully introduces new trees into the stand, due to high seedling and sapling mortality from fire or fire surrogates. Basal areas range from 5-600 square feet per acre, with most stands falling below 250 square feet per acre.

Function

DC41. Fire and fire surrogates approximate a fire return interval of 25-50 years in aspen stands. Many low intensity fires burning in surrounding conifer forest types do not enter aspen forest due to high moisture content in the fuel and soil. Stand-replacing fire in aspen forest is uncommon, and most fires that enter stands burn at low to moderate severity, with only scattered mortality of overstory aspen individuals. Early and mid-seral aspen stands strongly ameliorate fire behavior and burn severity within aspen stands as well as in conifer stands immediately downwind.

DC42. Structural heterogeneity in aspen stands is high, and stands attract a broad diversity of wildlife species due to the availability of cover, forage, and nesting opportunities.

DC43. Native insect and disease species are allowed to fulfill their ecological role in the aspen community, with minimal risk of compromising stand resilience. Organic ground cover and herbaceous vegetation provide protection of soil, moisture infiltration and retention, and contribute to plant and animal diversity. Soil moisture in aspen stands is generally higher than in surrounding conifer stands, due

to higher water tables, lower rates of evapotranspiration, and higher organic matter content in the soil, which aids in moisture retention. There is little or no bare ground. Natural and anthropogenic disturbances are sufficient to maintain desired overall tree density, structure, species composition, coarse woody debris, and nutrient cycling.

Composition

DC44. Total vegetation cover and diversity is generally high in aspen stands, especially in the forb and grass components of the forest understory. Depending on location, elevation, and site characteristics, a number of conifer species may be present (up to 25% canopy cover), and other hardwoods like alder or willow may occur nearby. Shrub layers may be present, and may include a number of relatively shade-tolerant species (e.g., serviceberry, snowberry, gooseberry, currant) and also dryland shrubs (e.g., sagebrush, bitterbrush), depending on site characteristics.

Meadows

Meadow vegetation occurs at elevations ranging from lake level to almost 10,000 feet. Meadow vegetation is characterized by dense graminoid (grasses, sedges, rushes) and forb cover, with or without a shrub component. While meadows account for a small percentage of the overall Lake Tahoe Basin landscape, they are of great ecological importance. Meadows in the Lake Tahoe basin are a spatially limited resource that plays a crucial role in hydrologic processes, erosion control, nutrient cycling, and habitat for many plant and animal species.

Meadows are usually classified based on vegetation, elevation, water table, landform, hydrology, and soil characteristics. Water table level and seasonal water table patterns are the most important factors determining the distribution of meadow vegetation, but meadow size and composition is further affected by climate, fire, and herbivory. In the Lake Tahoe Basin, dry meadows are found on floodplains or drainageways and at the dry edges of stream terraces. This type is moist in the early growing season and dry as the season progresses. Moist meadows are also found on floodplains or drainageways and stream terraces, but these sites are wet to moist through the growing season in most years. Wet meadows are found on sites that have water-saturated soils within 50 cm of the surface for most of the year. Fens are wet meadows that occur in organic soils where the water table is at the soil surface for most of the year.

Past land use and recurrent droughts have impaired natural function and processes of many meadows in the Lake Tahoe Basin. Perhaps the most significant documented trend in many montane meadows in the

Sierra Nevada is soil drying and resulting changes in meadow structure, composition, and function. Reasons for meadow drying include past overgrazing, road construction (which alters hydrology), conifer encroachment, which may be largely due to lack of fire since the beginning of fire suppression policies, and climate warming. Montane meadows have been identified as one of the most vulnerable and impacted habitat types of the Sierra Nevada, and meadow ecosystems are an important focus area for restoration efforts in the Lake Tahoe Basin.

Structure

DC45. At the scale of the Lake Tahoe basin as a whole, the area of high functioning meadow vegetation is higher than in 2009 and the trend is up and meadow wetness is maintained or increasing as determined by species composition. A high diversity of meadow types is represented. Soil drying and conifer encroachment that are due to human management are halted and reversed. Meadows affected by soil drying and conifer encroachment due to climate effects may also be targeted for treatment, depending on management goals. Bare ground cover is reduced in many meadows. Healthy stands of willow, alder and aspen grow in appropriate places within and adjacent to meadows.

Function

DC46. Fire (prescribed or natural) or fire surrogates maintain and/or reclaim meadow landscapes from encroaching conifers, and increase the vigor and diversity of herbaceous meadow vegetation. Where necessary and possible, stream down-cutting and meadow soil loss is halted. Meadows continue to adequately carry out important hydrologic functions. Meadows with perennial and intermittent streams:

- **a)** dissipate stream energy from high flows and result in increases in infiltration rates, reducing erosion and improving water quality;
- **b)** filter sediment and capture bedload, with subsequent floodplain development;
- **c)** enhance floodwater retention and groundwater recharge through increased rates of infiltration; and
- **d)** support healthy root systems which stabilize streambanks against down-cutting action.

DC47. Organic ground cover and herbaceous vegetation provide protection of soil, moisture infiltration and retention, and contribute to plant and animal diversity. Natural and anthropogenic disturbances are sufficient to maintain desired vegetation structure, species composition, and nutrient cycling.

Composition

DC48. A diversity of plant functional types are present and regeneration occurs naturally within each meadow type. In places where past human disturbance has affected meadows, the abundance of plant functional types identified as rare species are decreasing. Meadow species composition is predominantly native, perennial species. The abundance of exotic species is reduced.

1.1.3 Biological Resources

The Lake Tahoe basin provides habitat for a wide range of terrestrial and aquatic species. Past land use management has degraded some sensitive habitat while other habitats have been less affected. In addition to habitat degradation, non-native species and invasive species introductions have drastically altered some terrestrial and aquatic habitats.

Terrestrial and aquatic habitats are important both for native species that depend on them, and for future generations of the recreating public to enjoy. Toward this end, desired conditions have been developed to guide future management in the preservation, enhancement, and, in some cases, restoration of biological resources.

Habitat and Species Diversity

This section provides specific management direction to maintain habitat quality and abundance to support native species and habitat on the LTBMU.

DC49. *The functional, physical, chemical, and biological integrity of the Lake Tahoe Basin's aquatic ecosystems are maintained at or above a sustainable level. (Pathway)*

DC50. *SEZ biological processes function naturally within the constraints and dynamics of the watershed. Vegetation, terrestrial wildlife, and aquatic communities are healthy and sustainable. (Pathway)*

DC51. *The functional, physical, chemical, and biological integrity of the Lake Tahoe Basin's terrestrial ecosystems are maintained at or above a sustainable level. (adapted from Pathway - vision)*

DC52. The diversity, distribution and health of biotic communities, and associated species in aquatic and terrestrial habitats (such as lakes, fens, wetlands, SEZs, and coniferous forests) perpetuate their unique ecological functions and biological diversity, and support sustainable populations of native plants and animal species. The connectivity, both spatial and temporal of these aquatic and terrestrial habitats at the landscape level allows for physically, chemically, and biologically unobstructed movement of native species sufficient for their survival, migration, reproduction and dispersal.

DC53. In-stream flows and floodplain inundation frequencies sustain aquatic habitats. Perennial flowing streams and associated lakes support a community of macro-invertebrates indicative of healthy aquatic habitat conditions, and naturally reproducing populations of native plant and animal species. Aquatic habitats are free of aquatic organism barriers and provide habitat characteristics needed for all life-history requirements.

DC54. Undeveloped and minimally disturbed shoreline and lagoon habitats are sufficient to support native species dependent on the interface between lake and terrestrial ecosystems. Where fluvial ecosystems meet the lake shoreline (including Lake Tahoe), geomorphic conditions and associated barrier beach formations support marsh and lagoon habitats.

DC55. The abundance, spatial distribution, and size and decay classes of both standing (snags) and CWD meet the habitat requirements of native species that utilize these structures.

DC56. Terrestrial and aquatic habitat connectivity continues to provide unobstructed movement sufficient for survival, migration, reproduction, and dispersal given the potential effects of climate change on habitat and species.

DC57. The pattern and degree of forest fragmentation is consistent with natural landscape heterogeneity, including all seral stages, and meets the habitat needs of terrestrial wildlife species that are generally vulnerable to extensive forest openings, edge effects, and gaps in the forest canopy.

DC58. Ecological conditions throughout the Plan area contribute to the recovery of Federal Threatened (T) and Endangered (E) species, and prevent listing of Federal Candidate species (C), Federal Proposed species (P), and Forest Service Sensitive species (FSS).

DC59. The forest supports well distributed and connected habitat for FSS, and TRPA identified native species. These identified populations and habitats are ecologically sustainable, self-sustaining, well-distributed, and well-connected.

DC60. Ecological conditions sustain or enhance native species and support self-sustaining communities of native plants and animals.

DC61. Inherent genetic variability within native plant populations is conserved and is sufficient to respond and adapt to changing climates and environment conditions.

DC62. Native non-game fishes, including but not limited to, Lahontan tui chub, Tahoe sucker, Lahontan redside, Paiute sculpin and mountain whitefish are well distributed in watershed stream reaches and are able to utilize near shore lake habitats throughout their historic range.

DC63. Selected rocky habitats support healthy and sustainable populations of rare plant and animal species including but not limited to Tahoe draba (*Draba asterophora var. asterophora*), Cup Lake draba (*Draba asterophora var. macrocarpa*), long-petaled lewisia (*Lewisia longipetala*), and Mount Lyell salamander (*Hydromantes platycephalus*).

DC64. Cliff, cave, and cave surrogate habitats (e.g., mines, buildings, etc.) recognized as important to the survival, migration, reproduction, and dispersal of species dependent on these habitats are suitable and accessible for these uses consistent with site capability. Measures to protect and ensure human safety are compatible with maintaining or enhancing accessibility for these species.

DC65. Conifer stands adjacent to wetlands, wet meadows, and open water habitats including but not limited to the areas between Emerald Bay and Taylor Creek, and near Marlette Lake, and in newly discovered special status raptor locations, have the following characteristics:

a) Conifer stands are open canopied, late seral, and Jeffrey pine-dominated in composition and structure;

b) Several trees exist in each stand that are larger in diameter and taller than the dominant tree canopy, particularly trees greater than 40 inches dbh and at least 100 feet tall with dead tops and robust, open branch structures;

c) Higher than average levels of snags for the stand type are present, composed of the largest tree size classes and diverse decay classes.

DC66. Late and mid seral closed canopy habitat contains elements (e.g., snags, coarse woody debris, large trees, dense canopy) important to mature forest-associated species.

DC67. Areas surrounding marten den sites have (1) at least two conifers per acre greater than 24 inches dbh with suitable denning cavities, (2) canopy closures exceeding 60 percent, (3) more than 10 tons per acre of coarse woody debris in decay classes 1 and 2, and (4) an average of 6 snags per acre.

DC68. Complex early seral habitat created as the result of a disturbance (e.g., burned forest habitat) contains dense patches of pre-disturbance residual habitat elements (e.g., snags) and habitat elements characteristic of natural seral progression (e.g., regenerating shrub cover and herbaceous understory) that are important to early forest-associated species.

Invasive Species Management (Aquatic and Terrestrial)

This management direction is included to help maintain habitat quality and native species diversity. The management direction is applied to species identified as invasive by the California Department of Food and Agriculture (CDFA), Nevada Department of Agriculture (NDA), California Invasive Plant Council, Lake Tahoe Basin Weed Coordinating Group, and Lake Tahoe Aquatic Invasive Species Coordinating Committee.

DC69. Invasive species do not adversely affect native species, human health, ecosystem processes, or other NFS resources.

DC70. Aquatic and terrestrial ecosystems are self-sustaining and resistant to the establishment of invasive species.

DC71. Invasive species management prioritizes prevention and early detection and rapid response actions.

Protected Activity Centers and Home Range Core Areas (PACs and HRCAs)

This section describes the desired conditions for northern goshawk and California spotted owl PACs and California spotted owl HRCAs. PACs and HRCAs are established and maintained to protect suitable habitat components for these species.

DC72. Suitable nesting and foraging habitat within California spotted owl and northern goshawk PACs and California spotted owl HRCAs is maintained.

DC73. California spotted owl and northern goshawk PACs have the following mature-forest structure:

- **a)** at least two tree canopy layers,
- **b)** dominant and co-dominant trees with average diameters of at least 24 inches dbh,
- **c)** at least 60 to 70 percent canopy cover,
- **d)** some very large snags (preferably larger than 45 inches dbh), and
- **e)** snag and down woody material levels that are higher than average.

DC74. California spotted owl HRCAs consist of large habitat blocks with the following structure:

- **a)** at least two tree canopy layers,
- **b)** dominant and co-dominant trees with average diameters of at least 24 inches dbh,
- **c)** a number of very large (greater than 45 inches dbh) old trees,
- **d)** at least 50 to 70 percent canopy cover, and
- **e)** higher than average levels of snags and down woody material.

DC75. Highly suitable California spotted owl and northern goshawk breeding, roosting, and foraging habitats exist in spotted owl and goshawk territories within and overlapping the Lake Tahoe basin; these habitats trend towards resistance to large-scale disturbances such as severe wildland fire and pathogen/disease/insect mortality outbreaks. The trend in spotted owl and goshawk occupancy, survival, and productivity in these territories are maintained or increased over time within the capability of the landscape.

Figure 5. California spotted owl

Special Status Species Habitat Areas

Special Status Species Habitat Areas (SSSHAs) are defined as areas of quality habitat for Federal Threatened (T), Endangered (E), Candidate (C), and Proposed (P) species (FSH 1909.12, Ch. 40, Sec. 43.22a). These areas either currently provide habitat for Federal TEPC species or may provide habitat needed for future recovery.

The terms “recovery” and “recovery plan” are used in this Plan strictly as they relate to the Endangered Species Act (ESA). The LTBMU does not make determinations about when recovery is needed; recovery plans are developed by the US Fish and wildlife Service only after a species is listed as Threatened or Endangered. Candidate species do not have recovery plans.

Species included are Lahontan cutthroat trout, Sierra Nevada yellow legged frog, Tahoe yellow cress, and whitebark pine. This list is subject to change when species are added or removed.

Lahontan Cutthroat Trout

DC76. Lahontan cutthroat trout (LCT) populations are naturally self-sustaining, well-distributed, and well-connected, forming meta-populations that can expand and endure natural disturbances. Culverts or other structures do not inhibit migration unless deemed necessary to maintain upstream population integrity. Current and future water-bodies identified by the Tahoe Basin Recovery Implementation Team support naturally reproducing populations of LCT. Current recovery areas in the Upper Truckee River watersheds (from Meiss Meadows to the Southern extent of Christmas Valley) and Fallen Leaf Lake(including Glen Alpine Creek) are suitable for LCT and have the following characteristics:

a) Upper Truckee River, upstream of the natural fish barrier, is free from non-native trout and aquatic invasive species, such as whirling disease pathogens;

b) Fallen Leaf Lake and Glen Alpine Creek are free of aquatic invasive species and support LCT life histories.

c) In addition, current and future fluvial and lacustrine systems where recovery occurs exhibit the following aquatic habitat characteristics: riffles, runs, pools, spawning gravels, CWD, and in-lake structure are complex and well-connected and free of non-native species that would inhibit LCT success.

Sierra-Nevada Yellow-legged Frog

DC77. Sierra Nevada (mountain) yellow-legged frogs occupy, persist, and colonize in historic lake and stream habitats that are fishless. Habitat for self-sustaining populations is present in identified lakes, streams, and meadow habitats. Suitable habitat is free from invasives, including *Batrachochytrium dendrobatidis* fungus (Bd), and introduced fishes (e.g., brook trout), and has well-connected micro-habitats for frog dispersal.

Figure 6. Sierra Nevada yellow-legged frog

Tahoe yellow cress

DC78. Tahoe yellow cress persists in sandy beach habitat around Lake Tahoe, despite periodic high water levels and human-related impacts. Viable populations are maintained at core sites that occur on NFS lands. At other sites, occurrences may decrease or disappear, but losses are counterbalanced by establishment of new sites, as determined by the species metapopulation dynamics.

Whitebark pine

DC79. Stand density, age distribution, and structural heterogeneity are such that stands are resilient to disturbance (e.g., wildfire and climate change) and resistant to pathogen infestations (such as white pine blister rust and mountain pine beetle).

DC80. Tree mortality in whitebark pine stands does not substantially deviate from typical patterns of vegetation succession. Mortality levels caused by pathogens do not contribute to an overall decrease in species sustainability.

DC81. Mature cone-bearing whitebark pine trees are well distributed spatially to allow for natural regeneration and to protect and conserve genetic diversity in situ, in particular diversity that may be related to WPBR-resistance.

1.2 Social and Economic Sustainability

This section includes desired conditions that focus on the human environment, including stewardship and partnerships, recreation, conservation and interpretive education and visitor services, scenic quality, cultural resources and tribal relations, noise, the road and trail system and other aspects of the built environment, lands and minerals, and permitted uses. These desired conditions represent goals to provide important social benefits to Lake Tahoe Basin communities, part-time residents, and visitors, and contributions to the local economy.

1.2.1 Partnerships and Volunteers

The LTBMU relies on its dedicated partners and volunteers to successfully manage the NFS lands and to attain stewardship goals across jurisdictional boundaries. Current partnerships with other entities help reduce hazardous fuels, build trails, restore historic sites, provide interpretive programs, restore habitats, remove invasive plants, and take part in many other management activities.

DC82. *LTBMU and partner organizations capitalize on mutual interests and goals to efficiently and effectively achieve desired outcomes. Community members, interested stakeholders, regulatory agencies, and leaders from local jurisdictions are well-informed of ecosystem processes and management challenges, and work cooperatively to resolve issues. These partners gather and share information allowing for more accurate and responsive decision-making. (Adapted from Pathway)*

DC83. Partners and volunteers are engaged in coordination, development, and delivery of educational and community outreach programs.

DC84. Resource management and stewardship objectives are accomplished through collaboration with partners and volunteers.

Recreation and Human Values

The LTBMU provides visitors and area residents an extraordinary variety of outdoor recreation opportunities concentrated within a relatively small area of NFS lands surrounding Lake Tahoe. The

concentration of use (over 5.7 million visits per year on average) on around 155,000 acres is among the highest of any National Forest in the country, and based on US Census data is expected to increase.

The spectrum of recreation opportunities within the Lake Tahoe Basin varies from highly developed resorts to remote wilderness. Visitors can find full service amenities at developed sites such as Camp Richardson Resort and Heavenly Mountain Resort, or solitude within the Desolation Wilderness.

Those wishing to access Lake Tahoe may enjoy developed beach sites such as Pope, Baldwin, Meeks, and Nevada Beach, while the scenic east shore provides opportunities for more remote, less developed lakeshore access and stunning panoramic views of the lake and the Sierra Nevada. Interpretive opportunities are numerous, with local area history presented at the Tallac Historic Site, and natural history interpreted at the Taylor Creek Visitor Center.

More remote backcountry areas, such as Freel and Dardanelles Inventoried Roadless Areas, Desolation, Stanford Rock, Granite Chief, and Mt. Rose Wilderness Areas, provide dispersed recreation opportunities to visitors seeking solitude or outdoor adventure.

Visitors seek a multitude of experiences on NFS lands that cannot be adequately captured by the term 'Recreation' and can be difficult for public land managers to quantify. LTBMU lands provide opportunities to experience solitude, physical challenge, social interaction, spiritual meaning, and a myriad of other values. Providing for these qualitative experiences enhances the diversity of recreation opportunities available in the Lake Tahoe Basin and is an important component of the LTBMU recreation program.

1.2.2 Sustainable Recreation

The aim of sustainable recreation management is to integrate recreation program activities with landscape processes, social values, and economic considerations to provide high quality recreation opportunities that can be perpetuated through the long term.

Sustainable recreation is a systems-based approach to managing recreation within the larger context of landscape values, services, and processes. The three themes encompassed by sustainability are social (recreation opportunities), economic (built environment), and environmental (natural setting). No one theme is prescriptive of sustainability in and of itself; all three must successfully be integrated in the landscape in order to achieve sustainable recreation. By addressing facilities issues in concert with resource protection, sustainable recreation management increases the longevity and quality of developed and dispersed recreation opportunities on the Lake Tahoe Basin Management Unit.

Potential adverse effects to natural, cultural, and social resources may occur if recreation is unmanaged. Over the life of this Forest Plan, recreation will be managed on the LTBMU for a variety of values, including natural resource conditions, aesthetic value, and human experience. By managing for these values in a sustainable way, the Forest Service will continue to deliver a wide range of developed and dispersed recreation opportunities on NFS lands.

In support of meeting sustainable recreation objectives, the following desired conditions have been developed: recreation opportunities, public access (socio-economic), and recreation development (built environment).

Recreation Opportunities

DC85. *A spectrum of high quality recreational opportunities are provided, while Lake Tahoe Basin's natural setting as an outstanding recreation destination is maintained. (Pathway)*

DC86. Landscape-scale recreation opportunities encompass the many unique natural features available in the Lake Tahoe Basin.

DC87. A diversity of recreation opportunities, programs, and facilities contribute to community vitality and the economic sustainability of local communities in the Lake Tahoe Basin.

DC88. Recreation opportunities enable long-term connections between people and their public lands, and are adapted for a changing visitor base.

DC89. Recreation projects are developed with the involvement of neighboring communities, partners, state and local agencies, tribes, and adjacent Forest Service units.

Public Access

DC90. *Encourage additional access where lawful and feasible to high-quality natural areas and shorezone consistent with desired resource conditions. (Pathway)*

DC91. The public has opportunities to access Lake Tahoe shorelines and NFS lands.

DC92. The role of humans in the natural environment is recognized.

Recreation Development

DC93. Programs and facilities are economically sustainable and can be successfully perpetuated through the long term.

DC94. Recreation development meets a wide range of social expectations while maintaining the quality of the setting and natural resources.

DC95. Management actions do not attract and habituate bears and other wildlife.

Recreation Special Uses

Recreation special use permits facilitate recreational opportunities on NFS lands for services not provided by the Forest Service. Recreation sites under special use permit are more commercial in nature than sites under Forest Service management, and offer a variety of services for a fee. Recreation special use permits include resorts, ski areas, recreation residences, outfitting and guiding, events, marinas, and organizational camps. In addition to the desired conditions described above, the following desired conditions apply specifically to recreation special uses.

DC96. In response to identified need and consistent with suitable uses, recreation special use permits facilitate delivery of services that complement those provided by the Forest Service.

DC97. Existing special use permits are administered to standards set by the Forest Service

Interpretation and Education

Interpretation and education on the LTBMU are provided through interpretive programs, conservation education, and visitor services. The goal of the interpretation and education program of work is to educate visitors and the local community about public lands, natural and cultural resource management, recreation opportunities, and stewardship principles.

Providing a coordinated system of interpretive facilities and programs is an important way to help residents and visitors understand the connection between their behavior and the sustainability of Lake Tahoe's natural setting. Coordinated efforts include public-private partnerships, community outreach, and school programs.

DC98. *Residents and visitors are educated about the recreation opportunities, appropriate behavior, and unique natural and cultural environments of Lake Tahoe. (Pathway)*

DC99. *Interpretive activities and programs communicate key stewardship concepts relevant to the Lake Tahoe Basin.*

DC100. *Visitors are informed about education and recreation opportunities and the natural and cultural resources of the Lake Tahoe Basin.*

DC101. *The public understands and is aware of Forest Service projects and management actions as well as the importance of ecosystem services.*

1.2.3 Scenic Quality

The public has expressed a strong desire to maintain the scenic integrity of the Lake Tahoe Basin, while accommodating forest management activities on public lands. Key valued scenic attributes include overall scenic quality of the natural environment, lake views, and dark night sky views (minimization of lighting to allow for dominance of natural, nighttime light). Other public desires include flexibility in design development to ensure that desired community character is achieved, and prevention of further loss of critical views.

DC102. *Scenery viewed from Lake Tahoe and the Basin's major roadways, public recreation areas, trails and urban centers predominantly displays natural-appearing forest, meadows, mountains, and the shoreline of Lake Tahoe. Development, where visible, appears subordinate to and harmonious with the surrounding setting. (Pathway)*

DC103. *Views of the night sky from the naturally-appearing areas of the Basin are conducive to star gazing. Light emanating from the built environment is carefully controlled to ensure safety and security and does not encroach upon the regional dark sky. (Pathway)*

DC104. Management activities promote scenic stability and increase resistance to visual disruption resulting from disturbance events. Landscape alterations complement and blend with the characteristic

landscape of the Lake Tahoe Basin. Vegetation treatments produce natural-appearing diverse forest structure.

1.2.4 Cultural Resources

Historic resources within the Lake Tahoe Basin reflect America's history and diverse cultures. The documentation, preservation, and interpretation of historic resources are integral to the LTBMU's management. Historic artifacts, sites, and features provide clues used to reconstruct human history in the Lake Tahoe Basin.

Cultural resources are characteristic of the following aspects or periods of Lake Tahoe Basin history:

- Early prehistoric occupation from approximately 10,000 to 1,500 years ago;
- Washoe tribal occupation, which has been demonstrated to extend back at least 1,500 years;
- Basque sheepherders occupancy beginning in the mid-1800s, as evidenced by aspen carvings (arborglyphs);
- Campsites of Chinese laborers who dominated the cord-cutting and flume-tending industries that supported Comstock Lode silver mining;
- Comstock era (1859-1880) logging features such as flumes, transportation features, sawmills, habitation sites, log skids, etc.;
- Era of elite summer resorts (Tahoe Tallac, Tahoe Tavern, Brockway Hot Springs) in the late 1800s; era of lakeshore estates of the wealthy and elite built in the early twentieth century, which denote the beginning of Tahoe's tourism and recreation era; and
- Transportation features, such as the Pony Express Trail and the Lincoln Highway.

A program of research, protection, rehabilitation, and interpretation of cultural resources which are determined eligible for National Register of Historic Places or whose eligibility are undetermined is ongoing and effective. Known cultural resources are proactively managed to enhance their scientific, cultural, historical, and traditional values.

DC105. Significant cultural resources are in good to excellent physical condition. Sites are protected from physical damage and wear resulting from visitor use and natural deterioration.

Figure 7. Valhalla at the historic Heller Estate

1.2.5 Tribal Relations

For thousands of years, aboriginal peoples of the northern Sierra Mountains and the Great Basin traveled to the shores of Lake Tahoe in the spring to reaffirm tribal unity through shared cultural practices. The Lake Tahoe Basin is the heart of the Washoe Tribe's culture. Spiritual and cosmologic beliefs derived from tribal ancestral heritage in the Lake Tahoe Basin are inherently intertwined in the landscape and its natural features. Tribal cultural identity is closely tied to the presence of culturally significant resources and the indigenous practices that sustain them.

Access and use of culturally significant resources and places further supports the maintenance of social networks and related cultural and economic values. Economic opportunities afforded through government-to-government partnerships contribute to the economic stability and resiliency of the Washoe Tribe and its members. Additionally, approximately 24 acres of former NFS lands within the Lake Tahoe Basin is held in trust for the Washoe Tribe by the U.S. Department of the Interior. The Washoe Tribe of Nevada and California is the tribal government that works with the LTBMU on a government-to-government basis.

DC106. Native American communities are well informed and involved in the planning process.

DC107. The LTBMU fulfills its responsibilities to the Washoe Tribe of Nevada and California through a well-integrated, visible, government-to-government relationship. Consistent with LTBMU's management, the Tribe's goals of cultural revitalization, traditional practices, and reestablishment of a land base, as well as trade and commerce, are supported by the Forest Service. Tribal consultation enhances the capacity of the LTBMU to resolve issues and develop collaborative opportunities for partnership.

DC108. Economic opportunities afforded through government-to-government partnerships contribute to the economic stability and resiliency of the Washoe Tribe and its members.

1.2.6 Noise

By definition, noise is "unwanted sound." The LTBMU is involved with noise monitoring stemming from activities on National Forest lands and will continue to evaluate and address noise issues respective to meeting established laws and regulations and noise standards and thresholds.

DC109. *Single event noise levels are controlled to preserve the serenity of the community and neighborhood and provide abundant quiet recreation areas. (Pathway)*

DC110. *Noise levels are controlled to protect wildlife. (Pathway)*

1.2.7 Access and Travel Management

LTBMU roads and trails provide management, administrative, and recreation access to NFS lands in support of agency goals and objectives.

The goal of the Access and Travel Management Program is to provide and maintain economically, socially, and environmentally sustainable access. Economic sustainability balances maintenance needs with annual maintenance and reconstruction budgets and eliminates deferred maintenance. Social sustainability meets user needs by providing a spectrum of recreation opportunities, both summer and winter, and needed administrative access to NFS lands. Environmental sustainability is met through integrated BMPs, optimizing high capability locations, and designs that meet Forest Service guidelines.

DC111. *The LTBMU supports a multimodal transportation system that provides a viable alternative to the private automobile, while serving mobility needs. (Adapted from Pathway)*

DC112. The LTBMU transportation system is socioeconomically and environmentally sustainable, and is responsive to changing needs while providing access for administration, resource protection, and a variety of recreation opportunities.

DC113. The transportation system is interconnected to federal, state, county, and local public roads and trails through collaborative access and travel management planning.

Figure 8. Trail to the highest peak in the basin, Freel Peek, 10,881 feet

1.2.8 National Trails System

The National Trails System is a network of scenic, historic, and recreation trails created by the National Trails System Act of 1968. These nationally recognized trails provide for outdoor recreation needs, promote the enjoyment, appreciation, and preservation of open-air, outdoor areas and historic resources, and encourage public access and citizen involvement.

Trails that are part of the National Trails System fall into three categories: National Scenic Trails, National Historic Trails and National Recreation Trails. National Scenic Trails and National Historic Trails are designated by Congress, and National Recreation Trails are designated by the Secretary of Agriculture or the Secretary of the Interior.

The Pacific Crest Trail (National Scenic Trail), Tahoe Rim Trail, Pope-Baldwin Bicycle Trail, and the Hawley Grade Trail (National Recreation Trails) are part of the National Trails System. Each of these trails is described in the Management Area section of the Plan.

DC114. Use and management of national trails system trails meets the intended goals and preserves the values for which they were established, and retain a natural landscape character.

DC115. Management of the trail setting is consistent with or complements the existing ROS class. The trail setting is managed to provide a variety of opportunities.

1.2.9 Built Environment

For this Forest Plan, the built environment includes buildings and infrastructure that are federally owned and managed by the Forest Service as well as those managed under special use permit.

DC116. Federally owned or managed facilities meet the needs of the agency and the public.

DC117. The appearance of existing and new facilities is consistent with the visual and cultural characteristics of the Lake Tahoe Basin landscape.

DC118. Deferred maintenance of Forest Service facilities is eliminated.

DC119. Federally owned or managed facilities meet universal accessibility standards.

1.2.10 Minerals

Mineral resources are not abundant on the LTBMU. Although there were a few actively worked mines in the past, there are none in the basin at present, and the most recent operating plan was submitted prior to publication of the 1988 Forest Plan.

DC120. Mining and mineral leasing laws and regulations are administered in a manner which meets environmental guidelines and regulations for the Lake Tahoe Basin.

1.2.11 Lands

The lands program facilitates the acquisition, exchange, and donation of NFS lands, as well as surveying and marking property boundaries and resolving trespass violations.

DC121. Partnerships are developed and maintained with other governments, agencies, and organizations to facilitate land adjustment (e.g., exchange, purchase, and donation) that will reduce fragmentation of public lands, increase public access to NFS lands and Lake Tahoe shoreline, and protect important natural and heritage resources.

DC122. Public land ownership boundaries are clearly marked on the ground, and land ownership information is easily accessible to the public.

1.2.12 Lands Special Uses

Permitted uses on NFS lands include rights of way for power lines, sewer lines and other utilities, cell phone and radio towers, water tanks and other infrastructure that serves local communities. Special use permits are also issued for various activities, as described below.

DC123. Community needs are met for utility and communication services (e.g., telephone, radio, commercial broadcasting, and two-way radio for public safety needs for local governments) as well as for transportation and access, when compatible with other desired conditions.

DC124. Access is available to NFS lands for research and monitoring that is compatible with other resource values, when disturbance is temporary.

DC125. Existing special use permits are administered to standards set by the Forest.

1.2.13 Range

Range management includes the authorized use and management of NFS lands for the purpose of livestock production and utilization of forage resources by livestock.

DC126. Management of range resources sustains or enhances desired conditions for other resources, including, but not limited to soil and water quality, vegetation, wildlife habitat, and recreation.

DC127. Utilization of forage resources is compatible with maintenance or enhancement of desired conditions for other resources, including, but not limited to soil and water quality, vegetation, wildlife habitat, and recreation.

Santini-Burton Acquired Lands/Urban Forest Parcels

Urban Forest Parcels consist mainly of lands that have been acquired by purchase or donation, under authority of Public Law 96-586 (Santini-Burton Act) of December 23, 1980. The acquisition of environmentally sensitive lands authorized by this act is often referred to as the urban lot program.

Many of the acquisitions are small lots (less than 1 acre) in urban subdivisions. The acquisition of urban lots serves three purposes:

1) Preventing residential development of environmentally sensitive lands;

2) Maintaining important areas within a watershed in a natural, undisturbed condition, allowing snowmelt water to infiltrate the soil surface and remove suspended sediments; and

3) Restoring lands in poor hydrologic condition.

Forested or other vegetated parcels of NFS lands within developed areas (commonly referred to as urban lots, urban intermix lands, or urban forest parcels) contribute to the maintenance of ecological integrity in the Lake Tahoe Basin. Protection and restoration of these lands directly influence attainment of Basin-wide desired conditions. Dispersed recreation (e.g. trails) and erosion control improvements are allowed on these lands.

DC128. Urban Forest Parcels are undeveloped, conserve natural forest conditions (open space) within the urban setting, support natural watershed function, and pose a low wildfire risk to communities.

DC129. Vegetation composition and structure is similar to general conservation areas.

DC130. Personal private use (encroachments) and other unauthorized uses of urban forest parcels do not occur.

1.2.14 Wilderness Areas

Wilderness Areas are designated by Congress for inclusion in the National Wilderness Preservation System.

DC131. Wilderness provides opportunities for solitude, and a primitive and unconfined type of recreation.

2 Part 2: Strategies

This part of the Forest Plan sets forth strategies and objectives for achieving or maintaining the desired conditions for the LTBMU. Program strategies embody the general approach that the responsible official will use to achieve desired conditions for each program area. Program strategies convey a sense of priority and a focus for objectives.

Objectives are concise, measurable, and time-specific statement of a desired rate of progress toward a desired condition or conditions. Objectives are consistent with the identified strategies, and are a means of measuring progress toward achieving or maintaining desired conditions.

2.1 Ecological Sustainability

2.1.1 Physical Resources Program Strategy

The close relationships among physical resources make it difficult to separate program strategies and objectives by resource. Soil and air quality objectives also support water quality. Preventing erosion not only maintains the nutrient-rich topsoil needed for plant growth, but also prevents sediment deposition in water bodies. Maintaining soil porosity is important for plant growth, but reduced porosity can also indirectly affect water quality – when the amount of water soil can accept is decreased, it runs off on the surface, increasing the potential for erosion and subsequent sedimentation. When pollutants in the air are deposited in water, water quality is compromised.

Air Quality

- Utilize smoke dispersion models for prescribed fire projects greater than 250 acres to ensure smoke impacts are minimized.
- 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.
- 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.
- Consider the Regional Haze State Implementation Plan targets for the Class 1 Airshed over Desolation Wilderness during project planning.

Water Quality and Soil Quality

- Implement PSW Region Best Management Practices (BMPs) and National Core BMPs to control nonpoint source pollution related to all management actions with the potential to affect water quality on NFS lands, and to protect, minimize, or mitigate adverse effects to soil, water quality, and riparian resources.

- 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.

- Participate in achieving the program goals for the Integrated Water Quality Management Strategy for achievement of the Lake Tahoe TMDL.

- Comply with the Tahoe Basin Upland TMDL by participating in the prescribed tracking and reporting program.

- 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.

- 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.

- Reduce the watershed impacts resulting from land coverage. Minimize the development of new hard and soft coverage from forest management activities. Seek opportunities to reduce coverage through site design when retrofitting, improving, or rebuilding at existing developed sites.

- 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.

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.

- 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.

- Manage dams to ensure adequate flows for downstream uses, including supporting aquatic habitats. Consider opportunities for removal of dams.

- Utilize a geologic and geotechnical analysis 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.

- Use plants which do not require long-term irrigation in re-vegetation and landscaping projects in order to conserve water.

Natural Hazards

- Evaluate natural hazards before developing or permitting new uses or facilities on NFS lands.

Watershed Restoration

- Implement restoration projects in high priority watersheds identified by LRWQCB's total maximum daily load (TMDL) Model for Lake Tahoe, to promote self-sustaining, dynamically stable stream systems, channel stability, and hydrologic function.
- Implement projects identified through National USFS Watershed Condition Assessment Process.
- 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.
- 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.
- 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.
- 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.
- Identify and implement restoration actions to maintain, restore or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species.
- 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.

2.1.2 Physical Resources Objectives

Obj1. 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 Evaluation Program and/or the USFS National Best Management Practices Evaluation Program.

Obj2. Maintain an up-to-date inventory of water rights and uses on NFS lands, and meet state requirements for maintaining water rights.

Obj3. Implement actions to restore geomorphic and habitat function to Reach 5 of the Upper Truckee River and Angora Creek within the Angora fire area by approximately 2016.

For Objectives related to facilities BMP retrofits, see Built Environment section.

2.1.3 Climate Change Strategy

Strategies for incorporating climate change considerations into management include:

- Collaborate on local and regional vulnerability assessments. Participate in a Regional vulnerability assessment for the Sierra Nevada.
- Incorporate vulnerability assessments related to climate change into management on the LTBMU as information is synthesized. Consider and prioritize adaptation activities recommended for vulnerable resources based on funding.
- Consider restoration of species and/or habitat identified as vulnerable to climate change during project planning.
- Consider restoration of individual species during habitat restoration, especially for vulnerable resources.
- Minimize management impacts to species that are vulnerable to climate change. Reduce stress (e.g., human activities, invasive species) related to management in order to reduce the additive effects of non-climate stress.
- Incorporate adaptation actions into management to increase resiliency and adaptive capacity of vulnerable resources.

2.1.4 Forest Vegetation, Fuels, and Fire Management Program Strategy

By improving, restoring, and maintaining forest health, a more resilient balance of forest stand densities, structure, and species composition will emerge across the landscape, and multiple objectives will be met, including developing and maintaining the habitat needs of wildlife species and enhancing scenic attributes.

The forest health and vegetation management strategy uses differences between current conditions and historic conditions (e.g., Table 2) as an index to measure the departure from, and progress towards desired conditions. Historic reference conditions are based on modeling conducted by Safford and Schmidt (2007). Note that these reference conditions do not necessarily represent targets, but they represent forest structures that are characteristic of pre-Comstock forests in the Lake Tahoe Basin, which were highly disturbance-adapted and disturbance-resilient. When the amount of forest area and vegetation type more closely approximates historical forest structures, forests in the Lake Tahoe Basin will be more resilient to fire, bark beetle-caused tree mortality, drought, and future changes in climate regimes. As new data become available, updated reference conditions may be applied when and where appropriate.

The strategies for the Forest Vegetation and Fuels program are:

- 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.
- Implement 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.

- Establish measures to prevent the establishment and spread of invasive plants during project implementation and post-disturbance rehabilitation activities.
- Consider all available technologies and management tools and practices to meet project objectives.
- 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.
- 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.
- Where feasible, plant blister rust-resistant western white and whitebark pine seedlings to sustain their density and basal area.
- Reforestation strategies incorporate species mix, stocking density, or use of genetically superior (e.g., five-needle pines that are major gene resistant or slow resistant to white pine blister rust) or pest resistant planting stock, to restore landscapes and improve adaptability under climate change.
- Re-vegetation following a disturbance event (e.g., fire) or management activity (e.g., creation of opening) 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.
- Forest vegetation treatments, including aspen stand enhancements and riparian area restorations, achieve High Minimum Scenic Stability (MSS) and enhance desired scenic attributes.
- 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.
- Planned and unplanned ignitions are used where possible to accomplish forest health, wildlife habitat, or other ecosystem restoration objectives.
- The majority of fuels reduction treatment efforts are concentrated in WUIs until initial WUI treatments are completed. WUI maintenance treatments occur as needed.
- Consistent with preserving the recreation resource, mitigate or remove trees, tree limbs, or downed woody debris identified as a hazard at developed recreation sites.

- 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.

- Where reforested areas (generally seedlings and saplings) 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.

- 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.

- 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.

- Consider aspen restoration or clone stimulation for each project planning area when aspen occur within vegetation management projects.

- Perpetuate and promote existing late seral stages in each project area and throughout the broader landscape, with primary emphasis on protecting/enhancing late seral dependent wildlife habitat.

- Consider removal for utilization, woody biomass that otherwise would be burned on site.

- Retain vegetation screening in scenic corridors and developed recreation sites, when not in conflict with hazardous fuels objectives.

Figure 9. LTBMU Tallac Crew cutting fire line

Strategies for the Fire Management program are to:

- Maintain fire suppression capability and preparedness at a level that is appropriate to protect lives, communities, and resources. Protection of human life (firefighter and public safety) is the most important objective during a fire.
- Immediately suppress all human-caused ignitions, regardless of location.
- Base fire management strategies and tactics on firefighter and public health and safety, fire cause, current and predicted weather, current and potential fire behavior, fire effects, values to be protected, post-fire tradeoffs, resource availability, cumulative effects of the fire, and cost effectiveness. Strategy and tactics may vary around a fire's perimeter.
- Support attainment of desired conditions for fuels reduction, wildlife habitat, forest health, and ecosystem restoration contained in this Forest Plan through appropriate response to unplanned ignitions. By taking into account the location of ignition, time of year, current and expected weather and burning conditions, fire managers apply the best strategy to mitigate risks to the public and firefighters, meet protection priorities, and meet cultural/natural resource management objectives defined in this Forest Plan.
- Respond to mutual threat incidents when requested under a cooperative agreement. Forest Service employees limit fire suppression actions to exterior structure protection measures as described in FSM 5137.
- Consider use of all types of firefighting equipment in fire emergencies when there is threat to human life and property, or where resource value saved is clearly greater than the damage done through the use of such equipment. In other than these conditions, disturbance to soils, stream environment zones, and visual quality are given increased priority. Cost effectiveness of equipment used is also considered during tactical decision-making.
- Strive to keep fire suppression costs near national historic averages for fires with similar characteristics in comparable areas.
- Continue a fire prevention program that reduces the number of human-caused fires through an aggressive program of public contact, education, outreach, and enforcement.
- Work in cooperation with public agencies, local fire-safe councils, and private citizens to exchange information and assistance throughout all local jurisdictions.
- Use fire retardant according to national and regional policy.

2.1.5 Forest Vegetation and Fuels Management Objectives

The following vegetation management objectives are stepping stones of expected achievement that will move the LTBMU forests toward the desired conditions. To accomplish these objectives two general treatments will guide restoration of forest structure, function and composition in the major forest types:

1) Thinning to move overabundance of closed mid-seral to open mid-seral or accelerate movement from one seral stage to the next.

2) Creating openings that emphasize group selections with reserves that move open or closed canopy mid-seral to early-seral.

The amounts of acres by treatment and forest type represent the first small steps in a long-term process aimed at achieving forest restoration goals. Given the focus of current program of work in the WUI, objectives related to these treatments will generally occur in the first 10 years of plan implementation and treatments related to restoring forest type structure, composition, and resiliency will occur throughout plan implementation. Although the approximate accomplishments are annual, we are assuming a best case scenario, which might not occur for a variety of reasons including budget, mill capacity, policy, or other factors.

Obj4. Reduce surface, ladder and canopy fuels through thinning and fuel reduction treatments on 2,000 acres per year in the WUI.

Obj5. Prescribed burning of surface fuels in the WUI occur on 1,800 acres per year when possible.

The following objectives will generally occur over the latter 10 years of plan implementation. Specific amounts of acres to be treated by forest type are approximate and represent an optimistic annual level of accomplishment.

White fir – Mixed conifer

Obj6. Create openings to shift approximately 50 acres of mid-seral white fir – mixed conifer type to early-seral each year between 2019 and 2029. Utilize opportunities for treatment after disturbance events.

Obj7. In stands historically dominated by pines, convert white fir-mixed conifer type in the early or mid-seral stages to Jeffrey pine by approximately 50 acres per year between 2019 and 2029. Retain pines during conversion treatments.

Obj8. Thin approximately 200 acres of white fir-mixed conifer each year between 2019 and 2029 to improve resiliency and reduce susceptibility to insects, disease, and drought.

Jeffrey pine

Obj9. Create approximately 40 acres of openings in the mid-seral stages to shift stands to early-seral Jeffrey pine each year between 2019 and 2029, 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.

Obj10. Thin approximately 250 acres of Jeffrey pine each year between 2019 and 2029 to improve resiliency and reduce susceptibility to insects, disease, and drought.

Red fir

Obj11. Create approximately 10 acres of openings in the mid-seral stages to shift stands to early-seral red fir type each year between 2019 and 2029. Utilize opportunities for treatment after disturbance events.

Obj12. Thin approximately 50 acres of red fir each year between 2019 and 2029 to improve resiliency and reduce susceptibility to insects, disease, and drought

Aspen

Obj13. Restore or stimulate regeneration of at least 25 acres of aspen per year.

2.1.6 Biological Resources Program Strategy

Conservation of Habitat and Species Diversity Strategies

- Develop a LTBMU biological (aquatic, botanical, and terrestrial) resources conservation strategy, including a five year action plan.
- Participate in Lake Tahoe Basin-wide and Region-wide recovery actions for Federal Threatened and Endangered species. Develop, in partnership with other Lake Tahoe Basin entities, a basin-wide management strategy that utilizes well-supported indicators and reference conditions to assess the biological integrity and status and trend of a number of threatened and endangered species, Region 5 sensitive species, TRPA special interest species, and priority invasive species.
- Management actions and programs assist in the identification and recovery of threatened, endangered, proposed and candidate species to enhance self-sustaining, well distributed, and well-connected populations and habitats and avoid actions which may cause a species to become threatened or endangered.
- Identify and map areas of high biological diversity, where multiple biological resources occur in the same habitat (e.g., a sensitive fish, TRPA special interest plant, and target wildlife species occur all within 200 meters of each other).
- Collaborate with partners to establish priority locations for maintaining and restoring habitat connectivity and to expand habitat of native species.
- Consider all levels of food web (trophic level) biodiversity (e.g., predator/prey) during project planning and design to help mitigate climate change exposure to individual species and communities (e.g., from changes in phenology and habitat shifts).
- Consider habitat connectivity for species that may be impacted due to climate change by removing or modifying physical impediments to movements.

Aquatic Habitats and Species

- Maintain, enhance, or restore the physical and biological characteristics of aquatic ecosystems.
- Minimize human disturbance that would degrade wetland function and processes.

- Provide for hydrologic and geomorphic processes, such as allowing flood events and associated bedload to pass downstream while providing for maintenance of stream pattern, profile and dimension.

- Ensure that management activities, including fuels reduction actions, within SEZs and SRAs enhance or maintain physical and biological characteristics associated with aquatic- and riparian-dependent species.

- Preserve, restore, or enhance special aquatic features, such as meadows, lakes, ponds, bogs, fens, and wetlands, to provide the ecological conditions and processes needed to recover or enhance the viability of species that rely on these areas.

- Identify and implement restoration actions to maintain, restore or enhance water quality and maintain, restore, or enhance habitat for riparian and aquatic species.

- Protect rare aquatic ecological habitats such as Osgood Swamp, Hell Hole, and Pope Marsh. Enhance these habitats through restoration activities such as the removal of upland vegetation (i.e., conifers, xeric species) and restoring hydrologic function.

- Seek opportunities to remove physical impediments to the movement of aquatic species, or modify physical impediments to allow migration.

- Maintain and restore connectivity of aquatic habitats where barriers to aquatic organism passage have been identified or where natural surface and subsurface water flows are intercepted, diverted, or disrupted in highest priority watersheds.

- Employ natural channel design methods/techniques to restore aquatic habitat, and facilitate upstream or downstream passage for aquatic-dependent species.

- Manage stream reaches and associated habitat to support all life stages of native assemblages by providing aquatic organism passage for all life stages, stream conditions that provide spawning and rearing habitat such as appropriate pool/riffle ratio, substrate and large woody debris, except where not appropriate (e.g., some Urban Forest Parcels).

- Restore aquatic habitat for native non-game fishes in streams that have been identified in the LTBMU five year restoration plan by removing stressors including but not limited to removal of invasive species such as warm-water fish.

- Participate with partner agencies to ensure native nongame fish status is current and accurate. Target to resurvey fish community sampling reaches at a minimum of every 10 years.

- Work collaboratively with partners to assess native non-game fish populations and implement habitat restoration strategies, such as warm-water fish removal.

- Support active restoration for native fishes where field data and other State, Federal, and other local agencies have determined that such species are at high risk of local extirpation.

- Maintain, restore, and/or enhance the ecological function and condition of shorelines, streams, lakes, wetlands (e.g., marshes, fens, springs, seeps, and lagoons), and/or meadows (wet and dry) in unstable or poorly functioning watersheds identified in the Lake Tahoe's Environmental Improvement Program or otherwise specified in species recovery plans.

- Promote actions that increase meadow wetness and diversity of native wetland species (i.e., obligate, facultative-wet).

- In certain places in meadows, prescribed fire may be used to favor increased growth of certain species important to cultural practices, such as basket weaving.

- Use historical sedimentation regimes as a guide for ecosystem resiliency and/or vulnerability.

- Project activities should maintain or enhance groundwater connectivity in marshes and lagoons to maintain linkage with fluctuations in lake levels.

- Management actions should consider retaining barrier beach and lagoon formations and processes.

- Utilize prescribed fire in aquatic ecosystems where the use of fire is needed to improve habitat or the long-term function of these ecosystems. Ensure that fire intensity and severity (i.e., residence time) are consistent with the natural fire regime for the ecotype.

- Consider the potential for changed flow regimes as a result of climate change during the development of the aquatic organism passage management and monitoring plan.

Terrestrial Habitats and Species

- Maintain, enhance, and/or restore terrestrial habitats to increase the diversity, abundance, and distribution of species and biological communities.

- Where compatible with other resource objectives for the area, increase total Salix (willow) cover during project implementation where habitat conditions will support Salix communities.

- Design management activities to maintain suitable habitat structure and function following implementation.

- Manage snags and coarse woody debris for wildlife habitat as part of forest health or fuels reduction treatments as well as post-disturbance restoration.

- Seek opportunities to develop and restore species migration corridors for terrestrial species.

- Maintain or restore habitat connectivity where appropriate to improve adaptive capacity. Collaborate with partners to establish priority locations for maintaining and restoring habitat connectivity.

- Maintain, enhance, or restore the physical and biological attributes of habitats where rare plants occur.

- Protect rare terrestrial ecological sites including, but not limited to Freel Peak, through restoration activities including, trail maintenance and signage.
- Management activities maintain, enhance and or restore rocky habitats that support healthy and sustainable populations of Tahoe draba (*Draba asterophora* var. *asterophora*), Cup Lake draba (*Draba asterophora* var. *macrocarpa*), and long-petaled lewisia (*Lewisia longipetala*).
- Identify and, as needed, protect refuge areas for rare plants with habitat that is likely to reduce or change due to climate change (e.g., subalpine & alpine habitat).
- Promote the use of native plant materials for the revegetation, rehabilitation, and restoration of ecosystems. Give primary consideration to genetically appropriate native plant materials.
- Anticipate plant material needs for emergency and planned revegetation. Develop plant lists, planting guidelines, plant material sources, seed caches, and seed storage facilities.
- Consider the enhancement of aquatic and terrestrial wildlife habitat (e.g., creation of snags, mosaic of habitat types) in forest management and prescribed fire projects.
- Retain connected patches of complex early seral habitat (e.g., burned forest habitat) with minimal management actions where retention would not conflict with public health and safety.

Invasive Species Management Strategies (Aquatic and Terrestrial) Strategies

- Clean vehicles and equipment to prevent the accidental spread of aquatic and terrestrial invasive species
- Use an Early Detection Rapid Response (EDRR) approach to survey susceptible aquatic and terrestrial areas, quickly detect invasive species infestations, and subsequently implement immediate and specific actions to control those infestations before they become established and/or spread.
- Monitor management activities for potential spread or establishment of invasive species in aquatic and terrestrial areas of NFS lands.
- Coordinate invasive species management actions (such as prevention, education, EDRR, up to date inventories, treatment) with tribes and other federal, state, local and private groups.
- Support invasive species research.
- Adopt an integrated invasive species management approach that evaluates all available control methods, including biological, cultural, mechanical/physical, and chemical techniques, as well as addresses potential adverse effects to native species, human health, ecosystem processes, or other resources on NFS lands.

Aquatic Invasive Strategies

- Implement aquatic invasive species control and/or eradication measures where there is high potential for adverse effects to native species, human health, ecosystem processes, or resources on NFS lands.

- Use prevention measures, such as screening, boat inspection, decontamination, and weed washing stations to reduce the spread or establishment of invasive species.

- Cooperate with the multi-agency Lake Tahoe Region Aquatic Invasive Species Program.

- Provide the public information about local Aquatic Invasive Species policies, where watercraft can be inspected and decontaminated prior to entering water bodies of the Lake Tahoe basin, and education regarding principles of cleaning, draining and drying for all watercraft at developed recreation facilities.

- Reinforce consistent AIS prevention and outreach message at appropriate Forest Service recreation facilities.

- Control existing or new populations of Eurasian water milfoil, curly leaf pondweed, invasive warm-water fish, bullfrogs, Asian clam or other newly discovered populations of aquatic invasive species.

- Work with current partners (CDFG, USFWS, UC Berkeley, and Sierra Nevada Aquatic Research Laboratory) and others to document Bd fungus occurrence levels in both existing populations and historic habitats of Sierra Nevada yellow-legged frog.

Terrestrial Invasive Strategies

- Cooperate with the multi-agency Lake Tahoe Basin Weed Coordinating Group Program. Prioritize invasive plant species and infestations, placing highest priority on new species and new, small infestations; include risk to NFS resources and feasibility of control among prioritization factors. Reassess priorities based on new information.

- Focus treatment efforts on high priority species and infestations, while developing management goals for lower priority species and infestations.

- Screen newly discovered terrestrial invasive plants species for management prioritization within two years of confirmed introduction on LTBMU.

- Monitor invasive plant management projects to determine success and to evaluate the need for follow-up treatments or different control methods. Monitor known infestations, as appropriate, to determine changes in density and rate of spread.

- Use prevention measures, such as materials inspection, equipment cleaning, and avoidance of known infested areas, to reduce the introduction and spread on invasive plants.

- Assess the amount of ground and vegetation disturbance in habitats that are highly vulnerable to invasive plant invasion and pursue active revegetation as needed.

- In partnership with the Pacific Southwest Research Station's Institute of Forest Genetics Blister Rust Project, identify and collect seed from 5-needle pine trees that exhibit rust resistance to white pine blister rust (target species are sugar pine, western white pine, and whitebark pine).

- Identify and assess terrestrial wildlife invasive species during project planning. During planned restoration activities, consider terrestrial invasive wildlife.

Protected Activity Centers and Home Range Core Areas (PACs and HRCAs) Strategies

- Collaborate with partners to establish priority locations for maintaining and restoring spotted owl habitat connectivity.

Special Status Species Habitat Area Strategies

In this Plan, the term "Conservation Strategy" is used only to describe broad scale strategies (usually at least Basin-wide) intended to assist larger scale efforts as well as management on the LTBMU. Such strategies are usually developed in conjunction with other agencies and groups (e.g., Tahoe Yellow Cress Conservation Strategy).

- Maintain or enhance habitat connectivity to achieve recovery goals.

Lahontan Cutthroat Trout

- Work collaboratively with the Tahoe Basin Recovery Implementation Team for LCT to implement the short-term recovery action plan.

Sierra Nevada yellow-legged frog

- Work collaboratively with partners to identify and implement additional habitat restoration efforts that expand the range of SNYLF within historic habitat throughout the Basin.

Tahoe yellow cress

- Work collaboratively with partners to implement a public-private Tahoe yellow cress adaptive framework; continued monitoring of TYC occurrences; encouragement of TYC stewardship on private lands; and site-specific conservation and restoration actions.

- Continue TYC public outreach and education efforts.

- Balance conservation of known TYC occurrences and high quality habitat with development and use of recreational facilities and access.

- Revise site-specific TYC management plans to allow for adaptive management of known occurrences and high quality habitat that addresses both the annual shifts in habitat and threat level associated with lake level changes, and the provision of adequate beach access for recreational users.

Whitebark pine

- Work collaboratively with partners to identify and implement efforts to conserve and, as necessary, restore whitebark pine stands.
- Assess management activities for the risk of establishment or spread of white pine blister rust (WPBR) among whitebark pine stands.
- Conserve whitebark pine genetic diversity by collecting and archiving seeds and growing and planting genetically diverse seedlings. Identify and collect seed from trees that exhibit some level of WPBR resistance. Where possible, protect valuable rust-resistant, seed-producing trees from future mortality caused by disturbance, climate change, and competition.
- Proactively manage whitebark pine stands of high conservation or restoration priority to improve resilience after disturbance and resistance to pathogens. Actions may include: precautions to limit the spread of blister rust; use of fire or silvicultural treatments; or reforestation with WPBR-resistant seedlings.
- Develop a unit-wide whitebark pine conservation strategy.
- Identify whitebark pine stands of conservation and, as necessary, restoration priority. Develop spatially explicit species habitat areas.
- Develop and maintain spatial data of known whitebark pine stands and potential habitat.

2.1.7 Biological Resources Objectives

Conservation of Habitat and Species Diversity Objectives

Obj14. 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) by 2029.

Obj15. Restore stream segments with degraded habitat in a minimum of 2 streams using natural channel design methods/techniques to create 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) by 2029. This will provide important aquatic habitat needed to support all life history processes.

Obj16. By 2019, identify degraded aquatic habitat that historically supported native aquatic species. Restore a minimum of two sites to support self-sustaining aquatic populations by 2029.

Obj17. By 2029, maintain or increase vegetation cover in meadows where LTBMU data shows that cover is insufficient.

Obj18. 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, by 2029.

Obj19. Restore a minimum of three willow flycatcher nesting habitats in historic and currently occupied habitats by 2029.

Obj20. Complete the Aquatic Organism Passage (AOP) action plan to identify management opportunities for improving aquatic connectivity by 2016.

Obj21. Improve 5 high priority AOP barriers by 2029, based on AOP action plan.

Obj22. Develop a conservation assessment for Tahoe and Cup Lake draba (*Draba asterophora* var. *asterophora*, *D.a.* var. *macrocarpa*) by 2019.

Invasive Species and Habitat (Aquatic and Terrestrial) Objectives

Obj23. Screen hand-carried/non-motorized watercraft 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), by 2016.

Special Status Species Habitat Area Objectives

Lahontan Cutthroat Trout

Obj24. Establish at least one self-sustaining LCT 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 2029.

Obj25. Secure the existing Upper Truckee River (Meiss Meadows) LCT sub-population (four miles of stream habitat) through maintenance removal of brook trout within 2 years.

Obj26. Reestablish LCT 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 Wildlife by 2029.

Obj27. Identify five recovery locations. Initiate recovery of two subpopulations of LCT within fluvial and/or lacustrine ecosystems, as identified by the Tahoe Basin LCT Recovery Implementation team by 2029.

Sierra Nevada yellow-legged frog

Obj28. Collaborate with California Department of Fish and Wildlife, US Fish and Wildlife Service, and Eldorado National Forest to identify and restore additional suitable habitat for SNYLF as deemed appropriate. Complete restoration of seven high alpine lakes (composed of habitat areas that would support four sub-populations) adjacent to current SNYLF populations in the Desolation wilderness by removing introduced trout species by 2029.

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 SNYLF sub-population, by 2029.

Obj30. By 2029, maintain or expand fishless high elevation aquatic habitats near existing or historic SNYLF sub-populations where such habitats are determined to support SNYLF production and development and these actions will increase localized range of SNYLF.

2.2 Social and Economic Sustainability

2.2.1 Partnership and Volunteers Strategies

The LTBMU continues to emphasize the use of partnerships and volunteers to attain our desired conditions.

- Provide for stewardship opportunities by partnering with schools, profit, and non-profit organizations, public, and other agencies.
- Through joint participation, cooperative agreements, volunteer agreements, and grant funding, encourage partners and volunteer stewards to achieve mutual resource management and stewardship goals.
- Using an all-lands approach, collaborate with neighboring communities, partner organizations, state and local agencies, tribes, and adjacent Forest Service units to achieve ecological, economic, and social sustainability within the Lake Tahoe Basin and in surrounding areas.

2.2.2 Recreation Program Strategy

The LTBMU recreation program strategy provides for a range of recreation opportunities while emphasizing shared use and sustainability objectives. The recreation program considers changing trends and user needs while maintaining the natural setting. All developed recreation sites continue to be well maintained, sustainable, and compatible with management goals.

Recreation Expansion Strategies

The LTBMU recreation program will work towards the sustainable integration of environmental, social, and economic conditions. Controlled expansion may be needed to provide future recreation opportunities. The following strategies and definitions provide guidance for potential future expansion.

- Consider changing user demands, trends, and preferences, including modifying existing sites and infrastructure to improve natural resource conditions and recreation settings.
- Undertake recreation expansion to address socioeconomic challenges, improve management of existing developed sites, and mitigate adverse effects to natural resources resulting from recreation activities.

Recreation expansion is an increase of infrastructure in support of additional recreation opportunities over the Lake Tahoe Basin Management Unit landscape, and is defined below.

1. The following management activities are considered recreation expansion:
    a. Additional general forest acreage under new special use permit for recreation development.
    b. Adjusting existing permit boundary to accommodate new recreation development.
    c. Addition of new infrastructure (overnight accommodation units and day use parking spaces) to accommodate recreation activities.
2. Examples where recreation expansion would be considered include:
    a. Expansion of ski area facilities outside existing operational footprint to accommodate summer uses as ski seasons become more variable thereby making the ski resort and neighboring communities more economically robust.
    b. Construction of new campsites at existing campgrounds to better meet existing user demand during peak summer use periods.
    c. Construction of new day use facilities to manage and consolidate existing uses at popular undeveloped recreation locations to mitigate adverse effects to natural resources resulting from unmanaged recreation.
3. A variety of ongoing management activities are not considered recreation expansion and instead allow for adaptive management of LTBMU recreation program in support of sustainability objectives. Examples of management activities not considered 'recreation expansion' include:
    a. Reconditioning or retrofitting existing infrastructure provided that the replacement is in substantial conformance with original structure.
    b. Providing environmental protections such as BMPs and paving existing parking.
    c. Providing updates in existing infrastructure design for people with disabilities.
    d. Adjustments of existing permit boundaries for environmental protection and administrative correction or clarifications (e.g., consolidation of special use permit boundaries to clarify responsibility for litter abatement). This would not change existing—or provide for additional—recreation development and activities.
    e. New land acquisitions with existing facilities.
    f. Maintaining existing inventory of overnight accommodation, parking spaces, and permit acreage Basin-wide (e.g., removal of a campsite for ecosystem restoration purposes at one location and relocation of that campsite at another more suitable (less environmentally sensitive) location).
    g. Conversion of existing roadside parking to managed parking with no change in capacity.
    h. Grooming activities on existing roads and trails (OSV and Cross-country skiing activities).
    i. Addition of acres under special use permit for short-term duration recreation activities and events that occur at existing developments.

Recreation Opportunities Strategies

- As recreation trends and user preferences change, recreation facilities and opportunities are adapted to provide intended user experiences while being compatible with management goals.
- Use planning inventory and monitoring tools to identify changing desired recreation activities, settings, and opportunities.
- Periodically review and update the forest camping order based on public health and safety, fire prevention and resource protection goals, and management capabilities.
- Recognizing and accepting that some conflict between user groups is natural, the LTBMU will manage user interactions by using a variety of methods, including educating visitors on shared and multiple use concepts (e.g., signage, information kiosk, interpretive programs), managing visitor expectations, and recreation setting design.
- Address hazards at recreation sites to provide for public safety.
- NFS lands on the LTBMU will provide a setting for local communities and visitors to pursue healthy lifestyle objectives and a range of outdoor pursuits year-round.
- Perform Title VI reviews of permit holders and review NVUM survey results regularly to ensure recreation needs of a diverse visitor base are being addressed.
- Maintain an interconnected, seamless approach to recreation planning in the Lake Tahoe Basin by applying an all-lands approach and collaborating with neighboring communities, partner organizations, state and local agencies, and adjacent Forest Service units.

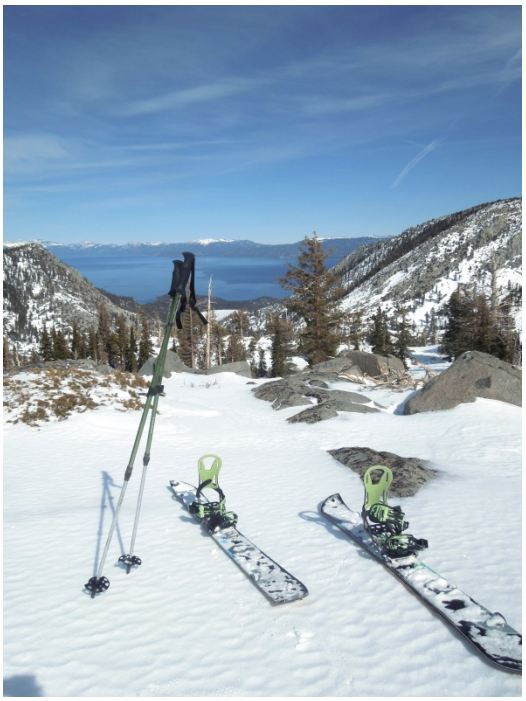


Figure 10. Backcountry skiing, Lake Tahoe Basin Management Unit

Public Access Strategies

- Manage recreation activities to avoid or mitigate environmental degradation in sensitive environments to ensure continued access.
- Coordinate management activities and projects to minimize impacts to public access, and recreational experience.
- Consider developed site design capacity and management capabilities when evaluating access.
- Improve circulation and reduce congestion through capital investments.
- Provide programs and facilities that meet universal accessibility standards.

Recreation Development Strategies

- Reduce deferred maintenance at developed recreation sites.
- Management of developed recreation sites will consider deferred maintenance and modification and/or conversion of existing facilities to achieve ecological, social, and economic sustainability of the recreation setting prior to constructing new facilities.
- Adjust recreation sites or permit boundaries to meet user needs and sustainability goals.
- Recreation infrastructure will incorporate innovative and sustainable design concepts.
- Modify or relocate federally-owned facilities and public access sites that are impeding groundwater connectivity, lagoon function, or barrier beach formation while maintaining public access and recreation opportunity.
- Developed recreation sites are made more sustainable through design and construction principles in order to increase a site's ability to withstand use without facility or natural resource deterioration.
- Coordinate with partner agencies, permit holders, and other appropriate organizations to educate visitors and residents on bear conflict issues in the LTBMU, and reduce the number of human-bear conflicts.

2.2.3 Recreation Program Objective

Obj31. Evaluate visitor satisfaction and user trends by completing the National Visitor Use Monitoring Survey every 5 years.

2.2.4 Recreation Special Uses Program Strategy

- Permitted activities increase opportunities for recreation use while protecting the natural setting and resources. Recreation special use permits effectively leverage LTBMU's ability to provide recreation services.
- Evaluate existing recreation special use permits for deficiencies before considering new proposals.

- Administer special use permits to Forest Service standards by:
    - Eliminating the backlog of expired authorizations;
    - Implementing appropriate monitoring and oversight of current authorizations; and
    - Completing appropriate level of environmental documentation.
- Issue new long-term recreation special use permits that expand opportunities in response to identified needs and management goals.
- Consider long-term plans when expanding or modifying ski facilities and activities.
- Consider summer uses at existing ski resorts consistent with national policy.

2.2.5 Interpretation and Education Program Strategy

- Periodically review Interpretation and Education programs and information for consistency with national objectives and regional and local issues.
- Communicate range of recreation opportunities and settings while emphasizing shared and multiple use objectives to the public. Encourage public responsibility for natural and cultural resource protection and recreation etiquette.
- Provide visitor information services at major entry points and areas of concentrated use.
- Provide and update interpretive signage, wayside exhibits, publications, and programs using a variety of media and methods.
- Educate the local community about the importance of ecosystem services and stewardship principles using teacher trainings, school programs, and community events.
- Educate the local community about principles and methods for sustaining forests in a changing climate.
- Inform the public about Forest Service projects and management actions.

2.2.6 Scenic Quality Strategies

- Manage scenery to perpetuate the overall natural-appearing setting, protect significant scenic features, and ensure that development is appropriate for the area in which it is located in terms of size, mass, architectural style, and density.
- Consider the type, intensity, location, and visual characteristics of land use, visual dominance competition between the natural and built environments, and resource management actions, particularly in sensitive, undeveloped areas.
- Manage for scenic stability through actions that will enhance and protect desired scenic attributes through vegetation treatments to achieve High Minimum Scenic Stability (MSS), on a project-by-

project basis over the Plan Period. Examples include aspen stand enhancements and riparian area restorations.

- Restore damaged landscape scenes (currently meeting Low or No Scenic Integrity Levels), to achieve the established scenery objectives shown in the Minimum Scenic Integrity (MSI) map.

- Mitigate the establishment of visible lines in landscape areas where vegetation is removed for management objectives; cleared areas will include edges that reflect the visual character of naturally occurring vegetation openings.

2.2.7 Cultural Resources Program Strategy

LTBMU's cultural resources program is focused on three main areas of resource management: 1) providing education, interpretation, and research opportunities; 2) protecting archeological, historical, cultural and traditional resources; 3) collaborative partnering with the Washoe Tribe and other heritage-resource interests.

Protecting cultural resources includes both proactive and reactive efforts, as well as offering support to other resource programs. Efforts and support activities include inventory, resource identification, documentation, evaluation, monitoring, consultation, nomination, preservation, stabilization, and/or restoration of cultural resources, under direction in Section 106 and 110 of the National Historic Preservation Act (NHPA). Most actions affected by Section 106 and 110 provisions are guided by Region 5's Programmatic Agreement with the California State Historic Preservation Office (SHPO) and the Advisory Council for Historic Preservation (ACHP).

- Through the Plan period, efficiently manage cultural resource databases to support resource management and research, in cooperation with the appropriate California and Nevada state agencies.

- Employ education and enforcement to deter vandalism.

- Implement restrictions, using permits and/or visitation controls, when necessary, to protect sites from physical damage and excessive wear and tear.

- Implement a policy of site avoidance to prevent physical damage to heritage resources during forest management activities.

- The cultural resources program will involve collaboration with site stewards; volunteers; State and other Federal agencies; local and tribal governments; schools and universities; and non-profit groups. Cooperative partnerships with organizations will provide site protection and facilitate development of research, educational, and interpretive opportunities. Public participation and partnerships in cultural resources management for these purposes will be increased.

- Address natural physical deterioration of cultural resources based on resource priorities and availability of funding.

2.2.8 Cultural Resources Objectives

Obj32. 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 by 2029.

Obj33. By 2024, develop a management plan for arborglyphs throughout the Lake Tahoe Basin.

Obj34. Add new interpretive elements (i.e., signs, boards, graphics, or new publicly-available printed materials) highlighting significant historic or cultural areas not yet interpreted in the Lake Tahoe Basin, by 2029.

2.2.9 Tribal Relations Program Strategy

- Tribal input is solicited during all stages of planning processes. Existing agreements that allow the Tribe to manage vegetation resources in traditional use areas are maintained or enhanced, and tribal interests are integrated into LTBMU program areas where possible.
- Coordinate management where National Forest lands are adjacent to tribal lands.
- Continue support of the Washoe Tribe in pursuit of establishing a Washoe Cultural Center and a Washoe Tending and Gathering Garden.
- Continue to implement the agreement regarding use of traditional management techniques for Meeks Meadow.
- Work closely with tribes to ensure that cultural practices and traditional knowledge is preserved and made available to future generations through preservation of important resources and supporting traditional uses at Lake Tahoe.
- Support the Washoe Tribe's goal of ensuring and increasing Tribal access to Lake Tahoe.
- Work cooperatively with the Washoe Tribe to maintain access to and protect the physical integrity of Cave Rock and other culturally important areas.
- Participate in additional LTBMU programs to enhance economic development opportunities for the Washoe Tribe (e.g., contracting, permits, employment). EO 13084-Consultation with Indian Tribal Governments. EO 13175-Consultation with Indian Tribal Governments.
- Identify opportunities to incorporate tribal traditional management practices into projects to restore, enhance, and promote ecosystem health, in collaboration with the Washoe Tribe and native traditional practitioners.

2.2.10 Tribal Relations Objective

Obj35. Revise the consultation protocol defined in the 1996 Memorandum of Understanding between the LTBMU and the Washoe Tribe by 2019.

2.2.11 Access and Travel Management Program Strategy

The strategy for achieving sustainable travel routes is to complete access and travel management (ATM) planning to identify needed routes, BMP needs, and restoration and reroute opportunities that will protect and enhance natural resources. The Travel Analysis process provides the guiding framework for Access and Travel Management planning for the National Forest transportation system and the ATM process provides site specific analysis for implementation.

The ATM planning process involves a strategic plan where the basin was divided into planning areas which subsequently became a project area for NEPA analysis. Through the NEPA process each ATM area is developed into a proposed action. Collaborative processes are used to involve agencies, stakeholders, and the public for the development of alternatives. After analysis and public input are complete the Forest Service selects an alternative and implements the ATM in that area.

The first round of ATMs are complete for all roads, and once complete for trails, routes will be revisited on a larger scale to determine the effectiveness of their implementation and to address new and remaining issues related to fuel treatments, water quality, and recreation management.

The LTBMU has collaborated with many trail users to establish the current trail system. Among those user groups are the Pacific Crest Trail Association, Tahoe Rim Trail Association, Tahoe Area Mountain Bike Association, League to Save Lake Tahoe, Tahoe Sierra Club, Back Country Horsemen, and the Blue Ribbon Coalition. The emergent trail system sustainably provides for recreation opportunities that reflect the demographics of the user groups in the Tahoe region.

- Designate road and trail systems. Utilize the ATM planning process to identify sustainable route systems and identify authorized uses of routes (Motor Vehicle Use Map, MVUM). Update ATMs to respond to changing conditions.
- Designate NFS lands open to use by over-snow vehicles.
- Manage designated road and trail systems so that they are socio-economically as well as environmentally sustainable. Management techniques include:
    a. implement water quality protection BMPs,
    b. manage road gate openings and closures,
    c. provide managed parking opportunities,
    d. provide route information and regulations,
    e. reroute and restore alignments,
    f. provide for a variety of user types,
    g. design to reduce use conflicts,
    h. provide multi-modal and loop trail opportunities,
    i. provide accessible opportunities,
    j. provide for Aquatic Organism Passage (AOP),
    k. anticipate higher and earlier peak run off water flows and more rain-on-snow events,

- Collaborate with agencies and partner organizations in road and trail transportation planning efforts aimed at connecting communities and public lands across jurisdictional boundaries.
- Reduce roadside parking in areas of high density use and provide for managed parking. Prioritize transit or alternatives to the private automobile where parking capacity is reduced.
- Increase dispersed winter parking opportunities.

2.2.12 Access and Travel Management Program Objectives

Obj36. Implement BMP retrofits on 285 miles of NFS roads by 2029.

Obj37. Implement BMP retrofits on 370 miles of NFS trails by 2029.

2.2.13 National Trails System Program Strategy

On the Lake Tahoe Basin Management Unit, the national recreation and scenic trails are predominantly located on National Forest System lands. Trails outside wilderness are generally clearly marked and identified for users with the national recreation or scenic trail symbol, especially at the trail termini and junctions with side trails. Trails inside designated wilderness are generally marked only at junctions with other trails. Access allows for public use, interpretation, and education of specified features of the trail in a manner that does not impair the features for which the individual trail was established. These trails may pass through a variety of physical settings and the recreational opportunity spectrum (ROS) setting varies depending on the outstanding features of the trail and the surrounding physical setting.

2.2.14 National Recreation Trails Strategy

- Utilize partnerships to achieve management goals for National Recreation Trails.
- National trails meet the maintenance standards for the trail class and managed use.
- Limited recreation facilities, such as interpretive signs, viewing platforms, and benches may be present along the trail. Trailheads may offer amenities such as picnic facilities or interpretive information that enhances the experience of using the trail.
- Trailheads may offer amenities such as picnic facilities or interpretive information that enhances the experience of using the trail.
- Where the trail leads to an outstanding destination feature, the qualities of that feature are protected.
- Reconstruct or relocate existing portions of the trail as needed to enhance the recreation experience and protect resources.
- Trailheads are designed with sensitivity to scale and character of the setting.
- Implement measures to protect areas of high ecologic value, such as rare plant sites or unique geologic features within the corridor, as needed.
- Preserve the scenic quality and character of the National Recreation Trails.

2.2.15 Pacific Crest National Scenic Trail (PCT) Strategy

- Manage the PCT as a non-motorized and non-mechanized trail (i.e., hiking, pack and saddle, ski and snowshoe uses).
- Emphasize preservation of the backcountry setting and rustic character of the trail and amenities along the trail.
- Users are educated to apply Leave No Trace Outdoor Ethics to preserve the character of the Trail.
- The PCT meets the maintenance standard for the trail class and managed uses of hiker/pedestrian and pack and saddle.
- Utilize partnerships to achieve management goals for the Pacific Crest Trail.
- Require mitigation measures including screening, feathering, and other visual management techniques to mitigate visual and other impacts of new or upgraded utility rights-of-way. Mitigation measures apply to facilities as well as vegetation.
- Where the trail leads to an outstanding destination feature, the qualities of that feature are protected.
- Reconstruct or relocate existing portions of the PCT as needed to enhance the recreation experience and protect resources.
- Trailheads are designed with sensitivity to scale and character of the setting.
- Where possible, locate trailhead parking facilities in locations not visible from the trail.
- Consider provision of campsites where there is a demonstrated need for overnight use and facilities are needed to protect natural resources.
- Trailheads may offer amenities such as sanitation and picnic facilities and interpretive information that enhances the experience of the trail. Recreation facilities along the trail, such as interpretive signs, are installed primarily for resource protection.
- Allow wildlife and fish habitat improvements which enhance trail desired conditions and setting. Allow expansion of existing forest openings and/or creation of new openings when compatible with desired conditions.
- Allow timber harvest, prescribed burning, and wildland fire to manage vegetation consistent with desired conditions and setting for the PCT.
- Wildfire suppression strategies will strive to minimize impacts on PCT values.
- Restore degraded destinations, areas, or trail sections to provide for public use while improving the immediate foreground view from the trail and area focal points such as lakeshores.

2.2.16 Built Environment Program Strategy

Fire stations, administrative offices, work centers, barracks, water systems, waste water systems, campgrounds, resorts, day use areas, visitor information/education centers, dams, and other similar constructed elements are components of the federally owned facilities managed by the Forest Service. The Forest Service also maintains administrative and recreation facilities that support recreation opportunities and community services and meet national direction for sustainable operations. The number, distribution, condition, and variety of facilities are important in providing a quality visitor experience and meeting administrative and community goals. Priorities for construction, reconstruction or decommissioning facilities are based upon public benefit and ability to reduce deferred maintenance.

- Use the Recreation Facility Analysis (RFA) and Facilities Master Plan to reduce deferred maintenance backlogs consistent with national direction.
- Buildings and facilities are prioritized for construction, reconstruction or decommissioning based upon public benefit and ability to reduce deferred maintenance.
- Provide and operate reliable, adequately sized facilities that support administrative needs and recreation opportunities.
- Seek opportunities to reduce impervious coverage and soil compaction on low capability soils.
- Implement water and energy conservation measures at developed recreation and administrative sites.
- Reduce energy consumption associated with facilities operations and maintenance.
- Retrofit Forest Service owned facilities with water quality protection BMPs throughout the Plan period.
- Incorporate opportunities for use of public transit, or other alternative modes of` transportation into new facilities or those undergoing remodel, reconstruction, or retrofit.
- Incorporate energy efficiency, conservation, sustainable design principles, and “green” technologies into administrative and recreation facilities whenever possible during renovations, remodels, reconstruction, retrofit, or new construction to minimize operation and maintenance costs.
- The quality of the built environment should benefit from sound site planning as well as from low-energy and environmental design principles such as those embodied in the LEED program.
- Construct facilities that are economically feasible to maintain.
- Recreational facilities and trails are rehabilitated and/or maintained to improve the environment, the user experience, protect natural settings, restore cultural and historical areas, and enhance economic sustainability.
- The architectural character of administrative and recreation buildings, landscape structures, site furnishings, wayside structures, and signs installed or operated on NFS lands are planned and

designed with aesthetic characteristics that respect the cultural and natural scenic quality of the Lake Tahoe Basin. The built environment is economically, environmentally, and socially sustainable.

- Prioritize buildings and facilities for construction, reconstruction or decommissioning based upon Agency or public benefit and ability to eliminate deferred maintenance.

2.2.17 Built Environment Objectives

Obj38. Implement BMP retrofits at all USFS facilities (including visitor centers, campgrounds, and parking lots.) by 2029.

Obj39. Develop, plan and schedule to adoption for retrofitting five developed facilities rated as Development Scale 3-5 to include universally accessible features by 2029.

Obj40. Maintain 15 administrative sites to standard by 2029.

Obj41. Maintain 44 recreation sites to standard by 2029.

2.2.18 Lands Program Strategy

Program strategies for the LTBMU Lands program are:

- Resolve trespass and encroachments with the highest priority assigned to the following: 1) where public safety is threatened; 2) where damage to resources and/or resource values is occurring, or encroachment is interfering with resource management activities; and 3) where public access is interfered with.

- Continue to purchase small urban lots, subdivision lots less than 1 acre, in Placer County only, where lots with an IPES score of 725 or less are still unbuildable and qualify for acquisition under the Santini-Burton program.

- Direct all other land purchases to parcels larger than one acre that include important resource or recreational values, improve access to National Forest System lands, do not have improvements, protect environmentally sensitive land from development or consolidate or improve NFS land boundaries, eliminate inholdings and provide for more efficient and effective resource management.

- In El Dorado and Douglas Counties, consider accepting donations of small urban lots that are unbuildable due to their location in Stream Environmental Zones when they improve the ownership pattern and management efficiency.

- Retain National Forest System lands in the Lake Tahoe Basin in public ownership to fulfill the specific objectives for which they were acquired.

- Seek opportunities for land adjustments with State and Local governments that consolidate ownership and improve management of urban lots.

- When approving erosion control grant projects, consider transfer of ownership to grantees when the proposed improvements encumber twenty-five percent or more of the lot.

- Consider authorizing small scale renewable energy projects, such a site specific solar, when they are compatible with other resource objectives and meet scenic resource standards.

- There are no major utility transmission corridors currently designated in the Lake Tahoe Basin. Such corridors should not be designated at Lake Tahoe due to their incompatibility with the scenic, recreational and other resource values at Lake Tahoe.

2.2.19 Research and Monitoring Projects Strategy

- Actively seek and encourage research activities that may be beneficial in informing management of NFS lands. Routinely evaluate research findings to inform adaptive management.

- Continue to prioritize science needs based on monitoring results, science findings, and national guidance.

2.2.20 Santini-Burton Acquired Lands/Urban Forest Parcels Program Strategy

Santini-Burton acquired lands are located throughout the Lake Tahoe Basin. In general, desired conditions, management strategies and management objectives are consistent with those associated forest-wide with the General Conservation Management Areas, dependent upon where the acquired lands exist on the landscape.

The Urban Forest Parcel subset of the Santini-Burton/Urban Forest Parcels Management Area has more specific strategies and objectives than those found in other Management Areas.

The Forest Service manages urban forest parcels as undeveloped open space for the purpose of preserving the hydrologic function of sensitive lands and conserving natural forest conditions within the urban setting.

- Manage urban forest as undeveloped parcels that provide open space and dispersed recreation opportunity.

- Manage stand densities on urban forest parcels to achieve and maintain healthy forest characteristics.

- Manage the continuity and arrangement of live and dead fuels to reduce risk of catastrophic fire, and to complement defensible space efforts on adjoining private lands. Urban Forest parcels are located within the urban zone of the wildland urban interface (WUI).

- Retain, protect, and restore aspen and riparian plant communities to enhance wetland function and provide habitat for disturbance tolerant species that utilize urban forests.

- Restore areas of existing human-caused disturbance, generally related to residential development, to control erosion and support natural watershed function.

- Prevent the introduction of non-native, invasive species and noxious weeds and contain existing populations.

- Mitigate all identified hazard trees as quickly as possible.

2.2.21 Santini-Burton Acquired Lands/Urban Forest Parcels Objectives

Obj42. Complete initial fuels reduction and forest health restoration treatments as needed on all urban forest parcels by 2019.

Obj43. Conduct follow-up fuels treatments every 10-15 years in urban forest parcels.

Obj44. Restore and re-vegetate areas of existing disturbance on up to 20 urban forest parcels annually.

2.2.22 Wilderness Strategy

- Manage wilderness areas according to existing Wilderness Management Plan guidelines, national direction, and The Wilderness Act of 1964.

2.3 Management Areas, Suitable Uses, and Resource Overlay Maps

2.3.1 Introduction

NFS lands are generally available for a variety of multiple uses, although not all uses and activities are suitable for all areas. The LTBMU has identified suitable uses and activities for various areas of NFS Lake Tahoe Basin lands called management areas (Table 3, and Map 1). This section describes general land use suitability for each management area. Identification of an area as suitable, suitable with restrictions, or not suitable for a use or activity provides guidance for making decisions about proposed projects and activities, but does not constitute a commitment or a decision to approve any particular projects or activities. Identification of suitable uses for the management area is often one of several steps in determining whether a project or activity is suitable in a given location. See the Forest Plan Consistency section in the Introduction for more detail.

Table 3. LTBMU Management Areas and acreage

Management Areas		Acres
W	Wilderness	24,664
BC	Backcountry (IRA)	45,372
GC	General Conservation	70,878
SB	Santini-Burton /Urban Forest Parcels	13,935
NFS Lands Total Acres		154,850

2.3.2 Wilderness Management Area

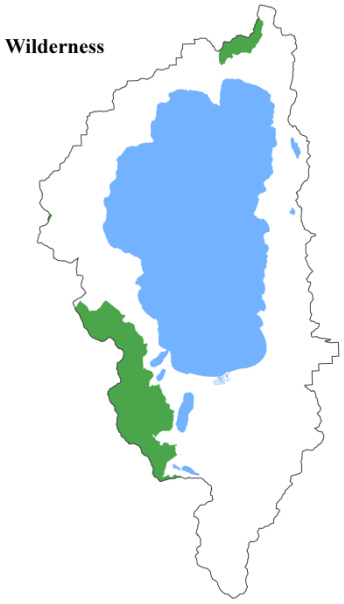
Management Concept: natural processes, regulated use, preservation management

Portions of Desolation, Granite Chief, and Mt. Rose Wilderness areas are located within the administrative boundary of the LTBMU and are part of the National Wilderness Preservation System – as designated by Congress – to provide present and future generations the benefits of an enduring resource.

Wilderness lands appear primarily affected by the forces of nature. Scenic integrity is very high; the valued landscape character is intact and appears unaltered. Wilderness provides outstanding opportunities for solitude and a primitive and unconfined type of recreation, yet is accessible to many. Wilderness areas offer places of undisturbed purity for people seeking natural scenery. Facilities and infrastructure to support dispersed recreation are limited, and do not conflict with the landscape character or interfere with natural ecosystem processes.

Wilderness lands are of sufficient size to make preservation and use in an unimpaired condition practicable. Natural processes and disturbance events (fire, insects, disease, and floods) shape vegetation composition and structure and landscape patterns.

These areas help sustain ecosystem function and species diversity by serving as habitat for fauna and flora and providing wildlife corridors. Wilderness may also provide ecological, geological, or other features of scientific, educational, scenic, or historical value.



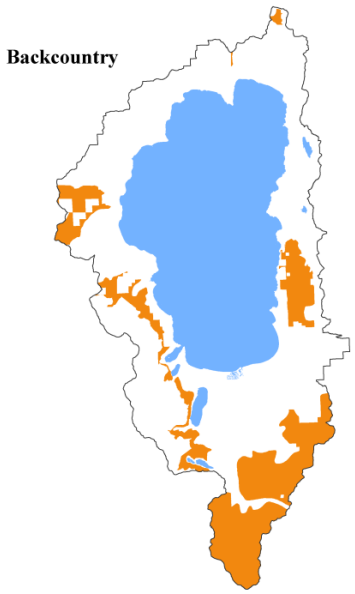
Wilderness Area	Acres
Desolation	22,038
Granite Chief	46
Mt. Rose	2,580
Total	24,664

Suitable uses in wilderness are defined in the Wilderness Act.

2.3.3 Backcountry Management Area

Management Concept: natural landscapes, dispersed recreation use, limited management

The LTBMU manages approximately 50,000 acres of Backcountry on NFS lands, the majority of which is in Inventoried Roadless Areas (IRAs). Outside of IRAs, approximately 3,619 acres of Backcountry lie between Ward and Blackwood Creeks adjacent to the Granite Chief IRA. Some backcountry areas are adjacent or contiguous to existing Wilderness (i.e., Pyramid, Mt. Rose, and Granite Chief). Other lands designated as Backcountry are larger blocks of unroaded areas including the Dardanelles/Meiss, Freel Peak, and Lincoln Creek. The Upper Truckee River (a suitable WSR, classified as wild) is located within this management area (See section 2.5 and Figure 17).



On these lands, natural ecological processes are primarily free from human influences. The landscape is predominantly shaped by natural processes and disturbance events such as vegetative succession, fire, insects attack, disease outbreak, and floods. Scenic integrity is high; the valued landscape character appears intact.

Backcountry areas fill a recreation niche between Wilderness and General Conservation. Dispersed recreation opportunities include hiking, mountain biking, cross-country skiing and snowshoeing, camping, and wildlife viewing. Over-snow vehicle use (OSV) is limited to designated areas (Snowmobile Area Map – Map 18).

Management activities that support administrative and dispersed recreation activities are minimal, but may have a limited influence on the landscape. Native-surface roads are present in some backcountry areas; road maintenance and reconstruction may be permitted on Backcountry lands where additional restrictions do not apply. Suitable uses do not include construction of permanent roads.

Similarly, Backcountry lands may be occasionally influenced by management activities to support forest health, improve habitat, and reduce fuels. Management-related disturbances would have only minor influences on the landscape character.

Backcountry areas contribute to ecosystem and species diversity and sustainability, serve as habitat for fauna and flora, and offer wildlife corridors. These areas provide a diversity of terrestrial and aquatic habitats, and support species dependent on large, undisturbed areas of land. Backcountry areas are managed to preserve and restore healthy watersheds with clean water and air, and healthy soils.

Watershed processes operate in harmony with their setting, providing high quality aquatic habitats.

2.3.4 General Conservation Management Area

Management Concept: Roaded landscapes, active management, dispersed and developed recreation uses.

This management area includes a broad spectrum of landscapes, activities, and uses, ranging from relatively unaltered lands to intensively managed recreation settings.

Generally Suitable Uses: Most activities and uses permitted by law on NFS lands, subject to specific restrictions of law, regulation, policy, and standards and guidelines.

This management area is comprised of NFS lands that do not have any other special designation that specifically defines their use; management is prescribed by Forest staff to attain forest-wide desired conditions. Active management is conducted for purposes of meeting a variety of social, economic, and ecological objectives.

Management activities may have a strong influence on the composition, structure, and landscape patterns of the vegetation in the more intensively used areas, while succession, fire, insect attack, disease outbreak, floods, and other natural processes and disturbance events are the predominant drivers in the more remote parts of the management area.

Scenic integrity is generally between low and moderate, though in some areas scenery appears only slightly altered. Where developed facilities are present, they are aesthetically incorporated into the landscape. Forest management activities are carried out in ways that maintain or enhance scenic integrity.

Places for people seeking natural scenery and solitude are available in some areas. In other areas, motorized and non-motorized recreation opportunities are easily accessed by the roads found on these lands, and users of hiking trails can expect encounters with others.

General Conservation lands adjacent to urban areas and neighborhoods are closely associated with communities, as well as with the houses, structures, people, and values associated with them. Individual and family histories may be closely interwoven with these lands. Consequently, residents may have strong attachments and feelings of ownership, which lead to a higher level of public scrutiny and sensitivity to management activities in these areas.

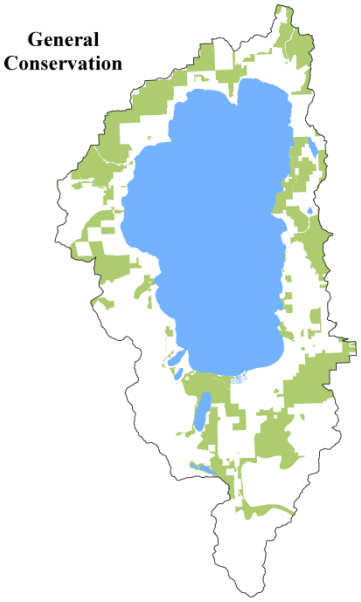
Lands adjacent to urban areas and neighborhoods and developed recreation sites are intensively managed in close coordination with affected communities and partners to conserve natural resources and maintain quality recreation opportunities. Vegetation and fuels management is a high priority on lands within the Wildland Urban Interface (WUI), in order to reduce wildfire risks. Cooperation and partnerships with adjacent landowners, local governments and other entities play an important role in land management.

General Conservation lands also include or provide access to popular destinations (such as beaches, resorts, historic sites, interpretive centers, ski areas, scenic vistas, lakes and streams, and regional trails). Developed recreation sites range from modified natural settings (with few permanent developed facilities, primarily for resource protection) to highly modified natural settings (with permanently developed facilities for visitor convenience).

Developed recreation sites provide rich and diverse opportunities for recreation activities in a variety of well-designed, well-maintained, and accessible settings. The uses associated with these lands contribute substantial socioeconomic benefits to the community in the form of jobs, income, access to public lands, and quality of life. These sites are often managed by private entities in cooperation with the Forest Service through special use permits.

Dispersed recreation opportunities include hiking, mountain biking, cross-country skiing and snowshoeing, camping, and wildlife viewing. Over-snow vehicle use (OSV) is limited to designated areas (Snowmobile Area Map – Map 18).

General Conservation lands also include rare habitat for native species, such as lake shore lagoons, barrier beaches, wet meadows, and other riparian areas. These lands provide habitat for federally threatened, endangered, candidate and proposed species as well as regionally sensitive species. These special habitats often overlap with areas that are highly desirable recreation destinations.



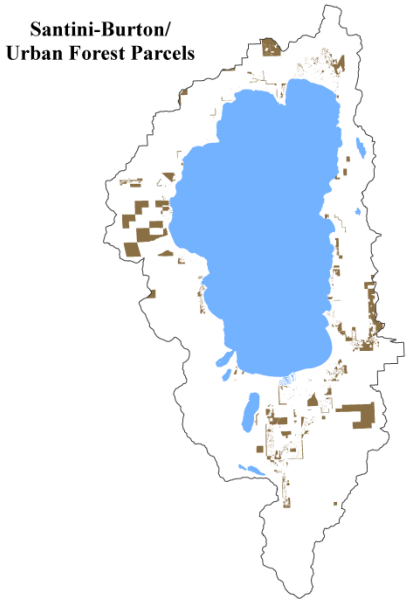
The more remote parts of this management area contribute to ecosystem and species diversity and sustainability, serve as habitat for fauna and flora, and offer wildlife corridors. A mosaic of vegetation conditions is often present, with some areas showing the effects of past management activities, and other areas appearing predominantly natural. In contrast, the more developed parts of the management area often exhibit lasting changes to ecological composition, structure, and function; these lands may provide wildlife habitat only for species tolerant of human presence. As intensity of use and management increases, so does the need to control terrestrial and aquatic invasive species.

Water quality is excellent in most streams and lakes, and aquatic habitats support desired species, although restoration activities may be needed in some places to mitigate past disturbances and restore natural stream processes and habitats. Soil quality is close to natural conditions throughout most of the management area. Forest management activities are carried out in ways that maintain or enhance soil and water quality and watershed conditions and processes.

2.3.5 Santini-Burton/Urban Forest Parcels Management Area

Management Concept: protected and undeveloped landscapes, active management

This management area is primarily comprised of lands acquired under the Santini-Burton Purchase authority. In 1980, Congress passed the Santini-Burton Act, Public Law 96-586, which authorized the Forest Service to acquire environmentally sensitive lands within the Lake Tahoe Basin to protect them from development. The Santini-Burton Act restricts the use and development of these lands. Santini-Burton lands range in size from less than one-half acre to 1,700 acres. The larger parcels are mostly located within or adjacent to General Conservation and Backcountry Management Areas, while the smaller parcels are mostly located in urban/suburban areas, and are surrounded by private lands.



Additional lands in this management area were acquired under the Land and Water Conservation Fund Act. These lands are small (generally less than 2 acres) urban forest parcels (urban lots) that are located in urban/suburban areas. Urban lots are public inholdings among privately-owned developed parcels and are generally not adjacent to other NFS lands.

Management of lands follows two basic principles: (1) it is consistent with the legislation under which the land was acquired (2) it is compatible with management and use of the surrounding lands. For example, lands in urban areas are managed consistent with the needs of the adjacent community. Some lands in this management area lie within the WUI, and would be managed accordingly (e.g., Urban Forest parcels within the Defense Zone).

Management within the Santini-Burton / Urban Forest Parcel Management Area is focused on preserving environmental quality. The primary distinction between this management area and the General Conservation Management Area is that the management emphasis is on protecting watershed conditions and community open space.

Urban Forest Parcels provide opportunity for dispersed recreation within the urban setting, such as walking/hiking, wildlife viewing, cross-country skiing, and access to streams and lakes. When appropriate, recreational improvements such as system trails and bike trails may occur on urban forest parcels. Development is prohibited on these environmentally sensitive lands except for dispersed recreation and erosion control improvements. Urban Forest parcels are located within the urban core, as shown on the Management Area map.

2.3.6 Suitable Uses and Management Practices by Management Area

National Forest System lands are generally available for a variety of multiple uses, although not all uses are suitable for all areas. Section 6 (g) of the Resource Planning Act of 1974 (RPA), as amended by the National Forest Management Act of 1976 (NFMA), requires "the identification of the suitability of lands for resource management"(RPA 1974, pp. 4-9).

Suitability is defined as “The appropriateness of applying certain resource management practices to a particular area of land, as determined by an analysis of economic and environmental consequences and the alternative uses forgone. A unit of land may be suitable for a variety of individual or combined management practices” (36 CFR 219.3).

Suitability is expressed as suitable, not suitable, or with restriction. Restrictions have several sources depending on the legal, policy or permitting language that applies to the activity.

S – Suitable

N – Not Suitable

R – Restrictions:

- Restricted by law (e.g., Wilderness Act, Desolation Wilderness)
- Restricted by designation (e.g., Grass Lake Research Natural Area)
- Restricted by Forest Order (e.g., Camping)
- Restricted by another decision (e.g., mountain biking on the Pacific Crest Trail)
- Restricted by management direction within this plan
- Restricted to authorized use only (e.g., communication sites)

This section describes common activities and land uses expected to occur on NFS lands within the Lake Tahoe Basin. The general suitability of activities and uses by management area is displayed below (Table 5). Determination of suitable or not suitable does not apply to existing activities and uses. Descriptions of these activities and uses follow the table.

Table 4. Suitable Uses and Management Activities by Management Area

Suitable Uses or Management Activities	Wilderness	Backcountry	General Conservation	Urban Forest	Santini-Burton
Ecosystem Restoration:					
Fuels Reduction	N	S	S	S	S
Vegetation Restoration	R	S	S	S	S
Managed Wildfire	S	S	R	N	S
Prescribed Burning	R	S	S	S	S
Stream Channel Floodplain Restoration	R	S	S	S	S
Soil & Water Restoration	R	S	S	S	S
Species Recovery Habitat Restoration	R	S	S	S	S
Invasive Species Management	R	S	S	S	S
Re-vegetation	R	S	S	S	S
Recreation:					
Developed Recreation Sites	N	N	S	N	N
Recreation, Non-motorized Use	S	S	S	S	S
Recreation Permitted Uses:					
Resorts	N	N	S	N	N
Recreation Residences	N	N	S	N	N
Ski Areas	N	N	R	N	N
Ski Slope/Trail	N	R	S	N	R
Organization Camps	N	N	S	N	N
Outfitter and Guide Service	R	S	S	S	S
Non-commercial Group Use	N	N	S	N	R
Infrastructure:					
Administrative Facilities	N	N	S	N	N
Roads	N	R	S	R	R
Motorized Use of Roads	N	S	S	R	R
Trails	S	S	S	R	S
Motorized Use of Trails	N	S	S	N	R
Mechanized Use of Trails	N	S	S	S	S
Motorized Cross-country Travel	N	N	R	N	N
Over Snow Vehicle Travel	N	R	R	N	R
Other Permitted Uses					
Communication Sites	N	N	S	R	R
Transportation Related	N	R	S	R	R
Utilities	N	R	S	R	R
Urban Stormwater Treatment	N	N	S	S	S
Community Use and Public Information	N	R	S	R	R
Non-Timber Forest Products	N	S	S	S	S
Production Livestock Grazing	N	R	R	N	R
Research and Monitoring	S	S	S	S	S
Permitted Temporary Activities	R	R	R	R	R

Ecosystem Restoration

Fuels Reduction – Activities focused on reducing risk to people, property, infrastructure, and natural and cultural resources, by removal, utilization, and/or rearrangement of natural and residual activity generated fuels. Activities include but are not limited to various silvicultural practices using mechanical, aerial, and/or hand treatments, prescribed fire, reforestation, and chemical application.

Vegetation Restoration – A full suite of activities that contribute to the sustainability and restoration of desired conditions for forest health including habitat and vegetation structural attributes. Invasive plant species, insects, and disease will be managed as an integral part of the restoration program. Activities include but are not limited to various silvicultural practices using mechanical, aerial, and/or hand treatments, prescribed fire, reforestation, chemical application, clearing of trees encroaching upon meadows, human access control, control of invasive species, and maintenance of snags and down logs.

Managed Wildfire – The management of naturally ignited fires to achieve resource desired conditions and objectives where fire is a natural ecosystem process.

Prescribed Burning - Igniting fires in order to achieve a management objective and/or a desired condition. This includes understory burning, pile burning, and broadcast burning. Managed active burning will be prescribed and monitored to burn at specified intensities over a defined area.

Stream Channel/Floodplain Restoration – Includes activities to restore geomorphic function and high quality habitat features to stream channels and adjacent floodplains. Activities include constructing new stream channels/floodplain and/or stabilizing and improving existing channels/floodplain. Restoration can also include removal or upgrades to in-channel infrastructure such as channel crossings or dams/diversion.

Soil and Water Restoration – Includes activities to maintain and restore soil function, and surface and groundwater hydrologic function. Activities include restoring compacted/disturbed soils, surface and soil organic matter, understory vegetation, and surface water drainage pathways. Restoration can also include removal of obsolete/legacy infrastructure such as asphalt, concrete, foundation, and drainage ditches.

Species Recovery and Habitat Restoration (aquatic and terrestrial) – Includes activities to recover and or restore biological processes and function of selected species and habitat. Restoration activities can occur in special habitats including, but not limited to, meadows, aspen stands, and or other habitats of importance to the recovery and restoration of a species. Recovery and restoration activities may include, but are not limited to vegetation thinning, fire (prescribed or natural), hydrologic modifications (i.e., removal of head cuts), introduction or re-introduction of a selected species, as well as removal, by various methods, of non-native or invasive species.

Invasive Species Management (aquatic and terrestrial) – Includes activities that prevent, control, and eradicate invasive species. Activities may include, but are not limited to outreach and education, inspection station, manual removal, chemical and biological removal, as well as thinning and fire.

Re-vegetation – Includes re-vegetation using primarily native seeds and transplants following the Native Plant Material Policy (FSM 2070 Vegetation Ecology). Re-vegetation activities may occur, but is not limited to, project areas such as on, trails, roads, in post-fire areas (prescribed and natural), at facilities, as well as in restoration.

Recreation

Developed Recreation Sites – Areas where facilities are provided for concentrated public use. Included are resorts, campgrounds, organization camps, picnic sites, swimming beaches, interpretive centers, visitor information facilities, trails, and parking and utility services associated with these facilities.

Includes trailhead parking, small remote camping sites, interpretive sites, vista points, OHV staging areas, and toilets.

Recreation, Non-motorized Use – Includes activities such as hiking, climbing, fishing, camping, swimming, sunbathing, sightseeing, guided interpretive activities, nature viewing, picnicking, non-motorized boating, equestrian use, cross-country skiing, snowshoeing, and snow play.

Non-Commercial Group Use – Non-commercial groups exceeding 75 people.

Recreation Permitted Uses

Recreation Residences – The privately-owned dwelling within an established recreation residence tract or group on National Forest System (NFS) land authorized for the purpose of facilitating the use and enjoyment of NFS lands and recreation resources.

Ski Areas – Accommodate primarily winter-based recreation activities (including ski lifts, snowmaking systems, mountain lodges and support buildings and resort infrastructure), but may also be used for summer recreation purposes (e.g., Heavenly Mountain Resort). The downhill skiing management practice includes activities required to plan for the development of downhill skiing facilities through private sector investment and operation. Also includes the administration required to assure proper operation and maintenance of the site. The primary purpose is to assure that people may safely enjoy the skiing and other recreation opportunities authorized for the site and protect the environmental quality of the area.

Within the alpine skiing management prescription area (Figures 11-14), administer special use permits for existing downhill skiing facilities on NFS lands. Ensure that environmental standards are achieved. Expand skiing facilities as needed based upon approved master development plans. Other resources and activities may be allowed where they do not conflict with the primary emphasis on skiing.

This management prescription applies to the improvements at Heavenly Valley and Alpine Meadows Ski Area. It also applies to sites identified for potential expansion of Alpine Meadows/Deer Park in Ward Valley, Northstar on Mt. Pluto, Homewood/Tahoe Ski Bowl on Ellis Peak, and Diamond Peak (formerly Ski Incline).

Ski Slope/Trail – Ski slopes and trails on NFS lands for winter-based recreation activities. This use generally involves NFS lands without lifts or substantial infrastructure. Alpine ski slopes and trails occur primarily in those situations where the majority of a large ski area operates on adjacent private lands (e.g., Homewood Mountain Resort). For nordic trails, this use generally involves setting groomed ski tracks to enhance cross-country and skate-skiing opportunities.

Outfitting and Guiding Service – This designation includes all commercial outfitting and guiding services for accommodating guests, transporting persons, and providing equipment, supplies, and materials to and across NFS lands. This designation also includes commercial guiding activities wherein the guide furnishes personal services or serves as a leader or instructor.

Infrastructure

Administrative Facilities – Includes offices, fire stations, lookouts, installations for research, and work centers.

Roads – Includes the construction, reconstruction, maintenance, and decommissioning of National Forest System (NFS) roads for motor vehicle use. (See current LTBMU Motor Vehicle Use Map (MVUM) for designated travel routes)

Motorized Use of Roads – Roads open to all motor vehicles including smaller off highway vehicle that may not be licensed for highway use. (See current LTBMU MVUM for designated travel routes)

Trails – Includes the construction, reconstruction, maintenance, and decommissioning of NFS trails for allowed uses. (See current LTBMU MVUM for designated trails)

Motorized Use of Trails – Motorized use on trails such as OHV's, and Motorcycles (See Motor Vehicle Use Map for designated trails).

Mechanized Use of Trails – Includes use of mechanized equipment, such as mountain bikes.

Motorized Cross-country Travel – Motorized Cross-country travel such as OHV's or Motorcycles. These uses are restricted to designated areas, as shown on the LTBMU Motor Vehicle Use Map (MVUM).

Over Snow Vehicle Travel (OSV) – Over-Snow Vehicle (Snowmobile) use on NFS lands.

Other Permitted Uses

Communication Sites – Sites designated for the location of communication facilities, including broadcast radio and television, cable television, microwave for industrial and common carriers, cellular telephone, land-line telephone, and amateur and mobile radio transmission and repeater sites. (See Map 8, Communication Sites for designated Communication Sites.)

Transportation Related – Includes facilities such as avalanche control centers, maintenance yards, storage facilities, airport navigation beacons, Department of Transportation easements, private party easements, and rights of way.

Utilities – Includes underground and overhead alignments for utilities including fiber optic, telephone, cable, water, sewer, and electricity distribution facilities. It also includes specific sites for wells, water tanks, springs, dams, pump stations, fish ladders, water diversion, reservoirs, and other utilities.

Urban Stormwater Treatment Projects – Includes special use permits to authorize use of NFS lands for urban storm water projects for treatment and control of runoff from urban areas and highways.

Community Use and Public Information – Includes permitted land uses such as non-commercial group use, monuments, markers, signs, benches, interagency visitor centers, amphitheaters, museums, transit centers, and cultural centers.

Non-Timber Forest Products – Includes commercial and non-commercial collection of materials such as firewood, plants, mushrooms, berries, biomass, pine cones, extractives, Christmas trees, and boughs.

Production Livestock Grazing – Authorized use and management of NFS lands for the purpose of livestock production, utilization of forage resources by livestock, and/or coordination of livestock grazing with other uses. Site specific environmental analysis is needed to determine the capability and suitability of this activity on any of the existing vacant grazing allotment on the LTBMU.

Permitted Research and Monitoring – Includes the temporary use of NFS lands for monitoring, sampling, and data collection in support of private and public research projects such as stream gauges and

air and water quality monitoring stations, and may involve sampling programs, research experiments, and erosion control and water quality monitoring.

Permitted Temporary Activities – Includes the temporary use of NFS lands for activities such as weddings, commercial filming and commercial still photography, training, races, festivals,commercial special events, and vendors.

Lands Suitable For Timber Production

There are no LTBMU lands where timber "production" is either a primary or secondary objective or goal. Timber output may be an incidental product from silvicultural prescriptions designed for other purposes, and timber harvest is seen as a "tool" for accomplishing other objectives such as restoration and fuels hazard reduction (Table 6, Category 3b). There is no intent of producing a sustainable timber harvest over time on any lands in the Lake Tahoe Basin. Therefore, there are no acres of lands suitable for timber production (Table 6, Category 3a).

Table 5. Summary of Available Areas for Timber

Category	Acres	Acres Generally Not Available for Timber Harvest	Acres Generally Available for Timber Harvest	Acres Not Suitable for Timber Production
1. Total National Forest System Lands within the plan area	153,820			
2. Lands generally not available for timber harvest (sec. 62.1)		50,956		50,956
a. Lands not available for timber harvest du to statute, Executive order, regulation, policy or physical and biological conditions (sec. 62.1)		25,016		
b. Lands where timber harvest is not compatible with desired conditions and objectives (sec. 62.1)		25,940		
3. Lands generally available for timber harvest (sec. 62.2)			102,864	
a. Lands suitable for timber production (sec. 62.21)*			0	
b. Other lands where trees may be harvested for multiple use values other than timber production (sec. 62.22)			102,864	102,864
4. Lands generally not suitable for timber production, all lands except 3(a). (sec. 62.3)				153,820

*Timber production achieves or is consistent with desired conditions and objectives.

2.3.7 Resource Overlay Maps

This section describes how each of the resource overlay maps was created and how they are intended to be used. Maps represent the best information available at the time of Plan publication. Each overlay is updated periodically as new information is received. The most up to date version of each map is stored electronically in the Geographic Information System (GIS) library on Forest Service data servers.

Special Areas

This map (Map 2) and the accompanying inset map (Map 3) show the locations of designated special areas on the LTBMU, which include National Scenic and National Recreation Trails, and the Grass Lake Research Natural Area. Plan components are provided to guide management of National Scenic and National Recreation Trails. Allowable uses in the Grass Lake RNA are described in Section 2.4.

Fire Management Units

This map (Map 4) was developed with focus on key multi-resource management objectives as outlined in this Forest land and resource management plan. A Fire management unit (FMUs) is definable by the 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 unit. LTBMU has defined three FMUs: Wildland Urban Interface (WUI), Wilderness, and General Forest.

Wildland Urban Interface

This map (Map 5) was created through a collaborative process involving fire management staff from multiple agencies and jurisdictions throughout the Lake Tahoe Basin.

The WUI overlay shows the boundaries of the Wildland Urban Interface areas: the Defense Zone, and the Threat Zone. The Defense Zone, which includes the urban core, extends approximately one quarter mile beyond the urban core, which is displayed as a subset of the Defense Zone since fire and fuels management objectives are consistent throughout. The urban core is where the communities are located, and is mostly private land. The Threat Zone varies in size and lies beyond the Defense Zone.

The primary use of this overlay is to guide management of unplanned ignitions and to delineate priority areas for hazardous fuels reduction projects and activities. Ownership varies throughout the WUI and management practices are applied according to jurisdiction.

Stream Environment Zones

This is a map of riparian vegetation which shows the approximate location and extent of SEZs (Map 7). SEZ boundaries must be field verified prior to any ground-disturbing activities. This map is used for preliminary or broad-scale planning purposes only, and should be compared with other GIS layers such as National Wetlands Inventory, Terrestrial Ecologic Unit Inventory, and Soil Survey.

PAC & HRCA

The purpose of this map (Map 12) is to identify areas where Plan components for PACs and HRCAs apply on LTBMU lands.

The following section describes the methodology for delineating current and future PACs and HRCAs. Additional management direction for PACs and HRCAs is located in the Desired Conditions, and Standards and Guidelines.

California Spotted Owl PAC

California spotted owl PACs are delineated surrounding each territorial owl activity center detected on the LTBMU detected after 1986. Owl activity centers are designated for all territorial owls based on:

1) the most recent documented nest site,
2) the most recent known roost site when a nest location remains unknown, and
3) a central point based on repeated daytime detections when neither nest or roost locations are known.

PACs are delineated to:

1) include known and suspected nest stands and
2) encompass the best available 300 acres of habitat in as compact a unit as possible.

The best available habitat is selected to include, where available:

1) two or more tree canopy layers,
2) trees in the dominant and co-dominant crown classes averaging 24 inches dbh or greater,
3) at least 70% tree canopy cover (including hardwoods), and
4) in descending order of priority, CWHR classes 6, 5D, 5M, 4D, and 4M and other stands with at least 50% canopy cover (including hardwoods).

Aerial imagery, GIS data for habitat types, habitat suitability models, and field verification are used as needed to delineate PACs. As additional nest location and habitat data become available, boundaries of PACS are reviewed and adjusted as necessary to better include known and suspected stands and encompass the best available 300 acres of habitat.

When activities are planned adjacent to non-national forest lands, available databases are checked for the presence of nearby California spotted owl activity centers on non-national forest lands. A 300-acre circular area, centered on the activity center, is delineated. Any part of the circular 300-acre area that lies on national forest lands is designated and managed as a California spotted owl PAC.

PACs are maintained regardless of California spotted owl occupancy status. However, after a stand-replacing event, evaluate habitat conditions within a 1.5 mile radius around the activity center to identify opportunities for re-mapping the PAC. If there is insufficient suitable habitat for designating a PAC within the 1.5 mile radius, the PAC may be removed from the network.

Northern Goshawk PACs

Northern goshawk PACs are delineated surrounding all known and newly discovered breeding territories detected on the LTBMU. Northern goshawk PACs are designated based upon the latest documented nest site and locations of alternate nests. If the actual nest site is not located, the PAC is designated based on

the location of territorial adult birds or recently fledged juvenile goshawks during the fledgling dependency period. PACs are delineated to:

1) include known and suspected nest stands, and

2) encompass the best available 200 acres of forested habitat in the largest contiguous patches possible, based on aerial imagery and GIS data for habitat types.

Where suitable nesting habitat occurs in small patches, PACs are defined as multiple blocks in the largest best available patches within 0.5 miles of one another. Best available forested stands for PACs have the following characteristics where available:

1) areas with large live and dead trees (>24 inches diameter-at-breast-height);

2) in westside conifer and eastside mixed conifer forest types, stands have a least 70 percent tree canopy cover;

3) in eastside pine forest types, stands have at least 60 percent tree canopy cover; and

4) in descending order of priority, CWHR classes 6, 5D, 5M, 4D, and 4M and other stands with the greatest canopy cover available (at least 50%). Non-forest vegetation (such as meadows) should not be counted as part of the 200 acres.

As additional nest location and habitat data become available, boundaries of PACS are reviewed and adjusted as necessary to better include known and suspected stands and encompass the best available 200 acres of habitat.

For Northern goshawks that are found on non-national forest lands, designate a PAC by either of the following methods: 1) a 200-acre circular area that focuses on the activity center, or 2) a 200-acre area that is centered on the activity center and includes the best available habitat in the sub-watershed unit. Any part of the 200-acre area that lies on NFS lands is designated and managed as a Northern goshawk PAC.

California Spotted Owl HRCA

Establish a California spotted owl home HRCA surrounding each territorial spotted owl activity center detected after 1986. The core area amounts to 20 percent of the area described by the sum of the average breeding pair home range plus one standard error. Home range core areas are 1,000 acres in size.

A California spotted owl HRCA is delineated surrounding each territorial spotted owl activity center (includes the PAC), is 1,000 acres in size, and is composed of the best available contiguous habitat in the closest proximity to the owl activity center as determined by aerial imagery, GIS data, habitat suitability modeling, and field verification.

Best available contiguous habitat is selected to include, in descending order of priority, CWHR classes 6, 5D, 5M, 4D, and 4M and other stands with at least 50% tree canopy cover (including hardwoods). The acreage of the 300-acre PAC counts towards the total HRCA. Core areas are delineated within 1.5 miles of the activity center.

When activities are planned adjacent to land not managed by the LTBMU, circular core areas are delineated around California spotted owl activity centers on non-National Forest System lands. Using the best available habitat as described above, any part of the core area that lies on National Forest System lands is designated and managed as a California spotted owl HRCA.

Special Status Species Habitat Areas

The purpose of these maps (Maps 13 and 14) is to identify areas of quality habitat for Threatened and Endangered Species (FSH 1909.12, Ch. 40, Sec. 43.22a), species proposed for listing, candidate species, and species that have been recently de-listed where regulatory agency monitoring is still considered necessary. These areas either currently provide habitat for Federal Threatened (T), Endangered (E), Candidate (C), and Proposed (P) species or have potential to provide habitat needed for future recovery. These areas are subject to change based on recovery plans, new listings, and/or other new information that would alter habitat needs for recovery.

Species included are Lahontan cutthroat trout, Sierra Nevada yellow legged frog, Tahoe yellow cress, and whitebark pine. This list is subject to change when species are added or removed.

Current maps for Tahoe yellow cress and whitebark pine show approximate locations and extent of species and must be field verified during project planning. Future inventory work will identify areas of quality habitat.

Recreation Opportunity Spectrum

The purpose of this map (Map 9) is to show how various classes of recreation opportunities are distributed across the LTBMU. Project design and activity planning should consider whether the project or activity is compatible with the ROS class.

Recreation Opportunity Spectrum (ROS) defines six recreation opportunity classes that provide different settings for recreational use:

- Primitive
- Semi-Primitive Non-Motorized
- Semi-Primitive Motorized
- Roaded Natural
- Rural
- Urban

ROS classes describe all recreation opportunity areas--from natural, undisturbed, and undeveloped to heavily used, modified, and developed. The criteria found in the *ROS Users Guide* (USDA Forest Service 1982) were used to delineate the ROS classes on the LTBMU.

Only four of the classifications have been inventoried on the LTBMU. There are no areas on the LTBMU that met the inventory criteria for Primitive. Though there are portions of the three Wilderness Areas in the Basin that are managed as primitive, their proximity to roads and urbanization and the intensity of use rule out a Primitive designation. There were also no areas on the LTBMU that met the inventory criteria for Urban. Though some undeveloped NFS lands may exist within urban neighborhoods in the form of scattered parcels, they are classified as rural because they offer visual and recreational relief from the adjacent urban development.

The ROS Users Guide describes types of access and facilities, lists typical uses for each class, and other information, including recreational settings, and provides planning guidance.

Minimum Scenic Integrity

This map (Map 10) shows the minimum scenic integrity objectives for LTBMU lands - the minimally acceptable levels of scenic integrity for a given area. Project design and activity planning should meet or exceed minimum scenic integrity objectives for the project or activity area and should maintain or enhance scenic integrity.

Scenic integrity is a measure of the degree to which the valued scenic attributes are present within the landscape. The highest scenic integrity ratings are given to those landscapes which have little or no deviation from the character valued by constituents for its aesthetic appeal. Scenic Integrity uses a graduated rating scale of six levels from "Very High Integrity" to "No Integrity". These are described in *Landscape Aesthetics: A Handbook for Scenery Management* (Agriculture Handbook 701).

The Minimum Scenic Integrity Objective (MSIO) map identifies assigned MSIO levels to NFS lands. Scenic Class, which describes the relative "social value" of areas for their scenery was the starting point for determining MSIO levels. Factors that affect Scenic Class include the inherent attractiveness of the area and its visibility from key viewing areas and travel routes.

- Designated wilderness areas were assigned a "very high" MSIO and identified backcountry and inventoried roadless areas were assigned a "high" MSIO.
- Major travel route roads (Concern Level 1 roads) including the Basin's highways, Pioneer Trail, and Forest Highway 73 ("Fiberboard Freeway") were buffered by 1/2 mile and assigned a "high" MSIO in these foreground views.
- The Pacific Crest Trail and Tahoe Rim Trail (Concern Level 1 trails) were buffered by 1/2 mile and assigned a "high" MSIO.
- Developed recreation sites and recreation residence tracts located beyond the travel route buffer were also assigned a "high" MSIO to correspond with level of visitation and the important role that scenery plays in determining a high-quality visitor experience.
- Areas beyond the foreground of Concern Level 1 routes were assigned a lower Scenic Class (2) and consequently a "moderate" MSIO.
- Developed ski areas, which currently have generally lower existing scenic integrity than surrounding lands were assigned a "moderate" MSIO recognizing that visual improvement is needed but that the visual contrast represented by cleared ski runs is likely to remain.
- Wildland urban interface areas located beyond travel route buffers were also assigned a "moderate" MSIO.

Final adjustments to MSIO boundaries were made to remove small areas that were designated differently than their surroundings as a result of GIS mapping and buffering.

Minimum Scenic Stability

This map (Map 11) shows the relative risk of the valued scenic attributes being lost or degraded based on the existing inventory of Scenic Stability levels on the landscape.

Scenic Stability is an indicator of the ecological sustainability of the valued scenic attributes. Scenic Stability does not measure or evaluate the entire ecological condition. Rather, it addresses how ecosystem dynamics will affect the long-term stability of the valued scenery and its attributes. Scenic Stability uses a graduated rating scale of six levels from "Very High Stability" to "No Stability" to identify the degree to which scenery attributes are likely to be perpetuated within the ecosystem context. These are described in Appendix J of *Landscape Aesthetics: A Handbook for Scenery Management* (Agriculture Handbook 701)

This map is used to prioritize ecosystem management work. For instance, hazardous fuels projects maybe prioritized in areas with lower scenic stability.

Ski Areas

These maps (Figures 11-14) show the locations where the alpine skiing prescription and associated standard (SG 109) apply. This prescription and the associated prescription boundaries were carried forward from the 1988 Land and Resource Management Plan for the Lake Tahoe Basin Management Unit (1988 LTBMU LRMP). SG 109 was also carried forward from the 1988 LTBMU LRMP, pg. IV-52 and IV-21.

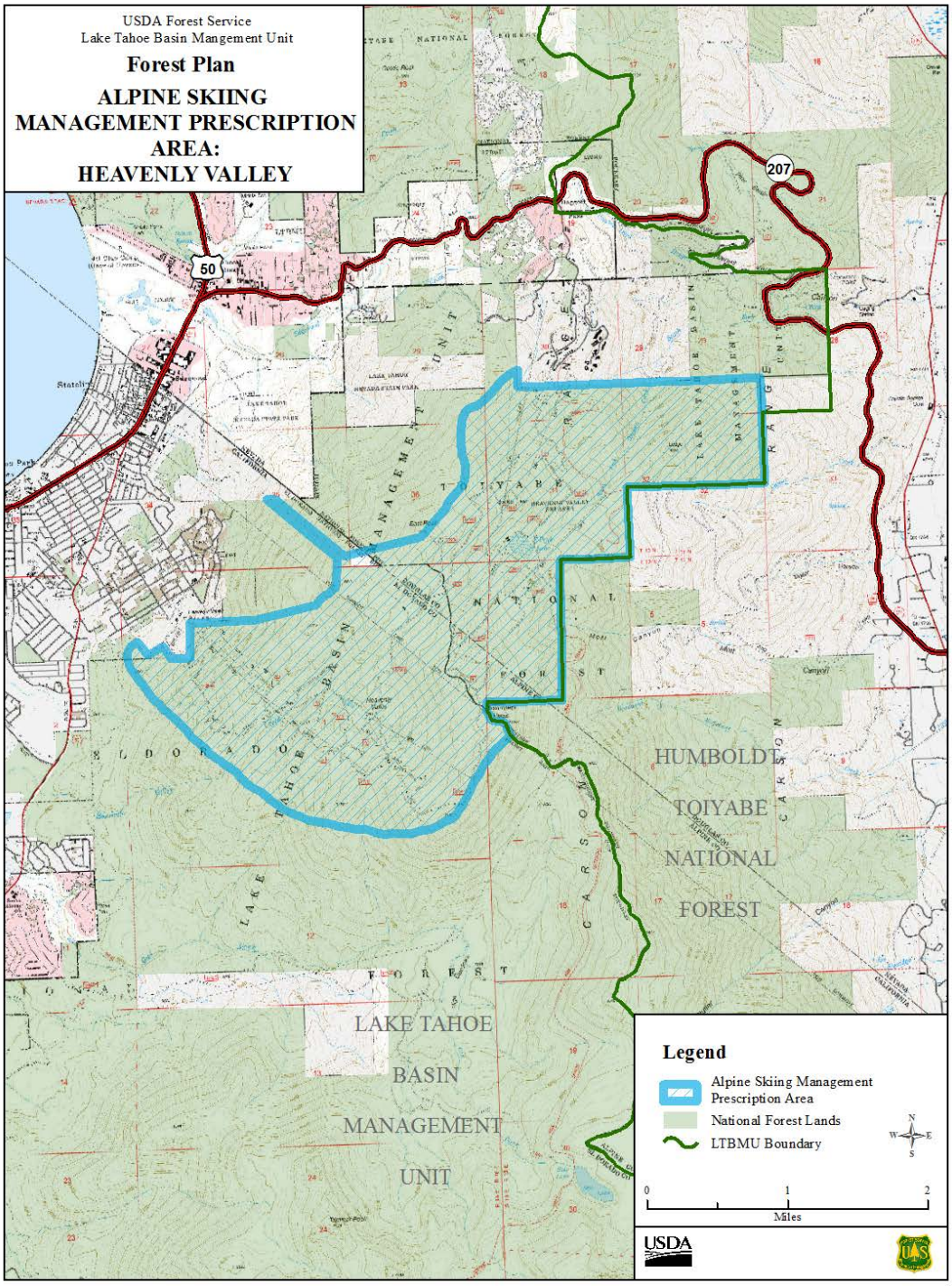


Figure 11. Alpine Skiing Management Prescription Area: Heavenly Valley

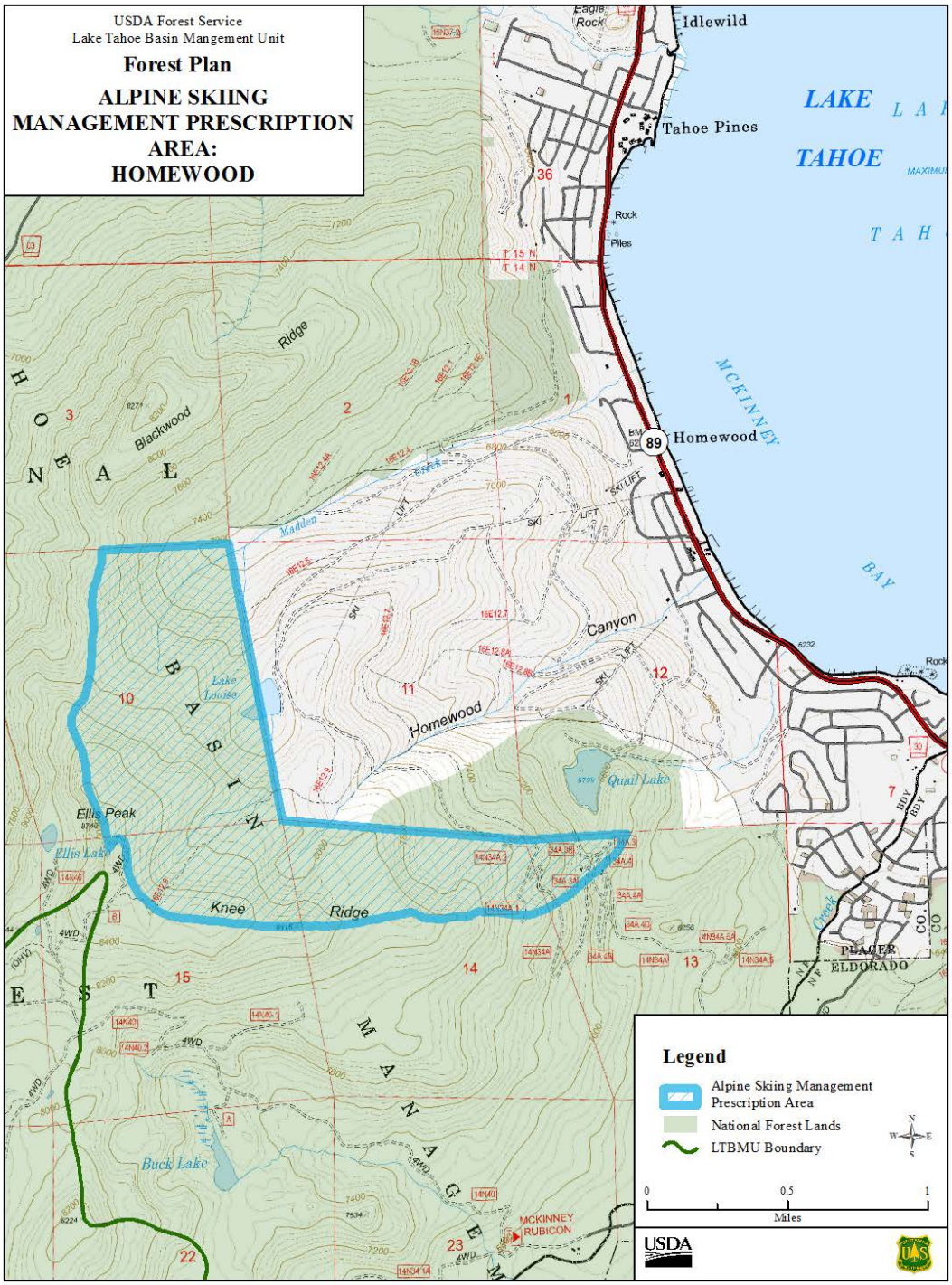


Figure 12. Alpine Skiing Management Prescription Area: Homewood

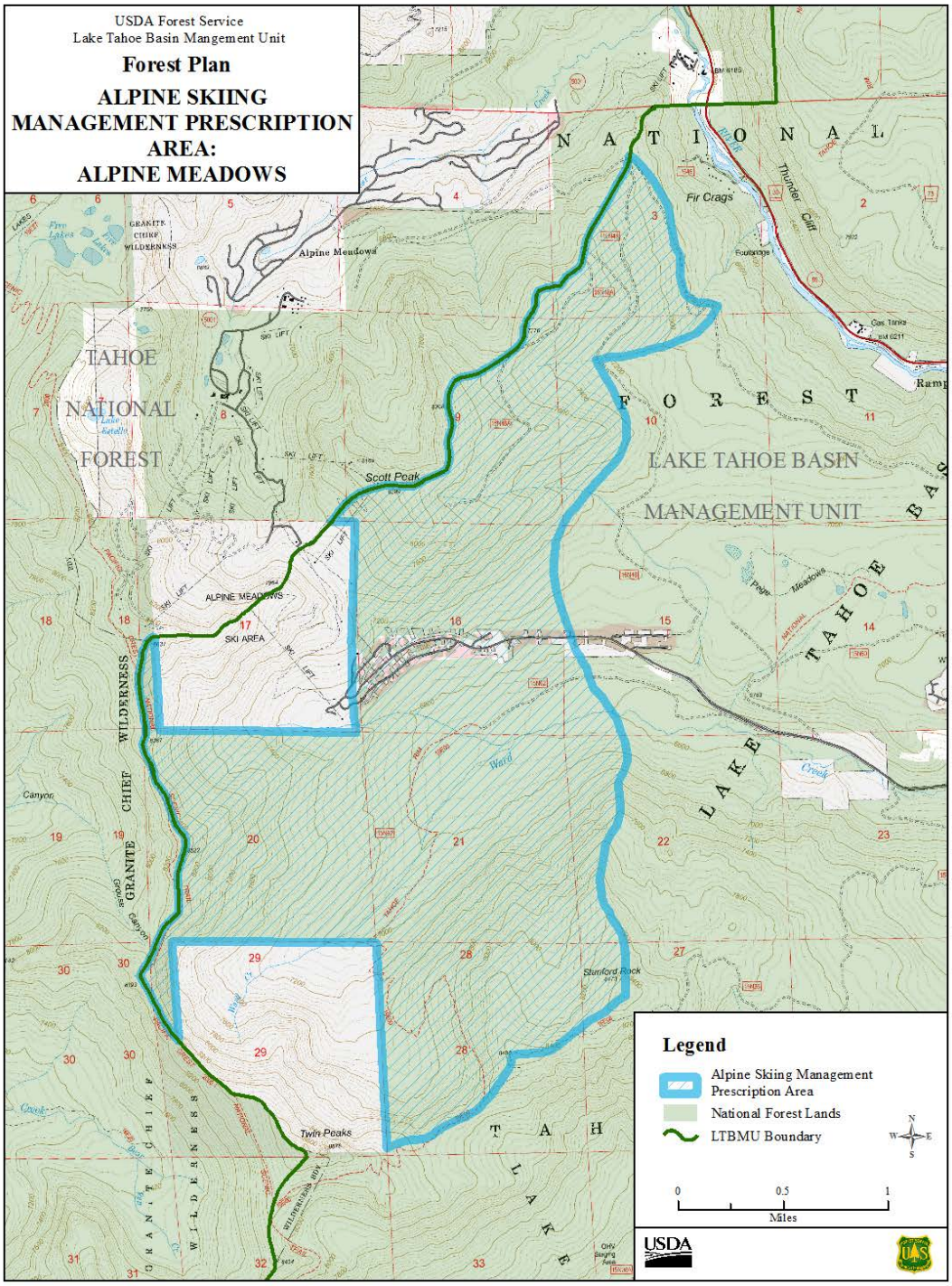


Figure 13. Alpine Skiing Management Prescription Area: Alpine Meadows

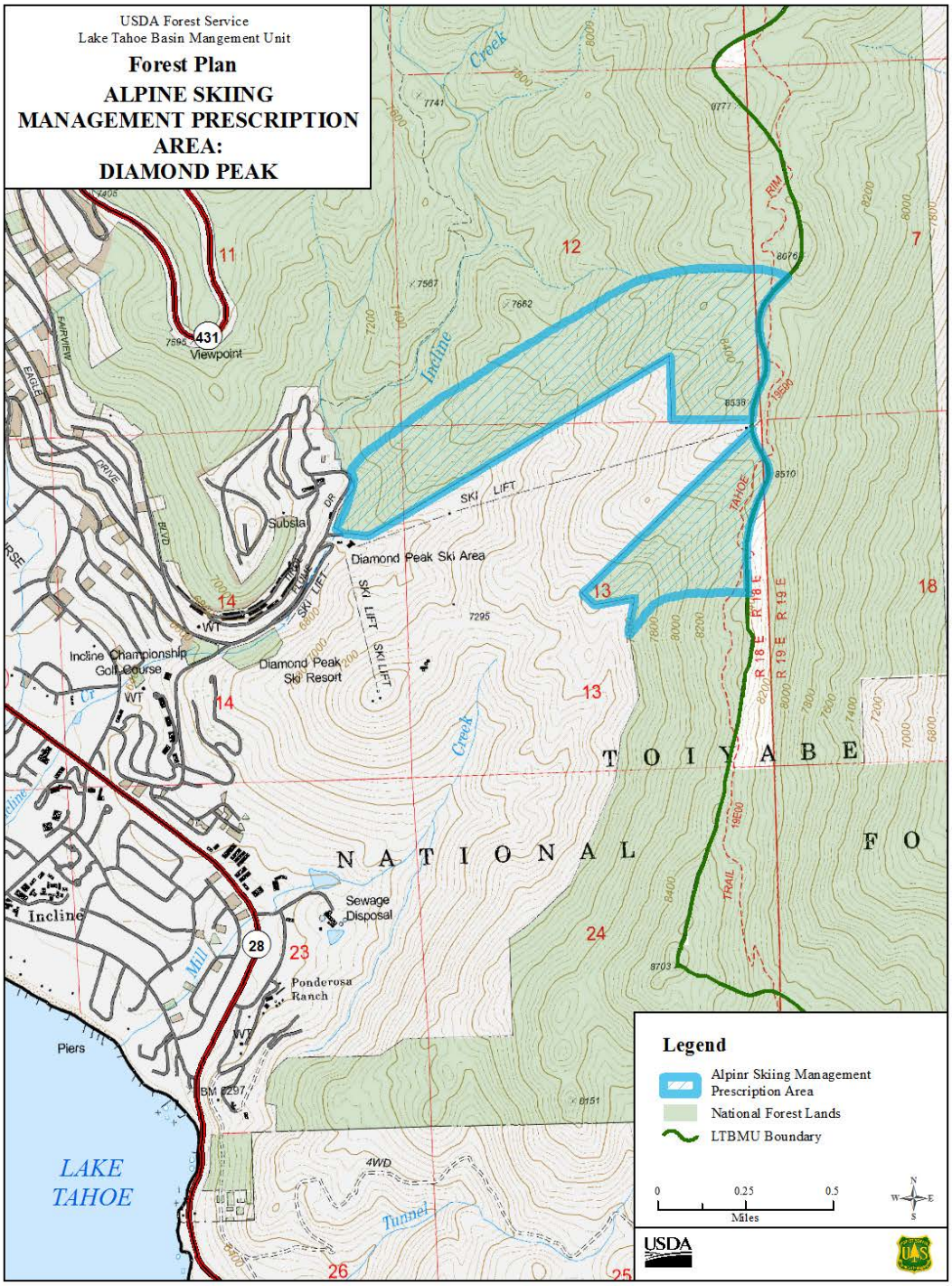


Figure 14. Alpine Skiing Management Prescription Area: Diamond Peak

2.4 Designated Special Areas

Special Areas are NFS lands designated as such because of their unique or special characteristics (reference Plan Maps 3 and 4). Special Areas include special interest areas (SIAs), research natural areas (RNA), Nationally Designated Trails, and other specially-designated sites. Special Areas will continue to be managed consistent with preservation of the values for which each Special Area was designated, as described below.

2.4.1 Wilderness Areas

Desolation Wilderness

Desolation Wilderness consists of 63,960 acres of sub-alpine and alpine forest, granite peaks, and glacially-formed valleys and lakes. It is located west of Lake Tahoe in El Dorado County, California and was designated in 1969. Desolation Wilderness is jointly managed by the Eldorado National Forest and Lake Tahoe Basin Management Unit.

Desolation Wilderness is managed according to the Wilderness Act of 1964 to "ensure an enduring resource of Wilderness for present and future generations." The wilderness character of the Desolation Wilderness and its natural ecological conditions will be preserved under the concept of non-degradation, to prevent loss of solitude and naturalness.

Granite Chief Wilderness

Granite Chief Wilderness was designated in 1984 because of its pristine nature, natural beauty, and potential to provide primitive, non-motorized recreational opportunities. The Tahoe National Forest manages this 25,680-acre wilderness, with only 46 acres located within the LTBMU.

Mt. Rose Wilderness

The 30,000-acre Mt. Rose Wilderness was designated by Congress in 1989. The LTBMU shares management responsibility with the Humboldt-Toiyabe National Forest; only 2,580 acres of the wilderness area is located on the Lake Tahoe Basin. Located in Nevada, between the Sierra Nevada mountain range and the Great Basin, the wilderness is named after the highest peak in the Carson Range. Due to its proximity to urban centers (adjacent to Reno and communities of north Lake Tahoe), Mt. Rose represents one of Nevada's most heavily used wilderness areas.

2.4.2 National Trails System

The National Trails System is a network of scenic, historic, and recreation trails created by the National Trails System Act of 1968. These nationally recognized trails provide for outdoor recreation needs, promote the enjoyment, appreciation, and preservation of open-air, outdoor areas and historic resources, and encourage public access and citizen involvement.

Trails that are part of the National Trails System fall into three categories – National Scenic Trails, National Historic Trails and National Recreation Trails. National Scenic Trails and National Historic Trails are designated by Congress, and National Recreation Trails are designated by the Secretary of Agriculture or the Secretary of the Interior.

Pacific Crest National Scenic Trail

Overall responsibility for the management of the Pacific Crest National Scenic Trail (PCT) lies with the Pacific Southwest Regional Forester.

National Scenic Trails are designated by an act of Congress. The Pacific Crest Trail is a 2,650-mile national scenic trail that runs from Mexico near Campo, California to the Pasayten Wilderness in Canada, passing through the Sierra Nevada and Cascade Mountain Ranges of California, Oregon, and Washington. Forty eight miles of the PCT wander in and out of the LTBMU's western administrative boundary, predominantly in Wilderness and Backcountry Management Areas. The PCT was designated to "provide for maximum outdoor recreation potential and for the conservation and enjoyment of the nationally significant scenic, historic, natural, or cultural qualities of the areas through which such trails may pass" (National Trails System Act of 1968, P.L. 90-543).

Permit quotas and fees required for overnight camping in Desolation Wilderness do not apply to journeys of over 500 miles on the PCT. Interagency permits for such trips are required and available at no charge from the Pacific Crest Trail Association. Either a wilderness permit or a PCT permit is required for all overnight visits.

2.4.3 National Recreation Trails

National Recreation Trails (NRT) are authorized under the National Trails System Act of 1968 (Public Law. 90-543, as amended through P.L. 111-11, March 30, 2009) (also found in United States Code, Volume 16, Sections 1241-1251) and designated by the Secretary of Agriculture.

Tahoe Rim Trail

The Tahoe Rim Trail (TRT) is a 166-mile trail that circumnavigates Lake Tahoe's ridges and mountaintops. Ninety-six (96) miles of the TRT was designated a part of the National Trail System due to its historical features, landscape and water features, scenic qualities, and recreation opportunities it offers. Along the west shore of Lake Tahoe, 48 miles is part of the Pacific Crest National Scenic Trail. The TRT offers outstanding views of Lake Tahoe and surrounding mountain peaks, forests, and meadows that form the Lake Tahoe Basin. The trail passes through two states (California and Nevada), six counties, the LTBMU, the Eldorado National Forest, Humboldt-Toiyabe, and Tahoe National Forests, and Nevada state park lands.

Pope-Baldwin Bicycle Trail

The Pope-Baldwin Bicycle Trail was designated a national recreation trail in 1979 due to the exceptional scenic and recreational opportunities it offers. Pope-Baldwin Bicycle Trail is a 3.3 mile long paved bicycle trail that traverses an area offering scenic views and extensive recreational opportunities. The trail links to South Lake Tahoe's urban bike route on its western end, connecting Pope Beach, Camp Richardson Resort, the Tallac Historic Site, and the Taylor Creek Visitor center.

Hawley Grade Trail

Designated as a national recreation trail, in1979, a 1.8 mile segment of the historic Comstock-era prospector and Pony Express route, Hawley Grade was the main route from Echo Summit into Lake Valley and the Lake Tahoe Basin. The designation recognized the trail's exemplary local and regional significance.

Hawley Grade is a 1.8-mile trail that was originally constructed as a toll road during the gold rush era. The Hawley Grade was designated as a national recreation trail due to its historical role in the Lake Tahoe Basin and its scenic views. In the 1850s, the Hawley Grade served mule-drawn wagons, and for a short time, the Pony Express. This trail, although rugged, offers spectacular views of the Lake Tahoe Basin from Echo Summit, high above the valley floor.

2.4.4 Other Designated Special Areas

Tallac Historic Site, Special Interest Area

The management goal of Special Interest Areas is to protect special recreational or scientific values, such as unique scenic, historical, geological, botanical, zoological, or paleontological characteristics. These areas are then available for public study, use, or enjoyment as appropriate.

The Tallac Historic SIA was established by the 1988 LTBMU Land and Resource Management Plan to protect the Tallac Historic Site and ensure continuing education and interpretation opportunities.

Grass Lake Research Natural Area

Research natural areas (RNAs) illustrate adequately, or typify for research or educational purposes, the important forest and range types in each forest region, as well as other plant communities that have special or unique characteristics of scientific interest and importance. RNAs are retained in a virgin or unmodified condition, except where measures are required to maintain a plant community that the area is intended to represent (36 CFR 251.23).

The Grass Lake RNA was established in 1991 and is administered jointly by the USDA Forest Service Pacific Southwest Research Station and Pacific Southwest Region. Grass Lake RNA provides a sample ecosystem suitable for scientific study. Uses are limited to research, study, observation, monitoring, and educational activities that are non-destructive and non-manipulative. Dispersed recreation is not encouraged, but is allowed if it does not affect natural conditions.

Lake Tahoe East Shore Drive, National Scenic Byway

A National Scenic Byway is a road recognized by the United States Department of Transportation for its archeological, cultural, historic, natural, recreational, and/or scenic qualities. This designation was established by Congress in 1991 to preserve and protect the nation's scenic roads and promote tourism and economic development.

The Lake Tahoe East Shore Drive National Scenic Byway extends from Stateline, Nevada (on U.S. Highway 50) north to Crystal Bay (on NV State Highway 28). Scenic views along Lake Tahoe’s eastern shore are dominated by undeveloped, forested lands. Scenic mid-ground views of Lake Tahoe’s clear aquamarine waters and rocky shoreline, coupled with distant views of forested slopes and high granite peaks, provide dramatic scenic vistas.

2.5 Recommended and Eligible Special Areas

2.5.1 Wild and Scenic Rivers

The process for identifying and evaluating potential additions to the National Wild and Scenic Rivers System includes determining eligibility, suitability, and classification as a wild, scenic, or recreational river. The LTBMU includes one suitable and recommended river segment (Upper Truckee), and six eligible segments, which are described below.

Formal designation of a Wild and Scenic River requires an act of Congress, similar to wilderness designation. Pending formal designation, the LTBMU must manage eligible and suitable rivers to maintain their free flowing character and outstandingly remarkable values unless a subsequent determination of ineligibility or non-suitability is made (FSH 1909.12 Chapter 84.3). Additional requirements may apply to rivers located within a Wilderness area or other designated area (FSM 2354.42e). Formal designation would require the LTBMU to develop a specific management plan for the river and a final boundary for the ¼ mile interim corridor on each side of the river. Additional information about the eligible and suitable rivers described in this section may be found in Appendix B of the FEIS.

Upper Truckee River

The Upper Truckee Recommended Wild River has a special mix of recreation, scenic values, and historic values that are considered Outstandingly Remarkable.

A seven-mile segment of the Upper Truckee River on the Lake Tahoe Basin Management Unit is suitable for Wild and Scenic River designation (Figure 17). The suitable segment is located in the Meiss/Dardanelles Inventoried Roadless Area, from Carson Pass to south of Upper Truckee Rd. Until designated, the interim corridor includes an approximate ¼-mile buffer on either side.

The Upper Truckee River was determined to be suitable in 1999, as a result of the Eight Eastside Rivers Wild and Scenic River Study Report and Final Environmental Impact Statement (USDA Forest Service Tahoe National NF and LTBMU 1999). Forest Supervisor Juan Palma recommended its designation to the Wild and Scenic River System as a Wild River. The Acting Regional Forester concurred and forwarded the recommendation to the Chief of the Forest Service.

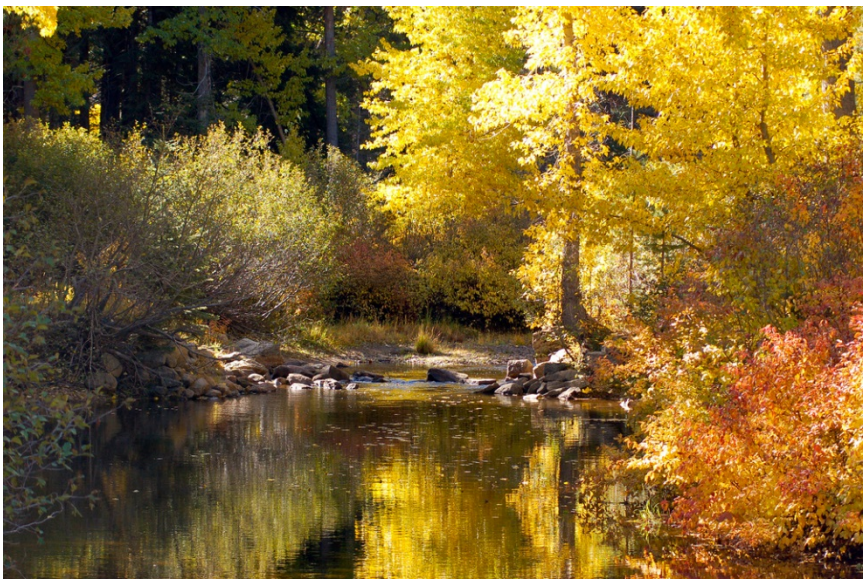


Figure 15. Upper Truckee River

Upper Truckee Tributaries

Three tributaries of the Upper Truckee River (Figure 17) are eligible for inclusion in the Wild and Scenic River System based on the Lahontan cutthroat trout populations and habitats in Tributaries 5, 7, and 8, which are federally listed as endangered.

Eagle Creek

Eligibility of Eagle Creek (Figure 18) is based on a combination of outstanding geologic, scenic and recreational values. The waterfall into Emerald Bay of Lake Tahoe was created by geologic faulting and glaciation (Eagle Falls). The upper falls are accessed by a relatively short and accessible hiking trail with popular views from the bridge located along the trail. The lower falls drop into Emerald Bay and are accessible by car. The spectacular backdrop of Emerald Bay and Lake Tahoe make the lower falls a popular destination for scenery viewing and photography.

Glen Alpine Creek

Federally listed endangered and threatened species occupy and utilize Glen Alpine Creek (Figure 19) for reproduction and other life history requirements. The headwaters of this river provide exceptionally high quality habitat for the federally endangered Sierra Nevada Yellow-legged frog, and the lower portion provides spawning habitat for Lahontan cutthroat trout. These outstandingly remarkable habitats and populations make this river eligible.

Taylor Creek

Eligibility for this popular destination is based on a combination of scenic, recreational, wildlife, and heritage values. Recreation opportunities surrounding Taylor Creek (Figures 16 and 20) include the Taylor Creek Visitor Center, Stream Profile Chamber, and Rainbow Trail. Wildlife viewing (including bears, beavers, songbirds, birds of prey, deer, native Lahontan cutthroat trout and other native fish species, Kokanee salmon, and other wildlife species) as well as scenic viewing are extremely popular due to the Taylor Creek's unique location and lagoon ecosystem. Taylor Creek is also an area of historically significant Washoe summer habitation associated with fisheries resources.

Figure 16. Taylor Creek

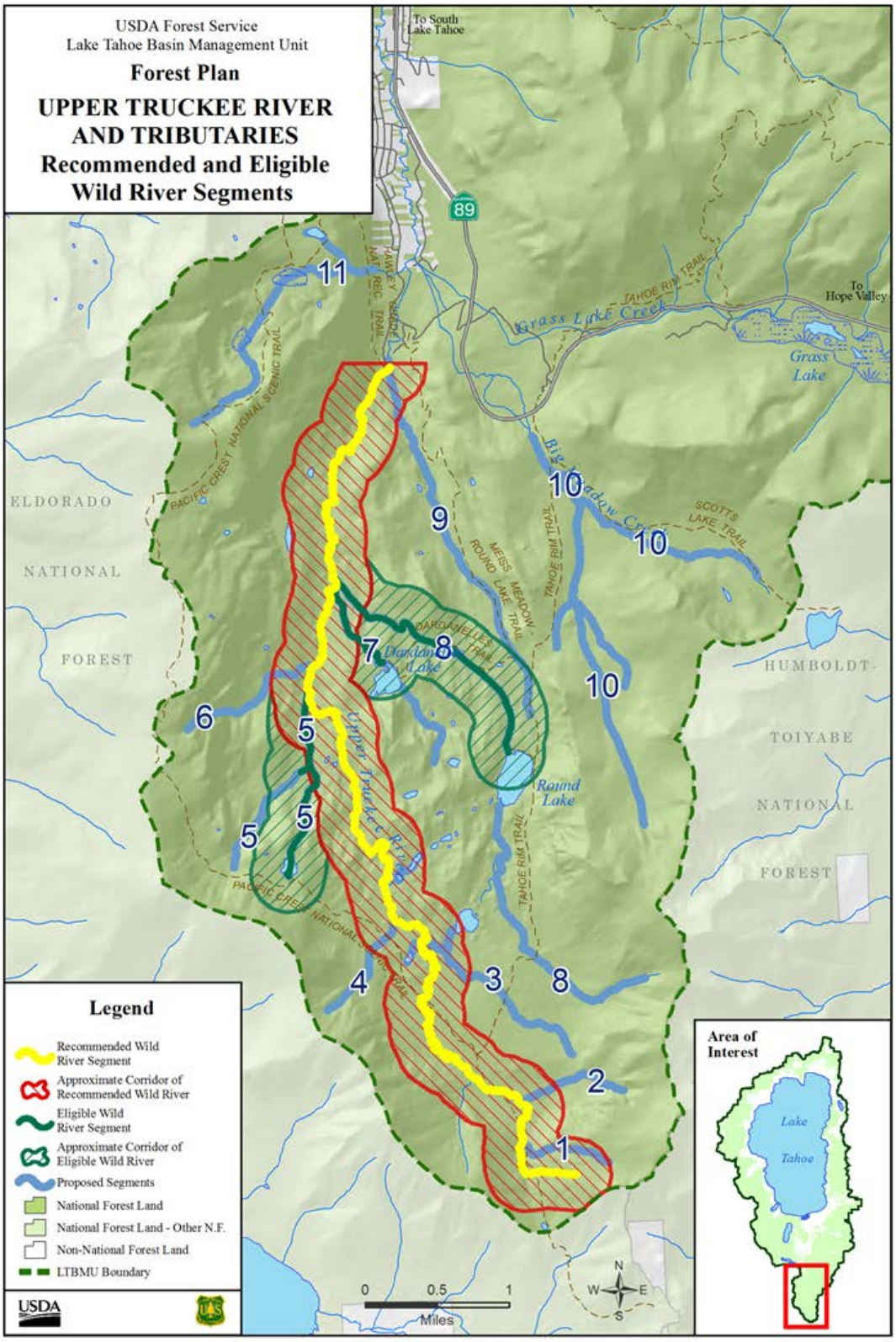


Figure 17. Upper Truckee River recommended and eligible segments

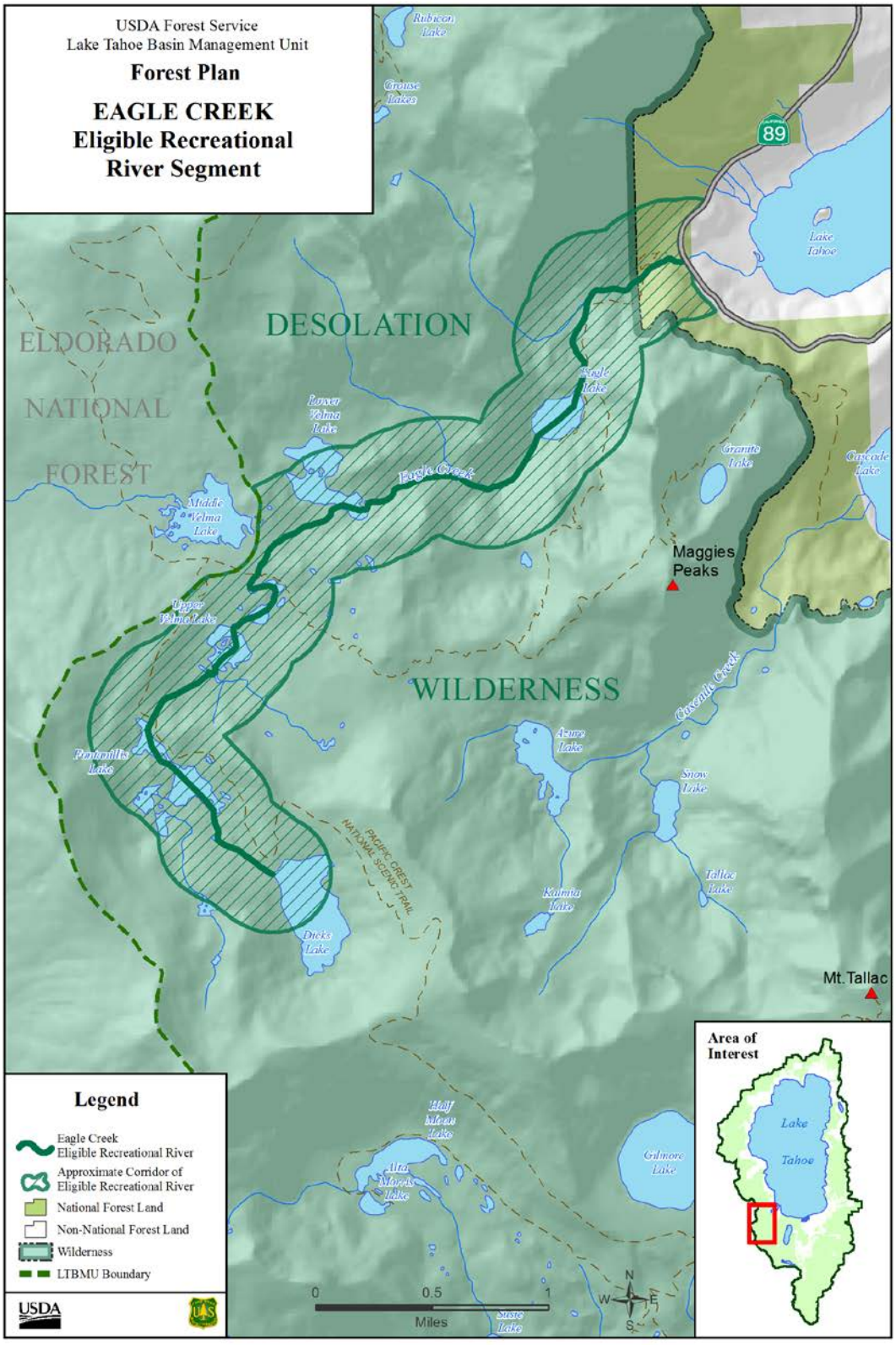


Figure 18. Eagle Creek eligible river segment

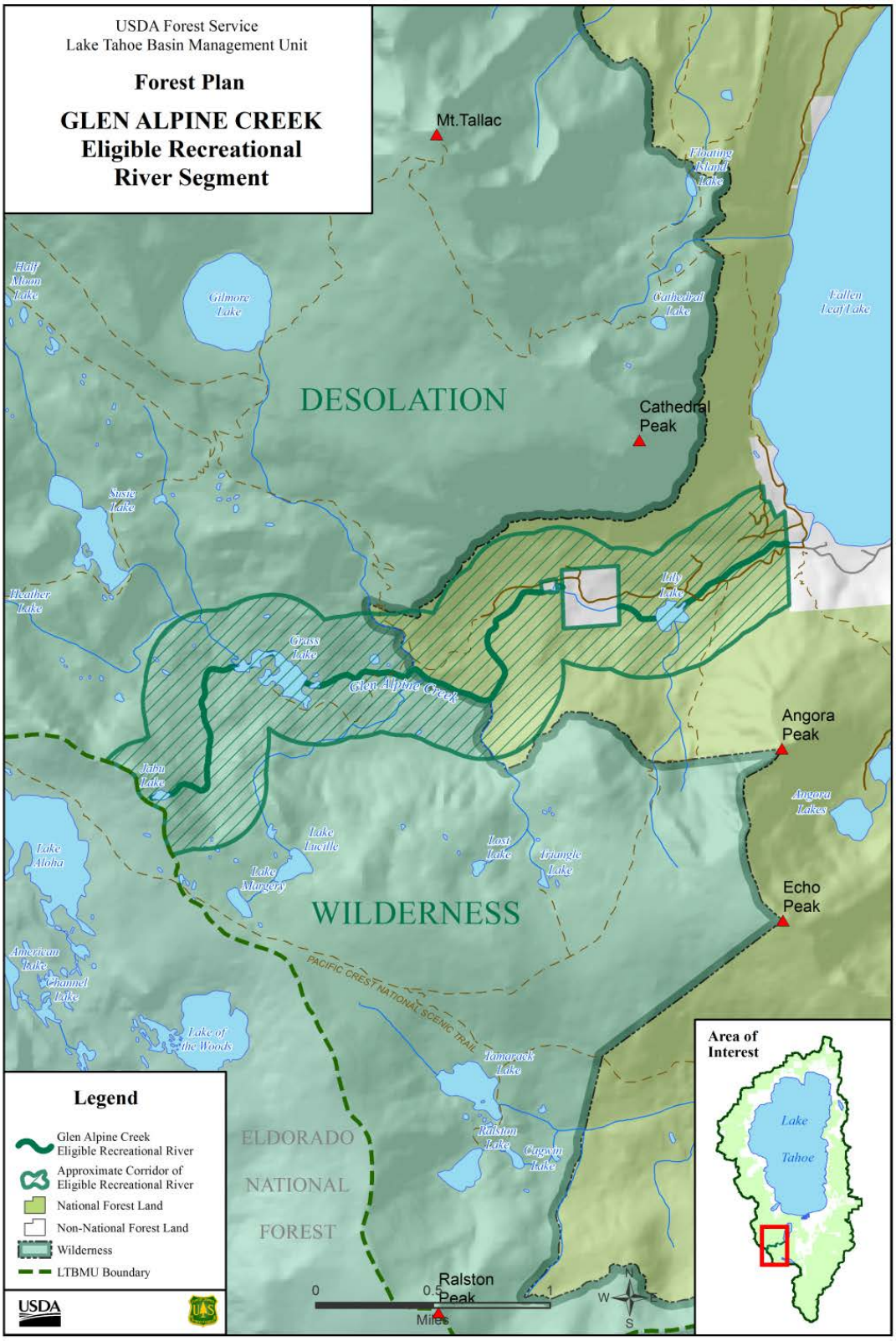


Figure 19. Glen Alpine Creek eligible river segments

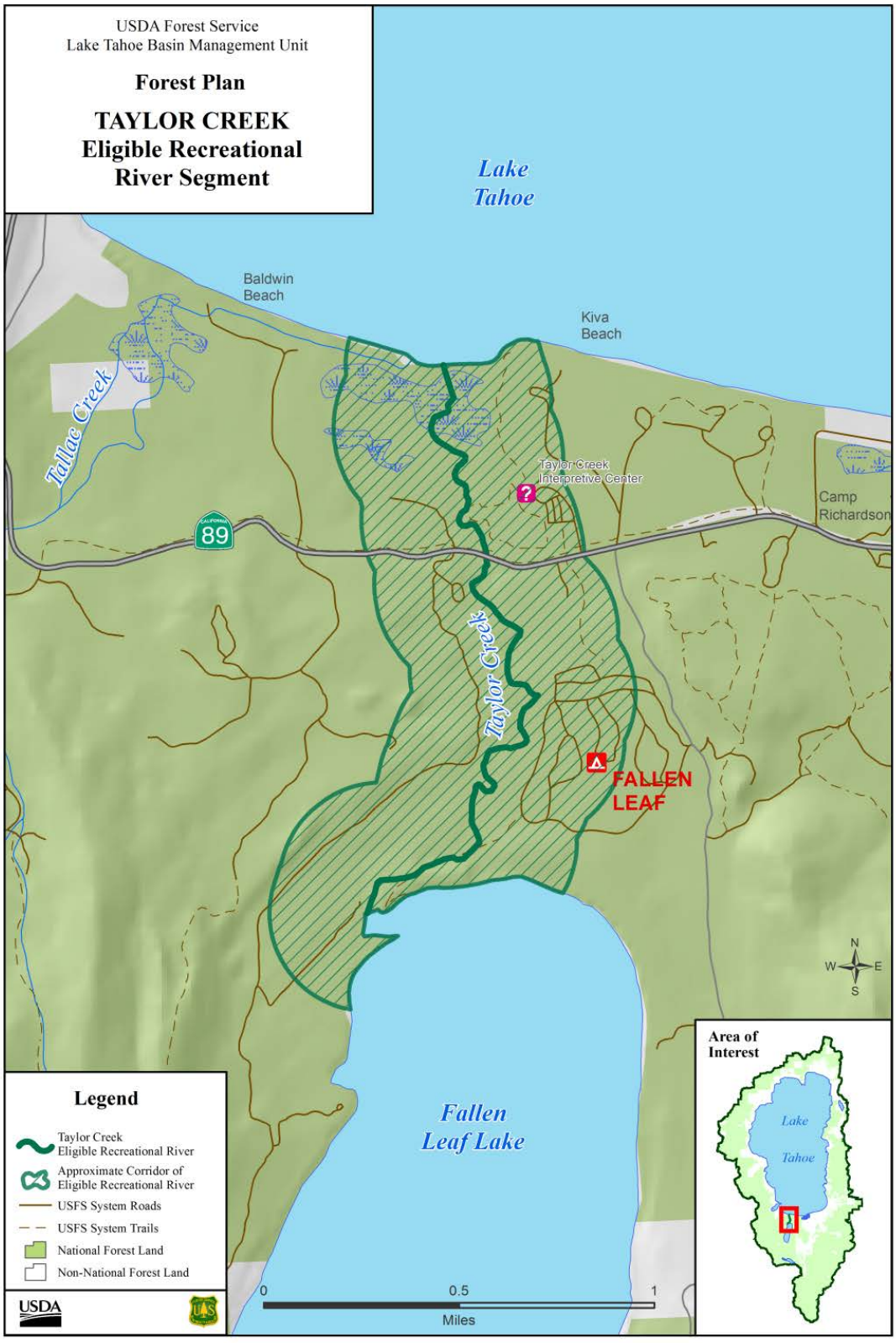


Figure 20. Taylor Creek eligible river segment

3 Part 3: Design Criteria

Design criteria include standards and guidelines. Standards and guidelines (S&Gs) set mandatory limits and constraints on management activities.

A **Standard** is a mandatory constraint on project and activity decision making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements. Project-specific deviations require plan amendment.

A **Guideline** is a constraint on project and activity decision making that allows for departure from its terms, so long as the intent of the guideline is met. The rationale for any deviation, however, must be documented in the project record. Guidelines are established to help achieve a desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements.

Together with applicable law, regulation, and policy, these Design Criteria provide sideboards for subsequent projects and activities to help achieve the desired conditions and objectives.

A wide variety of sources of information inform project and activity decision-making. This information is in the form of laws, regulations, policy, memoranda of understanding, conservation strategies, and programmatic agreements. Existing laws, regulations, and Forest Service directives are not repeated in this chapter. These documents are available from Forest Service offices, and most are posted on the internet. Many are cross-referenced in the design criteria under Other Sources of Information, but these lists are not all-inclusive.

3.1 Management for Multiple Uses

SG1. During project development and design, coordinate with all disciplines. Consider other multiple use values and strike an appropriate balance based on the agency's multiple use mandate when designing and implementing project-level resource protection measures. [Standard]

3.2 Ecological Sustainability

3.2.1 Physical Resources Standards and Guidelines

Air Quality

SG2. Design all Forest management activities to prevent violations of applicable air quality standards. [Guideline]

SG3. Control fugitive dust as needed during ground disturbing activities and periods of intensive road use. [Guideline]

Water Quality

The direction provides guidance for using BMPs to control nonpoint source pollution related to all management actions with the potential to affect water quality on NFS lands, and to avoid minimize, or mitigate adverse effects to soil, water quality, and riparian resources.

SG4. Design all Forest management activities to prevent violations of applicable water quality standards. [Guideline]

SG5. Apply current version of the PSW Region Best Management Practices as described in Forest Service Handbook direction for Soil and Water Conservation, Water Quality Management, and Forest Service National Core BMP Technical Guide to all management activities.[Standard]

SG6. 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. [Standard]

SG7. Store fuel and other toxic materials only at designated sites. Prohibit storage of fuel and other toxic materials within SEZs except at designated administrative sites and sites covered by a Special Use Authorization. Refuel outside of SEZs unless there are no other alternatives. [Guideline]

Water Use and Development

SG8. Cloud seeding to increase precipitation may be permitted unless this activity is shown to produce permanent substantial changes in land use or significant adverse environmental effects. [Guideline]

SG9. The water needed for beneficial uses of existing water rights, and availability of other water sources to supply the needs of forest ecosystem resources must be considered in reviewing water-extraction applications and evaluations, as well as requests for utilizing existing USFS water rights as part of special use permits. [Guideline]

Soil Quality

SG10. Avoid soil displacement to the extent practical when grading slopes, piling brush or slash, or engaging in other heavy equipment operations where earth moving is not the objective. [Guideline]

SG11. During vegetation management activities, limit operation of wheeled or tracked vehicles and timber harvesting equipment to designated routes, and restrict operations to periods of suitable soil moisture conditions as defined in project planning documents and contracts. Suitable conditions also include frozen ground, and/or a firm, protective base of compacted snow. When suitable conditions are not present, restrict equipment use to roads and designated stream crossings unless suitable mitigation measures can be employed. [Guideline]

SG12. Avoid unstable areas and SEZs when reconstructing existing roads and landings or constructing new roads and landings. Minimize and mitigate impacts where avoidance is not practical. [Guideline]

SG13. For vegetation management activities, detrimental disturbance that results in permanent soil impairment (defined in FSM 2550.5) should generally be limited to 15% of the activity area, or unit. The permanent transportation system is excluded from this calculation. [Guideline]

Stream Environment Zones

SG14. Apply appropriate BMPs and project design to reduce, as much as possible, (1) the risk of activity-related sediment entering aquatic systems, and (2) impacts to habitat for aquatic- or riparian-dependent plant and animal species. [Guideline]

SG15. Prescribe project-specific buffers around water bodies and SEZs, including meadows, bogs, fens, springs, and other wetlands as needed to maintain water quality and the physical and biological integrity of SEZs. [Guideline]

SG16. Prohibit disturbance of vegetation and soil 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). [Guideline]

SG17. Avoid or mitigate activities that adversely affect the water flow, water quality, or water temperature critical to sustaining groundwater-dependent ecosystems. [Guideline]

SG18. Permit tree removal and fuel treatments within SEZs when the activity is consistent with desired conditions. Utilize low ground-pressure vehicles, helicopters, over the snow logging, or other minimum ground-disturbing methods when operating off roads. Limit construction of new skid trails or roads for access into SEZs for fuel treatments or tree removal to the minimum needed. [Guideline]

Natural Hazards

SG19. Prohibit new construction in areas at risk from identified natural hazards including but not limited to mass wasting and avalanches. [Guideline]

SG20. Ensure that design, construction or rehabilitation of Forest Service real property is in accordance with standards and criteria outlined in the National Flood Insurance Program (42 U.S.C. 4001 and following) using flood-proofing measures and structural elevation where practicable. [Guideline]

Physical Resources Other Sources of Information

Air Quality

- El Dorado, Placer, and Washoe County regulations; NDEP regulations
- California Regional Haze Plan, CalEPA State Implementation Plan (Jan. 22, 2009)

Water Quality

- R5 FSH 2509.22- Soil and Water Conservation Handbook, Chapter 10, Water Quality Management Handbook
- FS-990a -National Best Management Practices for Water Quality Management on National Forest System Lands, Volume 1: National Core BMP Technical Guide
- FSH 2509.22 – Region 5 Soil and Water Conservation Handbook, Chapter 20, Cumulative Watershed Effects
- Water Quality Control Plan for the Lahontan Region, Chapter 5
- Lake Tahoe Basin 208 Plan

- Clean Water Act

Water Use and Development

- FSM 2540 – Water Uses and Development: FSM 2541.4, FSM 2541.41, and FSM 2541.42
- 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
- Memorandum of Understanding with the Fallen Leaf Protection Association, 3/6/72

Soil Quality

- FSM 2500 Ch.2550 Soil Management
- 2509.22 – Region 5 Soil and Water Conservation Handbook, Chapter 50 – Erosion Hazard Rating

Stream Environment Zones

See Water Quality and Soil Quality information sources.

Natural Hazards

- Region 5 Water Quality Management Handbook
- Natural Hazard Study for the Lake Tahoe Basin Management Unit

Climate Change

- Forest Service Strategic Framework for Responding to Climate Change. Version 1.0. 2008National Roadmap for Responding to Climate Change FS-957b 2011
- Navigating the Climate Change Performance Scorecard. A Guide for National Forests and Grasslands (Version 2) 2011

3.2.2 Forest Vegetation, Fuels, and Fire Management Standards and Guidelines

SG21. Apply an EPA registered borax compound to cut stumps in recreation and other high value sites according to Regional policy and recommended guidelines to limit the likelihood of heterobasidion root disease; outside of these areas determine the need to apply borax, based on biological considerations and management and restoration objectives. [Guideline]

SG22. Where possible, provide a 100 foot radius of defensible space around all structures on all USFS structures or USFS permitted structures as well as for non-federal structures adjacent to National Forest System lands. More than 100 feet of defensible space may be needed, depending on site conditions. [Guideline]

SG23. In conifer forest types, design fuel reduction treatments in conifer forest types so that post treatment flame lengths are less than 4 feet under 90th percentile fire weather conditions. [Guideline]

SG24. When designing forest health or fuels reduction treatments within a high use area or developed site, consider additional treatment measures as needed to address recreation needs. [Guideline]

SG25. When fuels are piled adjacent to trails or in high use areas or sites, ensure that project design includes proximity, pile size, and timing of burn to protect recreation and scenic resources. [Guideline]

SG26. Allow natural ignitions on NFS lands in all fire management units (FMUs), except the WUI defense zone, to meet forest plan desired conditions and objectives, when safety issues have been resolved and smoke impacts can be minimized. [Guideline]

SG27. Suppress all unplanned ignitions in the WUI defense zone. [Standard]

SG28. After wildfires and other large-scale natural disturbances, take prompt measures to reduce adverse effects on public safety, water quality, scenic quality, recreation use, wildlife, and forest health. During the planning of postfire restoration projects, reduce forest fuels as needed to meet fuel loading and fire behavior guidelines to provide for public safety. Prioritize objectives and consider ecological restoration utilizing Standards 60 and 61 below. The cost of restoration may be offset by the sale of timber and biomass. [Guideline]

SG29. Apply minimum impact suppression tactics (MIST) during fire management actions in wilderness and backcountry management areas. [Guideline]

SG30. In general, operate ground-based mechanized equipment for vegetation treatment on slopes less than or equal to 30%. Exceptions should be consistent with safety and design specifications and with the ability to effectively alleviate significant resource impacts. [Guideline]

SG31. When creating openings to restore forest structure/forest health use the group selection with reserve prescription within the mid seral stage. Openings shall range in size from less than 1 acre to 10 acres. Openings shall vary in size and shape and retain trees (singly and in clumps) to produce spatial and structural heterogeneity typical of early seral habitats. On a landscape basis, the majority of openings would be less than 5 acres. Shape and blend the edges of openings to the extent practicable with the natural terrain. [Guideline]

SG32. Select locations of openings (early seral creation or type conversion) on a project-specific basis and as part of the IDT process. Factors influencing the location of openings include but are not limited to the following: [Guideline]

- **a)** proximity to PACs and HRCAs and detections of late-and mid-seral associated species
- **b)** existing connectivity of habitat for species within or adjacent to project area
- **c)** proximity to developed recreation sites, scenic resources, and cultural resources
- **d)** proximity to open water and SEZs
- **e)** proximity to communities
- **f)** surrounding seral stages
- **g)** spread of invasive species (e.g., animals, plants, pathogens)

SG33. Retain trees 30 inches dbh or larger except as described in S&Gs 34 and 35. Where trees greater than 30 inches DBH need to be removed, ID Team members (e.g., vegetation management specialist, wildlife biologist, scenic specialist, recreation management specialist) will propose trees to be removed, girdled for snag creation, or felled for coarse woody debris during project development. [Standard]

SG34. Exceptions under which a tree 30 inches dbh or larger can be removed include the following (a-d). These exceptions do not apply to PACs. In TECPS-occupied or known nesting, denning, roosting trees and adjacent high-habitat-value trees (e.g., trees that provide thermal or protective cover) removal, snag creation or felling for coarse woody debris of a tree equal to or larger than30 inches dbh is prohibited. [Standard]

a) The tree(s) larger than 30 inches dbh presents a safety hazard, prevents equipment operability, or removal is required in conjunction with a special use permit (e.g., utility line).

b) The tree(s) larger than 30 inches dbh has been successfully infected by disease and/or infested by insects with potential to spread to adjacent trees and is in a developed recreation site or facility site (e.g., a communication site).

c) When necessary to support aspen, meadow or stream restoration

d) When managing for blister rust resistant sugar pines that require removal of competing trees within a sufficient radius to improve health of the sugar pine. [Standard]

SG35. Allow removal of large trees (>30 inches dbh) to achieve desired conditions for the forest type (DCs 27-35) when

a) the average dbh of overstory trees (dominant and co-dominant trees) within the stand is greater than 30 inches dbh and the stand density index (SDI) indicates that widespread mortality is imminent (e.g., SDImax), and

b) reducing SDI to a prescribed level for the forest type that will maintain the stand below SDImax for 15-20 years requires removal of some large trees, and

c) the selection for removal or snag or down log creation would allow competitive release for growth of the largest trees.

d) Selection of trees for removal would give preference to shade tolerant trees, and where they exist, retain clumps of large trees. [Standard]

SG36. When designing forest health treatments (thinning) that would reduce canopy cover and/or basal area, minimum canopy cover and basal area retention requirements would be identified to maintain habitat quality for TEPCS species on a project-by-project basis. [Guideline]

SG37. Use the following resource prioritization gradient for vegetation treatments: fire and fuels objectives generally increase in priority with increasing proximity to communities while wildlife objectives generally increase in priority with increasing distance from communities and proximity to specific wildlife resources (e.g., nest and/or roost sites). [Guideline]

SG38. In late seral stands occupied by late seral associated TEPCS species, limit canopy cover and basal area reduction to levels that maintain or improve habitat conditions sufficient to support late seral dependent wildlife species [Guideline]

SG39. In late seral closed canopy stands (greater than 50 percent canopy closure), treatments shall not reduce canopy cover in dominant and co-dominant trees by more than 10% across a stand, and not below canopy cover retention required in standards and guidelines for TEPCS species. [Standard]

SG40. Retain current late seral-closed canopy (greater than 50 percent canopy closure) stands and when considering thinning of these stands, retain this seral stage as closed canopy outside of the WUI. Within the WUI, retain this seral stage as closed canopy if fire behavior objectives can be met. [Standard]

SG41. Consider retaining forested linkages (with canopy cover greater than 40%) that are interconnected via riparian areas and ridgetop saddles. [Guideline]

SG42. Leave burn piles of slash from vegetation treatments no closer than 25 feet from water bodies and intermittent or perennial stream channels. [Standard]

Figure 21. Prescribed fire operations on the west shore of Lake Tahoe

Forest Vegetation, Fuels, and Fire Management
Other Sources of Information

- Forest Health Protection Handbook Chapter 60: Management of Specific Pests Amendment No.: 3409-11-2010-1. Regional Foresters' letter regarding policy to follow CA law 4291.
- Angwin, P., D. Cluck, P. Zambino, B. Oblinger and W. Woodruff. 2012. Hazard Tree Guidelines for Forest Service Facilities and Roads in the Pacific Southwest Region. FHP-PSW-April 2012 Report RO-12-01.
- LTBMU Resource Guidelines for Wildfire Suppression
- LTBMU Fire Management Plan
- FSM 5100
- PRC 4291 – California defensible space regulation (Public Resource Code)
- Nevada NRS 477.030 – creation and enforcement of Nevada defensible space regulation. Standards at Nevada Administrative Code 477.281

3.2.3 Biological Resources Standards and Guidelines

Conservation of Species and Habitat

SG43. On a project specific basis, prescribe measures needed to provide for the diversity of plant and animal communities and support the persistence of native species. [Guideline]

SG44. During project development, evaluate the project area, including any designated critical habitat, for the habitat suitability and/or occurrence of TEPCS species. [Standard]

SG45. Implement Limited Operating Periods (LOPs) for TEPCS species and TRPA identified native species (Plan Appendix C) when determined necessary through biological review. [Standard]

SG46. Maintain downstream flow and volume adequate to support aquatic species during in-stream restoration and/or water drafting activities. Avoid construction of artificial impoundments for water use except where needed for initial suppression of wildfires. Ensure that any artificial impoundments are removed after use and the area is restored. [Guideline]

SG47. Decontaminate field clothing and gear prior to entering and when moving between cave habitats to prevent the spread of pathogens and disease. [Guideline]

SG48. Maintain and restore the hydrologic connectivity of streams, meadows, wetlands, and other special aquatic features by implementing corrective actions where BMPs have not been implemented or are not effective on roads and trails that intercept, divert, or disrupt natural surface and subsurface water flow paths. [Guideline]

SG49. When stream crossings are constructed, reconstructed, or permanently removed, provide for aquatic organism passages. [Guideline]

SG50. Conduct fish salvage prior to in-stream management activities. [Guideline]

SG51. Employ measures such as limited operating period (LOP), buffering, and flagging and avoiding to minimize negative impacts to known TEPCS populations and habitats. [Guideline]

SG52. Genetically appropriate native plant materials shall be given primary consideration in revegetation, rehabilitation, and restoration. [Guideline]

SG53. When planting to increase willow cover, plant in patches with a mean size of 4,000 square feet. [Guideline]

SG54. Design pesticide applications to avoid adverse effects on TEPCS species and their habitats. [Guideline]

SG55. Retain snags and coarse woody debris at high use areas including developed recreation, administrative and permitted sites after considerations have been made for defensible space, public health and safety, and other management objectives for the site. [Guideline]

SG56. When facilities at developed recreation sites that are located in or adjacent to wetlands suitable for waterfowl nesting are opened between March 1 and June 30, implement appropriate actions (e.g., signing) to manage impacts from recreation (e.g., dogs) to maintain a low level of human disturbance on nesting waterfowl. [Guideline]

SG57. Manage stream reaches on the Forest to attain levels of stream shading which maintain cold water conditions from the months of June – September when precipitation and base flows are normally lowest and ambient air temperatures are highest. Cold water conditions during June – September should target a maximum 7-day mean temperature of 20ºC or less. [Standard]

SG58. Provide a renewable supply of large downed logs that: (1) can reach the stream channel and (2) provide suitable habitat within and adjacent to the SEZs. Leave existing downed trees and CWD that are in perennial or intermittent stream channels in place unless removal is needed to maintain channel stability.[Guideline]

SG59. To avoid removing or altering bank stabilizing vegetation, trees may be marked for removal (live or dead) within 5 feet of the bank edge of perennial or intermittent streams and lakes, only where fuel loads or stand densities exceed desired conditions and where CWD is at or above desired levels or where trees are a hazard to safe operations. [Standard]

SG60. Use screening devices for water drafting pumps, except when emergency fire suppression activities make it impractical. Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, form aquatic habitats. [Standard]

SG61. Postfire restoration projects (as planned using Guideline number 28 above) shall give priority to public safety and developed infrastructure first (e.g., hazard tree mitigation, WUI hazardous fuel reduction, flooding, roads, and trails, etc.) and then to wildlife habitat (including retention of burned forest habitat), soils, vegetation, water quality, and invasive species. [Standard]

SG62. Ensure that postfire restoration projects (as planned using Guideline number 28 above) include ecological restoration objectives based on needs of local wildlife species that use burned forest habitat. Retain with minimal intervention, connected patches of this habitat type that have habitat elements important to species associated with burned forest habitat (i.e., complex early seral). Where management intervention is necessary, restoration project objectives for wildlife will prioritize the retention of existing

dense and connected patches of snags that contain a range of snag sizes and spatial arrangements, and the retention of regenerating vegetation such as the shrub layer and herbaceous understory. [Standard]

SG63. Outside of WUI defense zones, salvage harvests are prohibited in California spotted owl PACs and known carnivore 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. [Standard]

SG64. Evaluate the need for ecological restoration following disturbances unrelated to fire (e.g., avalanches, windthrow, flooding, insect outbreaks, disease). Give priority to public safety first and then to wildlife habitat (including retention of habitat), soils, vegetation, water quality, and invasive species. [Guideline]

SG65. During project-specific analysis determine appropriate amount of coarse woody debris to provide for long-term habitat quality. Coarse woody debris is generally comprised of at least three downed logs per acre in varying stages of decay. [Guideline]

SG66. Manage snag levels during project specific analysis after consideration for public safety. Prioritize retention of medium- and large-diameter snags or live trees that exhibit form and/or decay characteristics regarded as important wildlife habitat (e.g., have substantial wood defect, teakettle branches, broken tops, large cavities in the bole, etc.). Retain snags as follows: [Guideline]

- **a)** Red fir forest type and white fir-mixed conifer forest types – on average, strategically locate and retain six of the largest snags per acre (In the WUI, fewer snags may be retained.)
- **b)** Jeffrey pine – on average, strategically locate and retain three of the largest snags per acre (In the WUI, fewer snags may be retained.)
- **c)** Snags should be clumped and distributed irregularly across treatment units.
- **d)** Snags with cavities are a priority for primary and secondary cavity nesters (e.g., mountain bluebirds, house wrens, and white breasted nuthatch). When snags are absent consider installation of nest boxes to benefit cavity nesters.
- **e)** Consider multiple resource values to determine appropriate retention levels based on availability and project objectives.

SG67. Do not construct roads and trails within ¼ mile of the top or base of known cliff nesting raptor sites. [Standard]

SG68. Prohibit activities, such as rock climbing near occupied cliff nesting raptor sites during the nesting season (April 1-July 31), as needed to protect individuals. Determine buffer distance based on nest location, nesting pair behavior, and cliff features that either expose or visually/audibly shield the nest from disturbance. [Standard]

SG69. 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. [Standard]

SG70. Design vegetation treatments to minimize potential for creating isolated late seral stands by maintaining habitat connectivity of late seral stands. [Guideline]

SG71. When marking trees in late seral habitats, consult with a wildlife biologist regarding tree marking guidance, to ensure that the highest quality resting, denning, nesting, and roosting trees are retained.[Standard]

SG72. Marten den sites are 100-acre buffers consisting of the highest quality habitat in a compact arrangement surrounding the den site. CWHR types 6, 5D, 5M, 4D, and 4M in descending order of priority, based on availability provide highest quality habitat for the marten. Mitigate impacts where there is documented 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. [Standard]

Invasive Species Management (Aquatic and Terrestrial)

SG73. Incorporate prevention and control measures into project planning, management activities and operations to prevent new introductions or contribute to spreading of invasive species, and reduce impacts from existing infestations on NFS lands, or to adjacent lands and water bodies. [Standard]

SG74. When feasible, employ the following control measures, such as: [Guideline]

- **a)** Use contract and permit clauses to require that the activities of contractors and permittees (including but not limited to special use permits, utility permits, pack stock operators) are conducted to prevent and control the introduction, establishment, and spread of aquatic and terrestrial invasive species.
- **b)** Include invasive species prevention and control measures in mining plans of operation and reclamation plans.
- **c)** When working in known invasive species infestations during project implementation, equipment and vehicles shall be cleaned before moving to other NFS lands.
- **d)** Support partner agencies and their programs.
- **e)** Use on-site materials where feasible, unless contaminated with invasive species.

SG75. Gravel, fill, topsoil, mulch, and other materials should be free of invasive species. [Guideline]

SG76. New infestations are inventoried and known infestations are prioritized and contained, controlled, or eradicated using an integrated management approach. [Standard]

Aquatic

SG77. Ensure that all motorized watercraft launching from staffed Forest Service facility have required documentation of AIS inspection.[Standard]

SG78. All equipment and vehicles (Forest Service and contracted) used in a waterbody during project implementation shall be inspected and free of invasive species prior to implementation.[Guideline]

SG79. Take actions as needed to minimize the risk of spreading Bd fungus and other potential aquatic pathogens and/or diseases through aquatic systems. [Guideline]

SG80. Ensure that field gear (waders, float tubes, etc.) is cleaned, decontaminated, and/or fully dried prior to entering or moving between aquatic habitats. [Guideline]

SG81. Establish non-motorized watercraft risk screening for AIS at staffed entry points for both Forest Service boat launches and recreation facilities adjacent to Lake Tahoe water bodies, including campgrounds, resorts, and day use areas. [Guideline]

SG82. Following emergency response guidelines, implement prevention measures to decrease the potential for aquatic invasive species transference during [Guideline]

Terrestrial

SG83. For projects involving ground disturbance, inventory project areas and adjacent areas (particularly access routes) for invasive plants. [Guideline]

SG84. If supplemental fodder (such as hay, straw, or silage) is required for permitted livestock, including horses and other pack animals, it shall be weed-free as certified by state or local certification programs. [Standard]

SG85. Screen plant materials used in revegetation, rehabilitation, and restoration (seed, cuttings, whole plants) for invasive plant risks. Avoid the use of persistent non-native plants unless justified in project documentation. [Guideline]

SG86. All equipment and vehicles (Forest Service and contracted) used off-road during project implementation shall be cleaned and free of invasive plant material before moving into the project area. [Guideline]

SG87. Following emergency response guidelines, utilize washing stations at staging areas, base camps, or other incident locations, to clean soil, seeds, vegetative material, or other debris that could contain invasive plant material from off-road equipment and vehicles. [Guideline]

SG88. Avoid locating landings or staging areas within areas infested by invasive plants, including during project implementation, fire management activities, and other ongoing management and maintenance activities. If infested areas are the only feasible landing/staging areas, then treat infestations prior to use, except in emergency situations. [Guideline]

SG89. Minimize the size of staging and construction areas. Where feasible, reestablish vegetation on disturbed bare ground to reduce invasive species establishment. [Guideline]

Protected Activity Centers and Home Range Core Areas (PACs and HRCAs)

SG90. 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 PACs where appropriate based on survey results. [Standard]

SG91. 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 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. [Standard]

SG92. For mechanical thinning treatments specifically designed to meet objectives for treating fuels and/or controlling stand densities in mature forest habitat (CWHR types 4M, 4D, 5M, 5D, and 6) outside the WUI defense zone:

- **a)** Within California spotted owl HRCAs: where existing vegetative conditions permit, design projects to retain at least 50% 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% canopy cover retention cannot be met for these reasons, retain at least 40% canopy cover averaged within the treatment unit.
- **b)** 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. [Standard]

SG93. 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.

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:

- **a)** lowest contribution to productivity: PACs presently unoccupied and historically occupied by territorial singles only.
- **b)** PACs presently unoccupied and historically occupied by pairs
- **c)** PACs presently occupied by territorial singles
- **d)** PACs presently occupied by pairs
- **e)** 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. 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. [Standard]

Figure 22. California spotted owl

SG94. 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. [Standard]

SG95. 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. [Standard]

SG96. 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. [Standard]

SG97. 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. [Standard]

SG98. 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. [Standard]

SG99. Design management activities (e.g., vegetation treatments, recreation or access expansion or improvements) to minimize potential for creating isolated PACs and HRCAs by maintaining habitat connectivity of the PACs/HRCAs with the adjacent forest. [Guideline]

Special Status Species Habitat Areas

SG100. Management actions are consistent with habitat and population recovery objectives outlined conservation strategies and recovery plans. [Guideline]

SG101. In all Management Areas - in streams or lakes occupied by SNYLF, avoid disturbance within 10 feet of streambanks and lakeshores during breeding activities or where egg masses are present. [Standard]

SG102. In streams occupied by LCT, limit activity disturbance on or near stream banks and in floodplains until completion of spawning and egg incubation periods. [Standard]

SG103. For projects proposed on the shorezone, barrier beach and backshore of Lake Tahoe that have the potential to affect Tahoe yellow cress plants or their suitable habitat, assess for Tahoe yellow cress prior to, but in the same year as, project implementation. [Guideline]

Figure 23. Lahontan cutthroat trout

Biological Resources Other Sources of Information

- Forest Service Manual and Handbook (FSM/H 2670)
- Endangered Species Act (ESA), Section 7 and implementing regulations (CFR)
- Species-specific Recovery Plans that establish population goals for recovery of those species
- Species management plans
- Species management guides or conservation strategies
- Regional Forester policy and management direction
- Pacific Southwest Region Noxious Weed Management Strategy. 2001.
- Forest Service Manual (FSM) 2900.
- Federal Noxious Weed Act of 1974, as amended (7 U.S.C. 2801 et. seq.)
- 36 C.F. R. 222.8.
- Departmental Regulation 9500-10.
- Noxious Weed Executive Order 13112.
- Lake Tahoe Basin Weed Coordinating Group Memorandum of Understanding (2008).
- Additional laws, regulation and policy as found in FSM 2901 (2011)

3.3 Social and Economic Sustainability

3.3.1 Recreation Standards and Guidelines

Recreation Opportunity

SG104. Use ROS classification as a guideline for projects, activities, and permitted uses. [Guideline]

SG105. During implementation of projects with the potential to affect recreation activities, implement measures to minimize impacts to recreation opportunities, facilities, and visitor safety. Such measures could include limited use or temporary closures. [Guideline]

Public Access

SG106. Allow outdoor recreation facilities and activities in SEZ and on other low capability lands (as defined by Bailey 1974) only where they are a part of long range development plans, or where the nature of the activity must be so sited. [Guideline]

Recreation Development

SG107. Recreation development expansion will not exceed the following: [Standard]

a) Recreation Sites such as resorts, campgrounds, beaches (acres) Existing acres **1,163**	Potential Increase 58 **Up to 1,221 ac.**
b) Overnight Accommodation Units (motel and lodge rooms, cabins, and campsites) Existing units **1,192**	Potential Increase 110 **Up to 1,302 units**
c) Day Use (parking spaces) Existing spaces **2,875**	Potential Increase 144 **Up to 3,019 spaces**

SG108. Maintain an inventory of recreation development expansion as described in a, b, and c above. [Standard]

SG109. Within the alpine skiing prescription boundary, as shown on Figures 11-14, expansion of existing ski facilities shall be permitted based upon an approved master plan for the future facilities. [Standard]

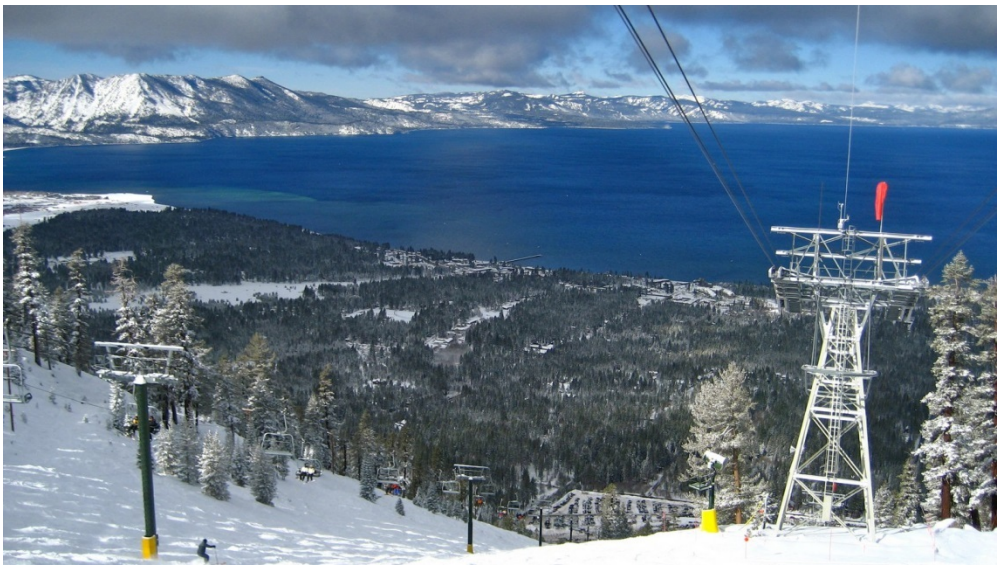


Figure 24. Winter recreation at Heavenly Mountain Resort, LTBMU

Recreation Other Sources of Information

- FSH 1900-3 Social Analysis for Planning and Decision-Making
- The Limits of Acceptable Change (LAC) System for Wilderness Planning, General Technical Report INT-176
- National Visitor Use Monitoring (NVUM) Reports
- LTBMU forest orders restricting recreation uses
- Recreation Facility Assessment, LTBMU
- Architectural Barriers Act, Forest Service Outdoor Recreation Accessibility Guide
- Americans with Disabilities Act
- FSM/FSH 2300 chapters
- An Approach to Sustainable Recreation-South Shore Corridor
- A Framework for Sustainable Recreation

3.3.2 Recreation Special Uses Standards and Guidelines

SG110. Evaluate the suitability of recreation residence reconstruction on a case by case basis if destroyed by fire, snow loading, or other causes,

If cabins in or adjacent to SEZ or other sensitive lands are destroyed, where reconstruction is allowed, special use permits will be modified to address impacts to sensitive resources, or revoked if impacts cannot be mitigated. [Guideline]

SG111. On roads and trails serving both special use sites and general public use, share maintenance costs on a basis proportionate to use; establish provisions in the permit. Develop maintenance agreements with individual permit holders or associations. [Guideline]

SG112. Trails developed and used by special use permit holders shall be maintained to Forest Service standards by the permit holders. [Standard]

SG113. Do not permit new recreation residences, including development on unoccupied (in lieu) lots, within existing recreation residence tracts. [Standard]

SG114. 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, and not be re-issued. No additions to existing improvements will be authorized for residences under such circumstances. [Standard]

SG115. Recreation residences will not be allowed to expand in size to accommodate more 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. If the required addition cannot be accommodated within the existing land coverage, additional coverage may be authorized. [Guideline]

Recreation Special Uses Other Sources of Information

- Forest Service Manual (FSM) and Forest Service Handbook (FSH) directives
- Recreation Facility Assessment, LTBMU
- Architectural Barriers Act, Forest Service Outdoor Recreation Accessibility Guide
- Americans with Disabilities Act

3.3.3 Interpretation and Education Standards and Guidelines

SG116. Provide for public use and education while preserving the historically and culturally significant aspects of the nationally registered historic sites and culturally important properties. [Guideline]

Interpretive and Education Other Sources of Information

- USDA FS Interpretive Services Strategy 2003
- PSW Region 5 Interpretive Services Strategy
- FSM 2390 Interpretive Services
- FSH 1600

- A Federal Vision for the Environmental Improvement Program at Lake Tahoe, June 2006
- Explore Tahoe Interagency Agreement
- Meyers Visitor Center Interagency Agreement
- Plan for the Tallac Historic Site 1994
- EIP
- FSM 1623 Natural Resource and Environmental Education
- The USDA Forest Service Interpretive Services Strategy
- Strategic Plan for Conservation Education in the Pacific Southwest Region, FSM 1623
- Title VI of the Civil Rights Act of 1964

3.3.4 Scenic Resources Standards and Guidelines

SG117. Scenic resource and built environment guidelines are incorporated into management activities and into the design and development of agency facilities.SG116. All resource management and permitted activities shall meet or exceed the established scenery objectives shown on the Minimum Scenic Integrity Objective (MSIO) map. Utilize techniques such as: [Standard]

a) Size areas cleared for management objectives to meet minimum requirements for operability and safety.

b) With consideration for scenic objectives, maintain clumps of trees within cleared areas if they do not pose a safety or operational risk.

c) Maintain understory vegetation within cleared corridors if they do not pose a safety or operational risk.

Scenic Resources Other Sources of Information

- USDA Forest Service, Lake Tahoe Basin Management Unit, Scenery Management System Inventory, 2008.
- Lake Tahoe Basin Scenic Resource Inventory, Wagstaff and Brady, 1980
- USDA Forest Service, Publication FS-710, The Built Environment Image Guide for the National Forests and Grasslands, December 2001.
- Agriculture Handbook No. 701, 1995. Landscape Aesthetics, A Handbook for Scenery Management
- USDA Forest Service, Sign Plan
- Best Environmental Design Practices - The following information constitute the Landscape Management Best Environmental Design Practices for utilities, range, roads, timber, fire, ski areas, and recreation activities:
- U.S. Department of Agriculture, Forest Service. National Forest Landscape Management:
- Volume 1. Agriculture Handbook 434. Washington, DC: U.S. Department of Agriculture; 1973.

- U.S. Department of Agriculture, Forest Service. National Forest Landscape Management:
  - Volume 2, Chapter 2: "Utilities." Agriculture Handbook 478. 1975.
  - Volume 2, Chapter 3: "Range." Agriculture Handbook 484. 1977.
  - Volume 2, Chapter 4: "Roads." Agriculture Handbook 483. 1977.
  - Volume 2, Chapter 5: "Timber." Agriculture Handbook 559. 1980.
  - Volume 2, Chapter 6: "Fire." Agriculture Handbook 608. 1985.
  - Volume 2, Chapter 7: "Ski Areas." Agriculture Handbook 617. 1984.
  - Volume 2, Chapter 8: "Recreation." Agriculture Handbook 666, 1987

3.3.5 Cultural Resources Standards and Guidelines

SG118. When avoidance of adverse impacts is not possible, authorize impacts to significant properties only after negotiating and signing a Memorandum of Agreement between the Forest Service and/or the appropriate State Historic Preservation Officer and Advisory Council on Historic Preservation. [Guideline]

SG119. Collect cultural artifacts only for diagnostic dating purposes, answering research questions, or protection of the artifact. [Guideline]

SG120. Except as noted in the foregoing guideline, record cultural artifacts in detail in the field, and leave them in place. [Guideline]

SG121. Include historic property protection provisions in contracts and special use permits as applicable. [Guideline]

SG122. Prohibit the use of metal detectors to locate archaeological or historical artifacts except for scientific research as permitted by the Forest Service. [Guideline]

Cultural Resources Other Sources of Information

- American Antiquities Act of June 8, 1906
- Historic Sites Act of 1935 as amended (16 USC 461-467)
- Protection of Archaeological Resources (36 CFR 296)
- Curation of Federally-Owned and Administered Archeological Collections (36 CFR 79)
- Protection of Historic Properties (36 CFR 800)
- Region 5 Amended Regional Programmatic agreement with the USFS and SHPO for Compliance with Section 106 of the National Historic Preservation Act.

3.3.6 Tribal Relations Standards and Guidelines

SG123. Consult with the Washoe Tribe of Nevada and California when management activities may affect tribal rights and interests or impact culturally important resources, consistent with the Consultation Protocol. [Guideline]

Tribal Relations Other Sources of Information

- American Indian Religious Freedom Act of 1978 as amended (42 USC 1996 and 1996a)
- EO 13084-Consultation with Indian Tribal Governments

- EO 13175-Consultation with Indian Tribal Governments
- Cooperative Agreement, February 26,1999, establishing collaborative wetlands conservation planning for the Baldwin/Taylor Creek and Meeks Meadow areas
- Record of Decision for Cave Rock Management Direction Final Environmental Impact Statement, USDA Forest Service, Lake Tahoe Basin Management Unit, August 5, 2003, Cave Rock Closure Forest Order No. 19-08-01.
- Native American Graves Protection and Repatriation Act (NAGPRA).
- 36 CFR 223 Subpart G – Special Forest Products.
- 36 CFR 223 Subpart H – Forest Botanical Products.

3.3.7 Noise Standards and Guidelines

SG124. LTBMU management actions are consistent with the TRPA Noise Thresholds for the Tahoe Basin for the National Forest lands within the Basin. [Guideline]

Noise Other Sources of Information

Code of Federal Regulations (CFR):

- Title 36 CFR 261.4(d).
- Title 36 CFR 261.10 (i).
- Title 36 CFR 261.15 (d).

The State of California has specific noise related laws that are enforced on the LTBMU:

- California Vehicle Code (CVC): 27150 (a).
- CVC 27150 (b).
- CVC 38365 (a).
- CVC 38370 (h)

3.3.8 Access and Travel Management Standards and Guidelines

Roads

SG125. Maintain designated road system condition to comply with manage motorized vehicle use as designated and illustrated on the motorized vehicle use map (MVUM). [Standard]

SG126. Temporary roads, or access ways created as part of management activities, shall be restored to prevent vehicle travel as soon as practical and/or upon completion of the use. Restoration shall include stabilization measures and other BMPs to protect water quality. [Guideline]

SG127. To protect watershed resources, employ the following guidelines for all road work (construction, reconstruction, and relocation):

- **a)** Design new stream crossings and replacement stream crossings to pass at least the 100-year flood, including bedload and debris.
- **b)** Design stream crossings to maintain streamflow in the channel in the event of failure of a road crossing.
- **c)** Design stream crossing to maintain or improve Aquatic Organism Passage.
- **d)** When locating or reconstructing roads, avoid SEZs or minimize effects to natural flow patterns in SEZs.
- **e)** Avoid road construction in meadows.
- **f)** Utilize appropriate Best Management Practices to minimize sediment delivery to streams and other water bodies. Road drainage shall be routed away from potentially unstable channels, fills, and hill slopes. Design BMPs to minimize reoccurring maintenance needs. [Guideline]

SG128. Implement seasonal road restrictions when:

- **a)** Weather or seasonal conditions result in vehicles causing unacceptable damage to soil and water resources,
- **b)** Damage incurs costs that are too great to justify repairing the road structure,
- **c)** User safety may be jeopardized by the road condition or other hazards,
- **d)** Motorized use would adversely impact major life-cycle events of TEPCS species. [Guideline]

SG129. Install barriers and/or signs to prevent roadside parking wherever necessary to protect the public and natural resources. [Guideline]

SG130. Avoid road building in areas of high mass soil instability, and design to protect water quality and scenic value in areas of moderate stability. [Standard]

Trails

SG131. Design new trails to avoid SEZs or minimize effects to natural flow patterns in SEZs. [Guideline]

Over Snow Vehicles

SG132. Manage over-the-snow vehicle use as displayed on Snowmobile Area Map – Map 18. [Standard]

Figure 25. Winter recreation patrol

Access and Travel Management Other Sources of Information

Roads

- FSM 7700
- LTBMU Forest Transportation Atlas
- 36 CFR 261 Travel Management Rule
- Travel Management Directives FSM 7700
- LTBMU Motor Vehicle Use Map
- Applicable Forest Orders

Trails

- FSM 2350 Trails
- FSH 2309.18 Trail Management Handbook
- Tahoe Rim Trail Management Plan
- Pacific Crest National Scenic Trail Comprehensive Plan
- LTBMU Motor Vehicle Use Map
- EM 7720-103 Standard Specification for the Maintenance and Construction of Trails

Over Snow Vehicles

- Snowmobile Guide, LTBMU

3.3.9 Built Environment Standards and Guidelines

SG133. Design the architectural character of administrative and recreation buildings, landscape structures, site furnishings, wayside structures and signs installed or operated by the Forest Service, its cooperators or permit holders to be consistent with the Built Environment Image Guide, North Pacific Province (BEIG FS710). Structures should be visually subordinate to, and complement the surrounding

landscape. Utilize a "Tahoe architectural theme" that is intended to blend facilities with the natural environment, meet user expectations, and maintain recreation niche consistency. [Guideline]

SG134. Design sites and facilities to conform to the designated ROS Class. [Guideline]

SG135. Require use of plant species native to the area or species approved for local use when revegetating disturbed sites and landscaping. [Guideline]

SG136. Install only the minimum amount of permanent lighting needed at administrative and recreation buildings, landscape structures, and signs installed or operated by the by the Forest Service or its cooperators and permit holders to protect the dark night sky while not increasing safety risks. Utilize light-sensitive, motion activated lighting systems that are illuminated only when needed for security and/or for maintenance. Utilize hooded light fixtures to prevent horizontal and upward light pollution. [Guideline]

SG137. Any facility that is constructed or altered shall comply with applicable accessibility guidelines. [Standard]

SG138. Ensure that facilities comply with health and safety codes. [Guideline]

SG139. Allow construction and development of facilities in SEZ and on other low capability lands only where they are a part of long range development plans, or where the nature of the activity must be so sited, and where mitigated. [Guideline]

Built Environment Other Sources of Information

- March 2004 LTBMU Facilities Master Plan
- Architectural Barriers Act, Forest Service Outdoor Recreation Accessibility Guidelines
- 2005 Energy Policy Act and Executive Order 13123
- FSM/FSH 2309, 2330 and 7300
- USDA Forest Service, Publication FS-710, The Built Environment Image Guide for the National Forests and Grasslands, December 2001.
- USDA Forest Service, Sign Plan
- Home Landscaping Guide for Lake Tahoe and Vicinity, UNR Cooperative Extension

3.3.10 Lands Standards and Guidelines

SG140. Land boundary lines should be surveyed, posted, and marked according to these priorities: 1) lines needed to meet planned activities; 2) lines need to protect USFS lands from encroachment; and 3) all other land boundary lines. [Guideline]

SG141. For planning purposes, acquired properties shall be included in the management area in which they are located. If a larger property is located in more than one management area, it will be included in both management areas as defined by the extension of the existing area boundaries. Properties acquired through the Santini-Burton Act shall be managed in accordance with the provisions of the Act. [Guideline]

Lands Other Sources of Information

- Landownership Adjustments (36 CFR 254); Land Uses (36 CFR 251)
- FSM 5400 Landownership
- FSM 5500 Landownership Title Management
- FSH 5409 Landownership Handbooks
- FSH 5509 Landownership Title Management Handbooks
- Federal Highway Administration, in accordance with the Forest Service MOU with the FHA

3.3.11 Lands (Non-Recreation) Special Uses Standards and Guidelines

Utility Easements

SG142. Utilize or expand existing utility easements and rights of way to maximize capacity, before granting additional easements. [Guideline]

SG143. Locate utility easements and rights of way where easily accessible for utility repair or modification. Minimize and mitigate disturbance to the natural and scenic environment. Site overhead transmission line alignments to meet scenic integrity objectives for minimizing visual impact. [Guideline]

Communication Sites

SG144. New cell phone sites or other communication equipment shall be co-located with existing infrastructure whenever feasible, such as water storage facilities, or existing communication sites. [Guideline]

Rights-of-Way

SG145. Grant road access to private land only where no other reasonable alternative exists, and where access is compatible with the road design and maintenance standards necessary for resource protection and public safety. [Guideline]

SG146. Access roads for operations and maintenance shall be managed under permit for non-system roads and under road use agreements for system roads to ensure adequate maintenance and BMPs to prevent resource damage to NFS lands. [Guideline]

Research and Monitoring Projects

SG147. All research and monitoring projects must be authorized in advance.. Research and monitoring projects shall be evaluated and monitored to determine suitability. [Guideline]

SG148. Require special use permits for research and monitoring projects when they require installation of facilities or potential impacts to soil, vegetation, cultural, or other resources. [Guideline]

Lands (Non-Recreation) Special Uses Other Sources of Information

- FSM 1920 Land and Resource Management Planning;
- FSM 2700 Special Uses Management;
- FSH 2709.11 Special Uses Management Handbook

3.3.12 Minerals Standards and Guidelines

SG149. Locatable mineral operations shall be required to ensure protection of resources and facilities. Approval of mineral operations shall be based on site-specific evaluation. [Guideline]

SG150. Plans of operation, reclamation plans, and reclamation bonds shall address the costs of:

a) Removing facilities, equipment, and materials

b) Isolating and neutralizing or removing toxic or potentially toxic materials

c) Salvaging and replacing topsoil and

d) Revegetating to meet the objectives of the land allocation in which the operation is located. [Guideline]

SG151. Extraction of common variety minerals shall not be approved. [Standard]

Minerals Other Sources of Information

- FSM 2800 Minerals and Geology

3.3.13 Range Standards and Guidelines

SG152. To protect hardwood regeneration in grazing allotments, allow livestock browse on no more than 20 percent of annual growth of hardwood seedlings (i.e., willow, aspen, alder, cottonwoods) and advanced regeneration. Modify grazing plans if hardwood regeneration or recruitment needs are not being met. [Guideline]

SG153. Exclude livestock grazing from standing water and saturated soils in wet meadows and associated streams and springs occupied by Yosemite toads or identified as “essential habitat” in the conservation assessment for Yosemite toads during breeding and rearing season (through metamorphosis). If physical exclusion is not practical, then exclude the entire meadow. [Guideline]

SG154. In meadows with occupied willow flycatcher sites, allow only late season grazing (after August 15) in the entire meadow. [Guideline]

SG155. 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. [Guideline]

SG156. Limit browsing to no more than 20 percent of the annual leader growth of mature riparian shrubs and no more than 20 percent individual seedlings. Remove livestock from any area of an allotment

when browsing indicates a change in livestock preference from grazing herbaceous to browsing woody riparian. [Guideline]

SG157. Locate new facilities for gathering livestock and pack stock outside of meadows, riparian areas, and other SEZs. During project-level planning, evaluate and consider relocating existing livestock facilities outside of meadows, riparian areas, and other SEZs. [Guideline]

SG158. Prevent removal of streambank vegetation from livestock trampling or browsing to maintain cold water conditions from the months of June – September when precipitation and base flows are normally lowest and ambient air temperatures are highest. Cold water conditions during June – September should target a maximum 7-day mean temperature of 20ºC or less. [Guideline]

Range Other Sources of Information

- FSM 2200 Range Management
- FSH 2200 Range Management

3.4 Designated Special Areas Standards and Guidelines

3.4.1 Desolation, Granite Chief, and Mt. Rose Wilderness

SG159. Manage wilderness areas in compliance with specific wilderness management plans or stewardship components identified through national guidance. [Guideline]

SG160. Consider wildland fire management strategies on a case-by-case basis as articulated in the Wilderness management plan or fire management plan. [Guideline]

Figure 26. Desolation Wilderness, looking north over Dick's Lake and Fontanillis Lake

National Trails System

Pacific Crest Trail, National Scenic Trail

Overall responsibility for the management of the Pacific Crest National Scenic Trail (PCT) lies with the Pacific Southwest Regional Forester.

SG161. Coordinate management of the Pacific Crest Trail between administrative units.[Standard]

SG162. Motorized and mechanized transport, or the possession of a device for that purpose, is prohibited on the PCT with the exception of specifically authorized crossings on system roads and trails. [Standard]

SG163. Manage the scenic corridor of the PCT by designing management activities within the foreground views from the PCT to meet a scenic integrity objective of high or very high. Management activities in the middle and background will meet or exceed a scenic integrity objective of at least moderate. [Guideline]

SG164. Limit proposed crossings of the trail and parallel routes to cases in which the crossing or route is the only prudent and feasible alternative to provide for an overriding public need, mitigate the impact upon the PCT. [Standard]

SG165. Hauling, skidding, or use of heavy equipment for fireline construction on the PCT tread or use of the PCT for landings or temporary roads is prohibited unless there is no prudent and feasible alternative to provide for an overriding public need or for firefighter safety, and impacts upon the PCT are mitigated. [Standard].

SG166. Roads or signs of management activities are prohibited unless there is a demonstrated, overriding public need or benefit and where no other reasonable alternatives exist. To the extent feasible, blend these features into the landscape so that they remain visually subordinate. [Guideline]

SG167. Implement measures to maintain public access to the PCT during management activities. [Standard]

SG168. Camping is prohibited adjacent to the PCT between US Highway 50 and the southern boundary of Desolation Wilderness (approximately 1 mile). Outside of Wilderness, camping is only allowed within 300 feet of the PCT and visitors will be encouraged to camp at least 100 feet from the trail. [Standard]

SG169. Issue lands special-use authorizations only where compatible with the PCT desired conditions or where there is a demonstrated, overriding public need or benefit and where no other reasonable alternatives exist. To the extent feasible, blend these features into the landscape so that they remain visually subordinate. [Guideline]

SG170. Authorize new recreation special uses only when they are compatible with the intended goals and values for which the trail was established. [Guideline]

Tahoe Rim Trail, Pope-Baldwin Bicycle Trail, Hawley Grade

SG171. Coordinate management of the Tahoe Rim Trail between administrative units. [Standard]

SG172. Design management activities within the foreground views from the trail to meet a scenic integrity objective at least as high as shown on the Minimum Scenic Integrity map. Management activities in the middle and background will meet or exceed a scenic integrity objective of at least moderate. [Guideline]

SG173. Overnight camping is only allowed within 300 feet of the TRT.

SG174. Where the TRT overlaps with the PCT, use must be consistent with all Standards and Guidelines governing the PCT. [Standard]

SG175. Implement measures to maintain public access to nationally designated trails during management activities. [Standard]

Designated Special Areas Other Sources of Information

Desolation, Granite Chief, and Mt. Rose Wilderness'

- 1964 National Wilderness Preservation Act
- Desolation Wilderness Management Plan
- Granite Chief Wilderness – Tahoe National Forest wilderness management guidelines
- Mt Rose Wilderness – Humboldt Toiyabe National Forest wilderness management guidelines
- Regional Minimum Impact Decision Guide for Wilderness

Tallac Historic Site, Special Interest Area

- Tallac Historic Site Master Plan (FEIS Record of Decision, USDA Forest Service, El Dorado County, CA, July 14, 1994)

Grass Lake Research Natural Area

- Forest Service Manual 4000, Ch. 4063 – Research Facilities and Areas Regional Forest Order

Lake Tahoe East Shore Drive, National Scenic Byway

- East Shore Drive National Scenic Byway, Rural Section, Incline Village to US 50, Corridor Management Plan, prepared by EDAW, Inc., for Carson City and Nevada Department of Transportation, TRPA, TEAM Tahoe, August 1997.
- Scenic Byways, A Design Guide for Roadside Improvements. Prepared for U.S. Department of Transportation Federal Highway Administration, prepared by the USDA Forest Service San Dimas Technology and Development Center, July 2002.
- Landscape and Aesthetics Corridor Plan for US 395, West US 50, SR 28, SR 207 and SR 421, prepared by Design Workshop and others for the Nevada Department of Transportation, December 15, 2006.

Pacific Crest Trail

- Pacific Crest National Scenic Trail Comprehensive Plan, Approved: January 1982. USDA Forest Service, Washington Office. National Recreation Trails
- 36 CFR 261.20
- USDA Forest Service Pacific Southwest Region; Regional Order 88-4
- National Trails System Act 1968
- Executive Order 13195 (2001)

Tahoe Rim Trail, Pope-Baldwin Bicycle Trail, Hawley Grade

- The Tahoe Rim Trail Management Plan, February 26, 2010. USDA Forest Service, LTBMU
- Forest Service Manual 2309.18 Chapter 10 Trail Planning, Oct. 16, 2008.
- National Trails System Act 1968
- Executive Order 13195 (2001)

3.5 Recommended and Eligible Wild and Scenic Rivers Standards and Guidelines

SG176. Manage all recommended and eligible rivers and segments of rivers to protect their free-flowing status and the outstandingly remarkable river values as required by FSH 1909.12 Chapter 82.5. [Standard]

Recommended Special Areas Other Sources of Information

- FSH 1909.12, Chapter 82.5 - Interim Management of Eligible or Suitable Rivers
- Wild and Scenic Rivers Act (16 U.S.C. 1271-1287, Public law 90-542 October 2, 1968)
- Record of Decision for the Eight Eastside Rivers FEIS (1999).

3.6 Management Area Standards and Guidelines

3.6.1 Santini-Burton Acquired Lands/Urban Forest Parcels

SG177. Identify and post (flag and/or sign) all land boundaries prior to project work to avoid conflicts with adjacent private properties. [Guideline]

SG178. Manage coarse woody debris and snag retention after providing for public safety and defensible space standards, to meet forest productivity and wildlife needs. [Guideline]

SG179. Allow adjoining property owners to conduct authorized fuels reduction activities annually on portions of Urban Forest Parcels that are located within 100 feet of a structure; to a level that allows compliance with California State Law PRC 4291 while providing resource protection to NFS lands. [Guideline]

SG180. Apply EPA registered borax to cut stumps according to Regional policies and guidelines in order to prevent establishment or spread of Heterobasidion root disease. [Guideline]

SG181. Improvements shall not be placed on Santini-Burton acquired lands, other than for dispersed recreation, erosion control projects or permitted activities. [Standard]

SG182. Manage Santini-Burton lots, or lots acquired under other authorities (including restricting certain recreation activities) consistent with the purpose by which the lot was acquired. [Standard]

Management Area Other Sources of Information

- PL 96-586 – Santini-Burton Act
- Land and Water Conservation Fund Act, 1964
- R5 FSM Supplement 5100-2010-1, referencing Defensible Space Letter from Regional Forester, 12/2009
- California State Law PRC 4291
- Report to Congress, Urban Intermix Parcel Acquisition and Management in the Lake Tahoe Basin, January 14, 2004)

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 components.

The Forest Plan Monitoring and Evaluation Plan is designed to measure the degree to which on-the-ground management is maintaining or making progress toward the Forest Plan desired conditions and objectives. This monitoring plan will test assumptions, track changes, and measure management effectiveness, primarily through status and trend monitoring and effectiveness monitoring. The monitoring plan provides a framework that will be supplemented by more specific monitoring plans and protocols. It will be adjusted as needed to respond to new information and unanticipated changes in conditions.

The Forest Plan Monitoring and Evaluation Plan is a subset of the monitoring for the LTBMU. Additional, project-specific monitoring may be required for some projects, including monitoring required through regulatory permitting processes. While inventories and implementation monitoring are important and will continue to be implemented, they are generally not included in this monitoring plan because they only indirectly inform progress towards the Forest Plan desired conditions and objectives. 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.

The LTBMU also participates in multiple broad-scale monitoring efforts. Some, but not all of these are included in the Monitoring Plan. For example, the LTBMU is an active partner in providing information to the Tahoe Regional Planning Agency for monitoring attainment of TRPA's environmental thresholds through the tracking and reporting of the Environmental Improvement Program performance measures, but these activities are not included in the Monitoring Plan.

The Monitoring Plan presented below 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.

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Air Quality: DC1	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: DC1	N compounds, O3 concentrations, and lichen analysis	What is the status and trend of N compounds and 03?	USFS (RO)	Life of plan	4 to 5 yrs	4 to 5 yrs
Air Quality: DC1	Acid deposition	What is the status and trend of acid deposition?	USFS (RO, PSW Station)	Life of plan	4 to 5 yrs along with N compounds monitoring	4 to 5 yrs
Air Quality: DC2	California Regional Haze State Implementation Plan goal	Is visibility improving and data following the Regional Haze glide path, if not what are possible stressors related to LTBMU activities?	USFS (RO), TRPA, CARB	Life of plan	Continuously	Annually
Soil Quality DC 4,5, 6,&7	Soil cover, soil physical properties, national disturbance monitoring protocol.	Is soil quality being maintained such that the productivity of the land is not substantially or permanently impaired?	USFS (LTBMU)	Life of plan	Annually	Every 2 years – as required by planning regs
Water Quality: DC 9, 10 **Soil Quality: DC8(erosion only and by inference only)**	BMPEP Evaluations.	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: DC10 **Habitat and Species Diversity** **DC50, DC51, DC53, DC54, DC59, DC61**	Macroinvertebrates – SWAMP Bioassessment Protocol	What is the status and trend of the biological integrity of LTB tributaries, and to what degree may LTBMU activities be related to changes in status and trends?	TRPA	Life of plan	Annually	TRPA Threshold Attainment Reporting Schedule

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Hydro & Geomorphic Process: DC12	Tributary water quality (multi/agency), aquatic habitat condition, channel geomorphic condition, degree of watershed disturbance, forest health (see WCA protocols)	Is watershed condition improving in the Lake Tahoe Basin, as evaluated through Watershed Condition Ratings, particularly in priority watersheds?	USFS	Life of plan	5 yrs	5 yrs
Forest Veg – Forest Structure **DC 23**	Seral Stage/ Percent	Are the seral stage percentages for a major forest type within the historic reference condition?	USFS (R5-Ecology, RSL, LTBMU)	Life of plan	5 to 10 yrs	5 years as part of TRPA Common Vegetation Threshold, & annually in FACTS based on accomplishments on LTBMU
Forest Veg - Forest Composition **DC 23**	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	5 years as part of TRPA Common Vegetation Threshold
Forest Veg - Forest Stand Resilience **DC 23, 24**	Mortality-Actual/ Trees Per Acre	Are levels of tree mortality, by causal agent, at background levels?	USFS (RSL, S&PF-FHP)	Life of plan	Annually	Reported annually as the Annual Mortality Report from Forest Health Protection
Forest Veg – Urban Forest Parcels **DC 20, 22**	Parcel Condition related to forest health (hazard trees, invasive plants, insects & disease), fuel accumulation, hydrologic condition (erosion), & encroachments	What is the condition of urban forest parcels, i.e., what is the management need for the parcel?	USFS	Life of plan	4-6 yrs depending on proximity to developed private lands	5 yrs

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Forest Veg **DC 22** **OBJ 5**	Annual prescribed fire acres;	Are planned and unplanned ignitions being used to meet or trend towards resource goals? Are we meeting prescribed fire objectives?	USFS	Life of plan	Annual	5 years
Habitat & Species Diversity: DC53, DC61	MIS habitat and population distribution at the bioregional scale	What are the trends for Management Indicator Species at the bioregional (Sierra Nevada) scale?	USFS (RO) / 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: DC53, DC54, DC59, DC60, DC61 **Forest Veg DC 46**	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
Habitat & Species Diversity: DC53, DC57, DC60, DC64	Density, Plant Size, & demographic structure of TESPC plant species most likely impacted by changing climate (e.g., Tahoe draba, long petaled lewisia)	What is the status and trend of TES plant species most likely impacted by changing climate?	USFS (LTBMU)	Life of Plan or until species is removed from TES or SI list	5 yrs	6 yrs

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Habitat & Species Diversity **DC50, DC51, DC53, DC59, DC61, DC63** **Invasive Species Management** **DC70, DC71, DC72** **Special Status Species Habitat Area:** **DC77** **Hydro & Geomorphic Process: DC15**	Stream Temperature Monitoring: temperature	Are stream temperatures suitable for life history of native aquatic species? What is the status and trend of these native aquatic and nonnative aquatic species most susceptible to changing climate?	USFS (LTBMU)	Life of Plan	Annually (not every site will be monitored annually)	5 yrs
Habitat & Species Diversity: DC53, DC46, DC61	Photo-monitoring, cover/presence of key indicator species	What is the status and trend of Grass Lake (RNA) and Hell hole (critical habitat) fen ecosystems? Are changes in climate influencing community trends?	USFS (LTBMU)	Life of Plan	5 yrs	6yrs
Habitat & Species Diversity: DC54, DC55 **Special Status Species Habitat Areas: DC79**	TYC population estimate (through census or other sampling methods) and habitat assessment	What is the status and trend of Tahoe yellow cress? Are core sites adequately protected?	LTBMU with partner	Life of Plan	Set of conditions based on lake level	Annually when survey is conducted

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Habitat & Species Diversity: DC58, DC59, DC60 **Special Status Species Habitat Areas: DC80, DC81, DC82**	Whitebark pine stand conditions	What is the status and trend of whitebark pine, incidence of blister rust, and infestation of bark beetles? Is regeneration sufficient for the sustainability of whitebark pine in the LTB?	USFS (FHP, R5-Ecology, LTBMU)	Life of Plan	Annually (not every stand every year)	5 yrs
Invasive Species Management DC70, DC71, DC72 **Habitat & Species Diversity: DC50, DC51, DC53, DC59, DC63** **Special Status Species Habitat: DC77, DC78** **Recreation Opportunities DC85, DC86** **Interpretive Services and Conservation Education** **DC99, DC100, DC101, DC102**	Invasive species sites/acres, new detections	What is the status and trend of invasive species within the Lake Tahoe basin? Are education, prevention, and treatment measures effective at preventing and reducing the spread of aquatic and terrestrial nonnative invasive species?	Coordination with Basin Invasive groups, LTBMU partner	Life of Plan	Annually (not every species or every site will be monitored annually)	5-6 yrs

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Special Status Species Habitat Areas: DC78 **Habitat & Species Diversity:** **DC53, DC59**	Amphibian visual encounter surveys: number of amphibians, demographics, presence of Bd (chytrid fungus) [includes western toad and MYLF]; number of fish	What is the current status of amphibian, including Sierra Nevada (mountain) yellow-legged frog (SNYLF), populations and critical habitat 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 Wildlife; USFWS	Life of Plan	Annually (not every species or site will be monitored annually)	5 yrs
Habitat & Species Diversity: DC50, DC51, DC54, DC61 **Hydro & Geomorphic Process: DC16, DC17**	Ecological condition of streams using established protocols (e.g., SCI)	What are the current physical and biological condition of streams and associated floodplains in the Lake Tahoe basin, and how is that condition changing over time? 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?	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
Special Status Species Habitat Areas: DC77 **Habitat & Species Diversity: DC59**	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 salmonids? Does the LCT population have multiple age and size classes as a positive population response to brook trout removal? Are we meeting recovery objectives?	US Fish and Wildlife, in collaboration with USFS (LTBMU) and partners	Life of Plan, or until recovery actions are achieved	Annually (not every site or entire site each year)	5 yrs

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Habitat & Species Diversity: DC59, DC61, DC60	Number of detections, nests, and or roosts	What is the status and trend of select invertebrate and vertebrate 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
Forest Vegetation: **DC40, DC41, DC42, DC43, DC44,DC45, DC46** **Objective Forest Veg and Fuels: 13** **Habitat & Species Diversity: DC53, DC61** **Objective BIO: 17, 19**	Acres/sites restored; number of Willow Flycatcher (WIFL) sites	What is our progress towards maintaining and improving willow and aspen habitats within the Basin?	USFS (LTBMU)	Life of plan	When plan is adopted and then every 2 years	5 years
Habitat & Species Diversity; Vegetation: DC58, DC60, DC23 **Standard and Guidelines:** **SG 31, 32**	Acres of early seral forest and forest openings (less than 1 to 10 acres) created within each watershed; proportion of early stage/openings created adjacent to mid seral, early seral, late seral, urban; nearest detection of sensitive wildlife species	What progress has been made towards protecting and maintaining late seral habitat connectivity?	USFS (LTBMU, RSL, PSW)	Life of plan	Starting 10 years after Plan is adopted and then every 5 years.	5 years

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Habitat & Species Diversity: DC50, DC51, DC52, DC53, DC59, DC61 **Vegetation: DC46** **Species Refuge Areas: DC76** **Soil Quality: DC4, DC6, DC7, DC8** **Water Quality:** **DC11** **Hydro & Geomorphic Process: DC14**	Intensity of winter recreation use (e.g., groomed cross-country trails, OSV); sensitive resource presence; compaction; water quality.	Is resource damage occurring from winter recreation use?	USFS (LTBMU)	Monitoring would occur where known OSV use occurs in occupied habitat and/or suitable habitat or where future OSV expansion occurs	Baseline, every 3 yrs	5 years
Habitat & Species Diversity: DC73, DC74, DC75, DC76 **Standards and Guidelines: 90-99**	Species presence (e.g., spotted owl) ; canopy cover, basal area, structural complexity of understory (e.g., snags, downed wood, saplings), tree size class distribution	What progress has been made and what is the success towards maintaining/improving the habitat condition of PACS?	USFS (LTBMU)	Life of Plan	Selected project(s) that have occurred both within and outside a PAC to provide information needed for effectiveness of plan S&G	Pre- and post-project, then up to 5 monitoring periods over a course of up to 10 years
Recreation Opportunities: DC86	National Visitor Use Monitoring (NVUM)	What is the trend of visitor use, visitor satisfaction, and progress toward meeting recreation objectives in the plan?	USFS (WO, LTBMU)	Life of Plan	5 yrs or agency standard	5 yrs or agency standard

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Recreation Development: DC94	INFRA and SUDS (square ft. of parking, infrastructure, permitted acres). GIS. Track deferred maintenance costs over time; special use permits administered to standard; expired special use permits.	How are recreation facilities contributing to the plan's desired condition(s) and objective(s) socio-economic sustainability?	USFS (LTBMU)	Life of Plan	Annual	5 yrs or agency standard
Wilderness: DC132	Visitor satisfaction surveys, campsite condition inventories)	What level of solitude and primitive and unconfined type of recreation opportunities are visitors experiencing?	USFS (LTBMU)	Life of Plan	Annual or as described in Wilderness Management Plans	5 yrs or agency standard
Access & Travel Management: DC113	NVUM indicators of satisfaction; ATM project analysis	Does the managed route system meet public access and resource management needs?	LTBMU	Life of plan	Every 5 years	Every 5 years
Access & Travel Management: DC113 **Built Environment: DC115**	facility condition index; road and trail deferred maintenance	Are maintenance levels sufficient to support existing infrastructure (e.g., roads, trails, facilities)	LTBMU	Life of plan	Annual	Every 5 years

Tier 2 Monitoring Elements

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Habitat and Species Diversity: DC53, DC57, DC61, DC64	Freel Peak GLORIA - biodiversity	What is the status and trend of high elevation communities and risks to these communities due to changing climates?	USFS (PSW, R5 Ecology)	Life of Plan	5 years	Unknown
Forest Veg **DC 22**	Severity proportions burned by wildfires	Do wildfire severity proportions resemble desired fire regime?	USFS	Life of plan	Post-fire	5 years
Habitat & Species Diversity: DC53 **Forest Veg: DC46**	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
Protected Activity Center: DC73	California Spotted Owl; Northern Goshawk	What is the status and trend of California Spotted Owl and Northern Goshawk populations in the Basin?	USFS (RO)	Life of Plan or until species is removed from TES or SI list	3 times in 10 years monitoring plan - protocol developed by PSW (each of the 3 times is a 2 year protocol so 6 times in 10 years), annually known nests	10 years

Desired Conditions	Indicator/Measure	Monitoring Question(s)	Responsible Agency	Monitoring Time Frame	Frequency of Monitoring	Frequency of Reporting
Habitat & Species Diversity: DC56, DC69 **Standards and Guidelines** **44, 55, 58, 61, 62, 64,65, 66**	Change in species presence (e.g., black backed woodpecker, CA spotted owl) associated with snag habitat; number of snags retained or created, size of snags, spatial distribution	What progress has been made towards protecting/maintaining habitats with snags and CWD (e.g., burned forests, insect outbreaks, late seral)?	USFS or PSW	Pre and post project	Selected project(s) to provide information needed for effectiveness of plan S&G on burn forest habitat protection	
Habitat & Species Diversity: DC53, DC57, DC59, DC61 **Invasive species: DC70, DC71, DC72** **Special Status Species Areas: DC79**	Species presence, species condition, distribution and abundance of invasive	How do new recreation expansion and/or improvements of existing recreation influence the presence and/or condition of sensitive species? Are these conditions supporting conservation of sensitive species?	USFS (LTBMU)	Pre- and post-project	Selected project(s)	

Appendix B: Baseline Recreation Site Inventory

This table displays the baseline acres, number of overnight accommodations, and number of day use parking spaces on recreation sites within the LTBMU in 2013, at the time of publication of the LMP revision FEIS. Allowed increases are shown at the bottom of the table and in Forest Plan Standard #107. Increases beyond those allowed will require environmental analysis.

Lake Tahoe Basin Management Unit 2013 Recreation Site Inventory			
Recreation Sites	**Developed Recreation Site Acres[1]**	**Overnight Accommodation Units[2]**	**Day Use Parking Spaces[3]**
Resorts and Facilities			
Camp Richardson	96	405	148
Meeks Bay	26	57	300
Zephyr Cove	171	125	290
Round Hill Pines	50	14	260
Angora Lakes	6	8	30
Echo Chalet	4	17	30
Camp Richardson Corral	12	0	35
Sub-Total	**365**	**626**	**1093**
Organization Camps			
Berkeley Camp	14	41	
California Alpine Club	1	1	
Camp Shelly	10	26	
Camp Concord	27	29	
Sub-Total	**52**	**97**	
Swimming Beaches			
Pope Beach	25		328
Baldwin Beach	46		165
Meeks Bay Beach	6		67
William Kent Beach	1		6
Nevada Beach	32		161
Sub-Total	**110**		**727**
Campgrounds			
Bayview Campground	4	13	
Pine Flat	26	20	
Fallen Leaf	127	206	
Meeks Bay	8	40	
William Kent	23	95	
Kaspian	7	9	
Nevada Beach	53	54	
Luther	21	11	

Recreation Sites	Developed Recreation Site Acres[1]	Overnight Accommodation Units[2]	Day Use Parking Spaces[3]
Blackwood Canyon	2	6	
Watson Lake	9	6	
Sub-Total	**280**	**460**	
Day Use Sites			
Kiva Picnic Area	87		64
Eagle Falls	3		32
Kaspian	2		21
64 Acres - Riverside	7		58
64 Acres - Lakeside	11		12
Sawmill Pond	8		18
Zephyr Shoals/Dreyfus	81	9	
Sub-Total	**199**	**9**	**208**
Interpretive Sites			
Tallac Hist. Site	67		68
Visitor Center	71		140
Supervisors Office	0		10
Glen Alpine Interpretive Site	6		0
Inspiration Point	2		20
Stateline Lookout	5		16
Logan Shoals	2		10
Washoe Cultural Center/SnoPark	1		100
Angora Lookout	1		2
Meyer Interagency Visitor Center	2		8
Sub-Total	**157**		**374**
Facilities Supporting Dispersed Recreation			
Alpine Trailhead			4
Bayview Trailhead			20
Big Meadow Trailhead			29
Blackwood Day use			15
Brockway Trailhead			10
Cathedral Dock			4
Cathedral Meadow Trailhead			4
Chimney Beach			21
Dagget Pass Trailheads			30
Echo Summit/Lake			74
Fountain Place Trailheads			20
Glen Alpine Trailhead			40
Kings Beach			5
Lam Watah			20
Luther Pass Trailhead			30
McKinney Rubicon			10

Recreation Sites	Developed Recreation Site Acres[1]	Overnight Accommodation Units[2]	Day Use Parking Spaces[3]
Meeks Trailhead			10
Moraine Trailhead			30
Mt. Tallac Trailhead			12
Rainbow Trailhead			5
Secret Harbor			31
Skunk Harbor			7
Spooner Junction			10
Stanford Ridge Trailhead			5
Tahoe Meadows Trailhead. Mt. Rose			5
Tahoe Paradise			8
Thunderbird Cove Trailhead			10
Trout Creek			3
Twin Peaks Trailhead			4
Sub-Total			**476**
TOTAL	**1163**	**1192**	**2875**
	Developed Recreation Site Acres[1] 5% increase	**Overnight Accommodation Units[2] 10% increase**	**Day Use Parking Spaces[3] 5% increase**
Allowable increase during planning period	**58**	**110**	**144**
Planning period maximum: existing plus allowable increase	**1221**	**1302**	**3019**

[1]Developed Recreation Site Acres – developed recreation site area rounded to nearest acre, using 2013 GIS data.

[2]Overnight Accommodation Unit – defined as a campsite, motel or lodge room, or cabin.

[3]Day Use Parking Spaces – number of parking spaces.

Appendix C: Limited Operating Periods

This section describes the limited operating periods for specific species as required in SG45. Limited operating periods may change or be added over the life of the Plan based on species status including new species detection and/or species removals/additions to TECPS lists.

Sierra Nevada (mountain) yellow-legged frog

Maintain a Sierra Nevada yellow-legged frog (*Rana sierra*; SNYLF) LOP April 15 through August 15 and prohibit habitat manipulation or other activity that could create bank disturbance within occupied habitats unless concurrence or an opinion has been reached otherwise by the FWS through project or programmatic level of consultation through issued letter of concurrence or Biological Opinion indicates activity is acceptable.

Cliff Nesting Raptors

Do not construct roads and trails within ¼ mile of the top or base of known cliff nesting raptor sites. Prohibit activities such as rock climbing that may disrupt breeding during the raptor nesting season (April 1-July 31). Determine the distance to prohibit activities from an occupied nest based on nest location, nesting pair behavior, and cliff features that either expose or visually/audibly protect the nest from disturbance.

Marten

Maintain a marten LOP (March 15 through July 31) within ½ mile of a known den site. 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. If a female marten is detected in the planned activities area or within 0.5 mile radius of the activity site, their detection locations are buffered by 700 acres (equal to approximate average female home range size) of the best available habitat to encompass the likely den sites.

Marten Waiver - 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.

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).

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.

California Spotted Owl and Northern Goshawk - Breeding

Maintain a California spotted owl and /or northern goshawk LOP during the breeding season (March 1 through August 15 for California spotted owls and February 15 through September 15 for Northern Goshawk) for vegetation treatments within a minimum of ¼ mile of the nest site or activity center, unless surveys confirm that spotted owls and northern goshawks 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 prior to implementing activities. For northern goshawks, if the nest stand within a PAC is unknown, either apply the LOP to a ¼-mile area surrounding the PAC, or survey to determine the nest stand location.

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.

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 in up to 5 percent of California spotted owl PACs and up to 5% of Northern Goshawk PACs per year on the Unit.