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Sagehen Basin Old Forest Sensitive Species Habitat Restoration

Vance Russell

California Program Director

National Forest Foundation





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November 19, 2013

Dear Mr. Branham:

Thank you for the opportunity to submit this proposal to the Sierra Nevada Conservancy (SNC) for Sagehen Basin Old Forest Sensitive Species Habitat Restoration on the Tahoe National Forest. This project, developed by a Sierra Nevada Conservancy-supported collaborative, is part of a landscape-scale effort to restore watersheds, forest ecosystems, and habitat in the Middle and Little Truckee watersheds.

The NFF respectfully requests ~~\$350,000~~^{\$349,140.} from the SNC to restore the Sagehen forest ecosystem through hand vegetation treatments, pile cutting vegetation and excess small down wood, and implementation of prescribed burns. Successful implementation will facilitate the return of mixed severity fire to the landscape and safeguard habitat for nesting, denning, and foraging of old forest sensitive species.

As one of 14 sites in our nationwide *Treasured Landscapes* campaign to restore iconic places on National Forests, this amount will be matched at approximately \$2.5:1 by the U.S. Forest Service. The Sagehen Restoration Project will not only help to move restoration forward in this important campaign location, but will improve water quality in downstream urban areas. Test plots have already proven a useful tool for working with Lake Tahoe Management Unit Staff and for initiating discussion with visiting legislators about framework for a similar but larger project covering the forests on the west shore of Lake Tahoe.

Thank you for your consideration and for your interest in the work of the NFF.

Sincerely,

Vance Russell
California State Director

Proposal :

Project Narratives

1. Detailed Project Description Narrative

a. Project Description

Beginning in 2012, The National Forest Foundation (NFF) has worked with multiple local partners to create a restoration plan for the Middle and Little Truckee watersheds as part of our nationwide *Treasured Landscapes* campaign. This campaign seeks to restore iconic sites on National Forests across the country from Florida to Alaska. The Truckee River project area, our *Treasured Landscapes* site on the Tahoe National Forest, extends from Lake Tahoe in the southern part of the Forest to the California state line (Figure 1). (pg 11)

While 63 streams flow into Lake Tahoe, one of the largest, deepest, and clearest lakes in the world, only one flows out – the Truckee River. The 35-mile stretch of river that flows out of Lake Tahoe, through the Lake Tahoe Basin Management Unit and Tahoe National Forest to the California/Nevada border, encompasses two watersheds, three counties and 27 tributaries. The Truckee watershed ranges from a low elevation of 5,050 feet at the California/Nevada state line to above 9,000 feet along the Sierra Crest.

Our overall goals for the Truckee *Treasured Landscapes* site are three-fold:

- Restore healthy aquatic ecosystems, creating abundant water for wildlife and communities and improving water quality;
- Create community and climate change resiliency through forest health and vegetation treatments; and
- Link science and action with community engagement.

Current Conditions

Forest stands in the region are increasingly homogenous and overgrown, leaving forests vulnerable to uncharacteristic wildfire, insect infestation, disease outbreaks and climate change. Timber industry employment, which historically provided living-wage jobs to the surrounding communities, has declined substantially and has not been replaced by an economically viable equivalent. Invasive weed infestations compete with native plants, degrade plant and wildlife habitat, disrupt natural ecological processes, increase the risk of mega fires, and contribute to soil erosion.

Desired Conditions

The primary project-desired condition is a forest ecosystem that is healthy and functioning, providing habitats that support native wildlife populations, like American marten, California spotted owl and northern goshawk. This would mean that: Bark beetle caused tree mortality is scattered with low-levels of chronic mortality, instead of persistently high rates and large clusters of mortality; forest ecosystems are not only resilient to changes in climate, but also contribute to water quality and communities that are resilient to changes in economic drivers and stressors; biomass and other value-added wood products are utilized as byproducts from restoration projects, and; restoration contributes to a healthy local economy and provides long-term, living-wage positions in the region.

Broad strategies to reach these desired conditions include the following:

- Implement forest treatment prescriptions for multiple ecological objectives that reduce stress on native forest and plant communities, improve water quality, enhance habitat, reduce hazardous fuels, and reduce bark beetle-caused tree mortality;
- Facilitate prevention, early detection and removal of invasive weed species; and
- Support hiring of local crews to implement forest restoration work.

Multiple priority restoration projects were identified by agencies and partners to implement during the five-year time span of the project. Any state or private funds raised for the project are matched at approximately \$2.50:1. We respectfully request \$7,500 from the Sierra Nevada Conservancy for Sagehen Basin Old Forest Sensitive Species Habitat Restoration. 16,349,140.00

Sagehen Forest Health

The Sagehen Forest Habitat Restoration project is located ten miles north of Truckee in the Sagehen Experimental Forest surrounding the University of California Berkeley Sagehen Creek Field Station (Figures 1-3). The majority of the project area is currently comprised of thick, homogenous stands of trees as a result of logging and fire suppression. This has limited the diversity of vegetation structure that old forest sensitive species require, particularly foraging habitat.

The proposed project was developed by a Sierra Nevada Conservancy-supported collaborative. The project will introduce stand variability and strategically enhance forest health through hand vegetation treatments like small tree cutting and piling as well as tree girdling (Figure 3). Further, existing pockets of mature cover and decadence will be maintained. All of the designations and treatments will vary in intensities depending on their topographic position on the landscape. Successful implementation of this project will not only safeguard appropriate amounts of snags and cover for nesting and denning habitats of old forest sensitive species, but will also create an abundance of close proximity foraging habitat these species require. Finally, this project will facilitate the return of mixed severity fire to the landscape which can jumpstart previously stalled ecological processes that are known to benefit an array of species.

Not only have the test plots been useful for the Sagehen Cooperative, they have already proven a useful tool for working with Lake Tahoe Management Unit Staff and for initiating discussion with visiting legislators about framework for a similar but larger project covering the forests on the west shore of Lake Tahoe.

The forest stand restoration project will also greatly improve water quality and quantity in the Sagehen Creek and ultimately, the Truckee River Basin. Studies are increasingly showing that prudent thinning can increase water quality in the watersheds where it takes place (supported by work completed in the Kings River Experimental Watershed, Sierra Nevada Adaptive Management Project, Mokelumne River Avoided Cost Study, the Sierra Nevada Watershed Ecosystem Enhancement Project in California, and numerous studies nationwide).

10/24

A detailed description of the forest prescription can be found in Appendix A. Additional information on the project background, need, purpose, proposed actions, alternatives and monitoring can be found in the Sagehen Environmental assessment: <http://goo.gl/u1wKuK>.

The Sagehen project will address the Sierra Nevada Conservancy goals and actions listed below either directly or indirectly. The proposed project is also directly focused on the following two Areas of Focus: Healthy Forests and Watershed Protection and Restoration.

Program Goal 2: Physical, Cultural, Archaeological, Historical, and Living Resources

Action 2.1: Identify priority projects, partners and mechanisms, that protect, conserve and restore physical and natural resources, watersheds, wildlife habitat and other living resources.

Action 2.5: Develop a strategy to work in partnership with other governmental agencies, non-governmental organizations, and other interested parties to identify information, assistance and resources needed to support community projects that protect, conserve and restore these important assets.

Action 2.7: Facilitate and foster good planning and education efforts (including those aimed particularly at students) to protect and enhance ecosystem and watershed health, sustainable working landscapes and economically viable communities.

Program Goal 3: Working Landscapes

Action 3.5: Facilitate local, regional and State planning to encourage upper watershed conservation efforts that result in increased natural water storage, groundwater recharge and habitat improvement.

Program Goal 4: Natural Disaster Risks

Action 4.1: Collaborate with state and federal land managers to identify projects and activities that will reduce risks of, and prepare for, natural disasters on public lands.

Action 4.5: Provide assistance to the Region in the development and implementation of alternative, multi-benefit natural disaster risk reduction programs such as bio-fuel creation.

Program Goal 5: Water and Air Quality

Action 5.2: Identify and support priority projects aimed at assessing, protecting, and improving watershed health, particularly those that provide multiple benefits.

Action 5.4: Provide incentives for watershed restoration projects resulting in upper watershed health, water quality improvement and water source conservation efforts.

Action 5.5: Engage in cooperative efforts with agencies and other partners aimed at educating about, planning for and monitoring the effects of climate change on the Sierra Nevada Region. As an example, investigate technology and program options for carbon sequestration.

Program Goal 6: Regional Economy

Action 6.1: To the maximum extent feasible, focus the SNC's expenditures and conduct activities within the region, utilizing community businesses.

Action 6.3: Identify resources and assistance that will benefit communities in efforts to improve their economic well-being.

Program Goal 7: Public Lands

Action 7.2: Develop and support, in consultation with state and federal land managers, sustainable projects that meet this objective, consistent with the land management agencies' objectives and responsibilities.

b. Workplan and Schedule Narrative

The project to restore old forest sensitive species habitat in the Sagehen Basin has the following objectives:

Objective 1: Retain appropriate amounts of existing mature cover and decadence

Objective 2: Create appropriate amounts of decadence where it is lacking

Objective 3: Introduce variability through hand vegetation treatments

Objective 4: Pile cut vegetation and excess small down wood to facilitate the return of mixed severity fire

Objective 5: Implement a prescribed pile burn followed by a prescribed underburn

A timeline, including tasks, budget, and approximate completion date is shown in Table 1. The tasks will be carried out by the Forest Service and University of California Berkeley Sagehen Creek Field Station. Contracting will take place on a bid basis as soon as the project is approved. We will contract with the operator that offers the highest quality work, most competitive prices and can operate within the description and constraints outlined in the environmental documentation. A more detailed description of the forest stand prescription and steps taken during implementation is included in Appendix A.

Table 1: Tasks and timeline for the Sagehen Forest Habitat Restoration Project

| Task | Completion |
|--|------------|
| 1. Demarcate unit boundaries, Dense Cover Areas and Tree Girdles | 9/15/13 |
| 2. Contract Preparation | 10/15/13 |
| 3. Contract Implementation | 10/1/14 |
| 4. Prescribed Fire | 11/15/15 |
| 5. End date | 3/1/17 |

c. Restrictions, Technical/Environmental Documents and Agreements Narrative

There are no property restrictions and/or encumbrances that could adversely impact project completion. All technical documents can be found at the following website: <http://goo.gl/u1wKuK>.

d. Organizational Capacity Narrative

The following partners will manage and implement the project:

National Forest Foundation

Vance Russell joined the NFF staff in February 2010. He has more than 20 years working in community-based conservation, restoration, and biodiversity conservation projects. Prior to this current position, he was Director of Audubon California's Landowner Stewardship Program, restoring habitat on farms and ranches in a manner compatible with existing agricultural operations. He is one of the founding members of the Wild Farm Alliance and currently serves on the organization's board of directors. Vance worked at the World Wildlife Fund's Biodiversity Support Program in the Latin America and Adaptive Management Programs. Vance received his M.S. in Natural Resources with a minor in Conservation and Sustainable Development from Cornell University in 1996 and B.A. in Biology from the College of Wooster in 1987. Vance will serve as the project manager and provide project technical oversight.

Sagehen Field Station

Jeff Brown is the director and Faerthen Felix is the assistant director of the Sagehen Creek Field Station and Experimental Forest which are research and teaching facilities of the University of California at Berkeley. The Field Station was established in 1951 with the signing of a long-term special use permit with the USDA Forest Service. Today this relationship includes the Tahoe National Forest, which manages the land, and the Pacific Southwest Research Station which created the Sagehen Experimental Forest in 2005. Sagehen serves as the hub of a much broader network of regional research areas known as the Central Sierra Field Research Stations.

USFS

Joanne Roubique is the District Ranger of the Truckee Ranger District of the Tahoe National Forest. Educated at Louisiana State University, Baton Rouge, as a landscape architect, she began her career with the Forest Service assisting with large-scale, landscape level planning. In her time on the Truckee Ranger District, she has been a strong proponent for integrated resource planning where the various resources and influences on the environment are considered together as an integrated picture. She is also a passionate proponent for working collaboratively with a broad range of interests to find the best answers for all, with the input of a variety of scientific disciplines. She played an active role in the establishment of the Truckee River Habitat Restoration Group, a precursor to the Truckee River Watershed Council. Joanne is known as a strong, collaborative partner with the many non-profit organizations working on various issues on the eastside of the Tahoe National Forest.

Randy Westmoreland is a Soil Scientist and Watershed Program Manager for the east side of the Tahoe National Forest. He has worked on the Tahoe National Forest for 17 years, largely focused on watershed

management and restoration. Randy has a B.S. in Soil Science and Watershed Management from California Polytechnic State University.

e. Cooperation and Community Support Narrative

The project has multiple partners involved in the identification, prioritization and implementation of the proposed projects. Local partners will provide cash and in-kind contributions to the project as indicated in the budget, primarily through the involvement of Trout Unlimited, Truckee River Watershed Council and volunteers. Community members will be further involved through the well-known Truckee River Days, run by the Truckee River Watershed Council and attracting more than 500 volunteers to 15 restoration projects annually. We will also involve community members through multiple field days, volunteer opportunities and two *Friends of the Forest*® Days which we will host with Forest Service and local nonprofit staff. *Friends of the Forest* Days feature a talk by a local expert followed by on-site restoration activities.

Due to the collaborative and community-based nature of the project as well as the great need for like projects in the Sierra, all project partners will strive to communicate widely about the Sagehen Forest Health project through print media, online (websites, blogs, social media) and tours. For example, at the legislative level, the project has already received visits and support from Representative McClintock and Senator Boxer's staff. We are working on future visits from Senators Reid and Feinstein as the water quality will greatly benefit Nevada, and Senator Feinstein has long supported similar projects in the Tahoe Region. Similarly, the National Forest Foundation often communicates results at a regional and national level through print journalism and social media and the National Forest Foundation website. Any posts to our Facebook page instantly reach an audience of over 150,000 and the blog on our website is widely visited and shared.

The project has a very positive history of cooperation and community support. In May 2010, a collaborative planning process was begun to engage all interested parties and stakeholders (public, private, and agency) to examine issues that pertain to fuels reduction management and to consider new information. Approximately 140 potentially interested and affected parties were initially invited to participate in the process. Since May 2010, 20-60 people (average of 25), representing local city, county, and state agencies, other federal agencies, environmental groups, private companies, universities and research, Forest Service research, and interested citizens have routinely and actively been participants in the collaborative process. Four issues drove much of the Collaborative's proposed action development. One general issue was that stakeholders were unsure what a treatment that incorporated concepts from the Forest Service General Technical Report, (GTR) 220 would look like. GTR 220 advocates creating healthy forests by increasing heterogeneity in the stands. The other main issues were concepts of ecological restoration and increased forest resiliency to change, habitat protection and enhancement for the Pacific marten, and how proposed treatments could affect fire behavior.

With an independent facilitator supported through Sierra Nevada Conservancy funds, collaboration took place primarily through a series of meetings, information shared through email, web postings, conference calls and in-person meetings. The initial stages were designed to inform stakeholders of the existing conditions and natural resource data that existed regarding the Sagehen Basin and to identify

any and all questions, concerns, and issues stakeholders had in relation to a proposed project in the area. Less complex issues and questions were addressed during the meetings and/or through modifications or additions to the proposal. Committees or subgroups of particularly interested stakeholders were formed to address the more complex and specific questions and issues.

To address the question of what a GTR 220 project looked like, two test plots of approximately three acres each were selected, one in the northeast portion and one in the southwest portion of the Basin. The test plots were designed to be representative of the larger project landscape. Each plot was inventoried, marked, harvested, and in the case of one plot, underburned during the summer/fall of 2010. Post treatment, the plots were re-inventoried to provide metrics of size, species, and numbers of trees removed, basal area removed and retained, and before and after canopy cover. Post treatment photo point monitoring was also conducted. The plots helped to illustrate and test the prescriptions and methods described in Appendix A. Specifically the plots demonstrated variable thinning, legacy tree treatment, suppressed cut, dense cover area and early seral opening prescriptions.

The test plots proved to be very important to the larger collaborative process. The collaborative group was able to view the resulting stand composition and structure as well as two small adjacent areas that were sample marked to represent a before treatment condition. Data collected proved very effective in communicating the anticipated outcomes of treatments and helped further refine prescriptions for the larger Sagehen Project Area. Lessons learned helped to define operating procedures and to fine tune expectations on the logistics of implementation. The test plots provided a visual confirmation of the concepts expressed in GTR 220. Overall, they helped provide common understanding of the concepts, opportunities and challenges in using a new approach to forest stand treatment and management.

A preliminary Environmental Assessment and supporting environmental analyses for the Sagehen Project were provided to the public for comment during the 30-day comment period. Individuals and organizations that provided comments or expressed interest in the Sagehen Project during the 30-day comment period are in Appendix B. The only letters received—from Sagehen Biological Reserve, Sierra Forest Legacy and Sierra Pacific Industries—were in support of the project. It is clear that the project has received bipartisan support as a whole from the entire community including those from the timber industry, environmental groups, and legislators.

There is no significant opposition to the Sagehen Project. Please see Appendix B for responses to public comments received and the response to comments during the 30day comment period for the project Environmental Assessment.

f. Long-Term Management and Sustainability Narrative

Restoration projects will occur on public lands managed by the U.S. Forest Service under the 1990 Tahoe National Forest Land and Resource Management Plan, as amended by the 2004 Sierra Nevada Forest Plan Amendment (SNFPA) Record of Decision (ROD). These plans direct long-term management of public lands on the Tahoe National Forest in perpetuity. The Forest Service will perform long-term management of the project sites that are on National Forest lands, and it has interdisciplinary teams of hydrologists, fisheries biologists, wildlife biologists and range management specialists who will continue

to provide monitoring and recommended resource protection measures for any activities that occur in the area. The Forest Service has managed many similar areas to protect resource values in the past. All land management activities, including the project, are subject to specific Best Management Practices and Management Requirements/Mitigations detailed in the Tahoe National Forest Land and Resource Management Plan as well as additional resource protection measures. In addition, all projects must implement all requirements of the Central Valley Water Quality Control Board and be permitted through the Board, as well as the Army Corps of Engineers, as required.

Funding for long-term management will come from the Tahoe National Forest watershed budget. The past experience with this type of restoration has shown that while it is important to have provisions for long-term maintenance, significant maintenance is often not needed because natural hydrologic and geomorphic processes are restored. The Forest Service will be responsible for long-term maintenance of the project.

More specifically, the long-term goal is to return more frequent, low intensity fire to the Sagehen Basin. While there is no language in the Environmental Assessment that explicitly states exactly how and when treatments will be maintained over the long term, it was always part of the intent and design of the Sagehen Project that prescribed, and eventually natural, fire would be one of the primary tools for forest management in the future. By managing for a more active fire regime and implementing prescribed fires or treatments that mimic natural, low-intensity fire regimes, the treatments can retain their effectiveness over the long term. Additionally, the other identified needs of the project would be met long term post-project when the ecological role of fire is enhanced. In fact, the Collaborative will develop a cooperative team that will decide upon natural burns once the forest treatment portion of the project is completed.

The focus of the monitoring (identified in the Environmental Assessment, the Decision Notice, and Finding of No Significant Impact) on Best Management Practices and Standard Management Requirements throughout the life of the project ensures identified habitat features are maintained per the desired project specifications both during layout and implementation, and species specific monitoring. This ensures all Best Management Practices and Standard Management Requirements outlined in the project are followed (See Appendix C). Each discipline has the delegated responsibility and associated funding to monitor their specific resource and ascertain whether treatments are following project requirements. Further, treatments are monitored for unforeseen effects, which help inform the project's adaptive management strategy.

Perhaps more importantly for the entire Sierra Nevada, this project is widely applicable to all mixed-conifer systems and will provide a demonstration for how to implement a collaborative process that is both ecologically sound and, eventually, economically feasible. Noteworthy, is that the amount of timber produced by the project—6 million board feet of timber and 8 million board feet of chips—is the same whether the project was planned using status quo harvesting and fuel treatment methods or methods creating increased spatial heterogeneity in the stand as per GTR-220. Furthermore, the project proponents have already been able to utilize the test cut as a way to introduce silviculturalists from multiple agencies on the efficacy of the approach. For instance, we are working with the Lake Tahoe

Basin Management Unit to plan a similar process on the entire west shore of Lake Tahoe (~30,000 acres) that includes a gradation of thinning from the wildland urban interface to more remote areas. Not only will this reduce fire risk and increase forest stand resilience, but it will also guarantee long-term water quality in the basin, where lake clarity is a singular goal unifying countless actors. Similar approaches can and must be applied throughout the Sierra at increasingly larger scales to address forest health and water quality issues.

2. Supplemental Documents

a. Cooperation and Community Letters of Support

Appendix D

b. Long-Term Management and Sustainability

The Sagehen Project was designed in compliance with the [Tahoe National Forest Land and Resource Management Plan](#) (1990) as amended by the Sierra Nevada Forest Plan Amendment Final Supplemental Environmental Impact Statement Record of Decision (SNFPA ROD, USDA 2004). An integral part of the SNFPA ROD is adaptive management and monitoring of projects that implement the Forest Plan Amendment. Specifically, projects are to use adaptive management coupled with management goals and objectives, and experimentation. Additionally, project managers must be able to ensure current and future projects are consistent with available science and that the effects of the projects are appropriately considered (USDA 2004, pg. 12). In order to ensure monitoring is occurring and the feedback loop for adaptive management is in place, the SNFPA ROD institutes a number of reporting and monitoring requirements for all projects implemented (USDA 2004, pg. 12), of which the Sagehen Project is one.

All projects will:

- Report all project activities in the Forest Activity Tracking System (FACTS) database which will provide a baseline for evaluating what activities are occurring and where.
- Be a part of the regional evaluation process, conducted annually, that informs management of 1) whether direction is being implemented as prescribed, 2) whether desired conditions are being met, and 3) if management practices are resulting in expected outcomes.
- Consider the results of the bioregion-wide tracking of key attributes of fuels reduction projects to 1) monitor achievement of the landscape-level desired conditions and 2) based on changes observed at the project-level, assess the need for modifications to the standards and guidelines at the forest and bioregion level.

In addition, the adaptive management program is designed to address high priority, key questions that relate to the uncertainties associated with management activities (USDA 2004, pg. 13). Focused topic areas for adaptive management are fire and fuels; old forests; aquatic, riparian, meadows; lower westside hardwoods; noxious weeds; soil productivity; sociocultural conditions; and air quality (SNFPA, 2001, Chp. 2 pg. 25). For these key topic areas, implementation, status and change, and cause and effect

monitoring are to occur (SNFPA, 2001 Chp. 2 pp. 26-28). The Sagehen Project focuses primarily on implementation monitoring, but also on status and change and cause and effect monitoring (Sagehen Environmental Assessment, pp. 64-67).

The Sagehen Project requires implementation monitoring of Best Management Practices and Standard Management Requirements throughout the life of the project. This ensures all Best Management Practices and Standard Management Requirements outlined in the project are followed (Appendix C and Sagehen Environmental Assessment pg. 64). Further, treatments are monitored for unforeseen effects, which help inform the project's adaptive management strategy. Specifically, monitoring associated with the Sagehen Goshawk Protected Activity Center and key habitat features such as, decadent feature enhancement, dense cover areas, existing larger down logs, and existing larger snags will be actively employed to monitor the status and expected or unexpected changes to these areas of interest (Sagehen Environmental Assessment, pp. 65-66). The Sagehen Project also provides a unique opportunity to study project cause and effects through an array of sound study designs coupled with a rich baseline of data from several external partners (Sagehen Environmental Assessment, pg. 67). These studies may produce some of the most thorough effects monitoring on forest management projects up to date. There are numerous ongoing studies within the Sagehen Basin that, in some cases, can be modified or simply repeated, to monitor project effects (Sagehen Environmental Assessment, pg. 67).

The planning for the Sagehen Project did consider the outcomes of the evaluation processes and the bioregional monitoring efforts. In addition, as the project is implemented and after direct project implementation, these factors will continue to be considered. Adaptive management will enable adjustments to the project if needed during implementation. Post-project, monitoring will enable an accurate evaluation of whether the project achieved its intended goals and objectives, which will inform the appropriate management of the area over the long-term. The adaptive management and monitoring program adopted in the SNFPA ROD coupled with the implementation, status and change, and cause and effect monitoring prescribed in the Sagehen Project provides for the long-term management and sustainability of the project area.

c. Maps and Photos

The Sagehen Project is part of a much larger project, the Tahoe *Treasured Landscapes* Site supported by multiple nonprofit partners and agencies and the Truckee Community including Sierra Business Council, Truckee River Watershed Council, Sierra Nevada Conservancy, Trout Unlimited, Truckee Trails Foundation, Pacific Southwest Research Station, Truckee National Forest, Lake Tahoe Basin Management Unit, Tahoe Conservancy, Tahoe Resource Conservation District, Sagehen Field Station, Truckee Donner Land Trust and University of California. Maps and photos from the project are shown in Figures 1-3. A map illustrating specific project, treatment areas and area covered by the project is shown in Figure 3.

1) Project Location Maps

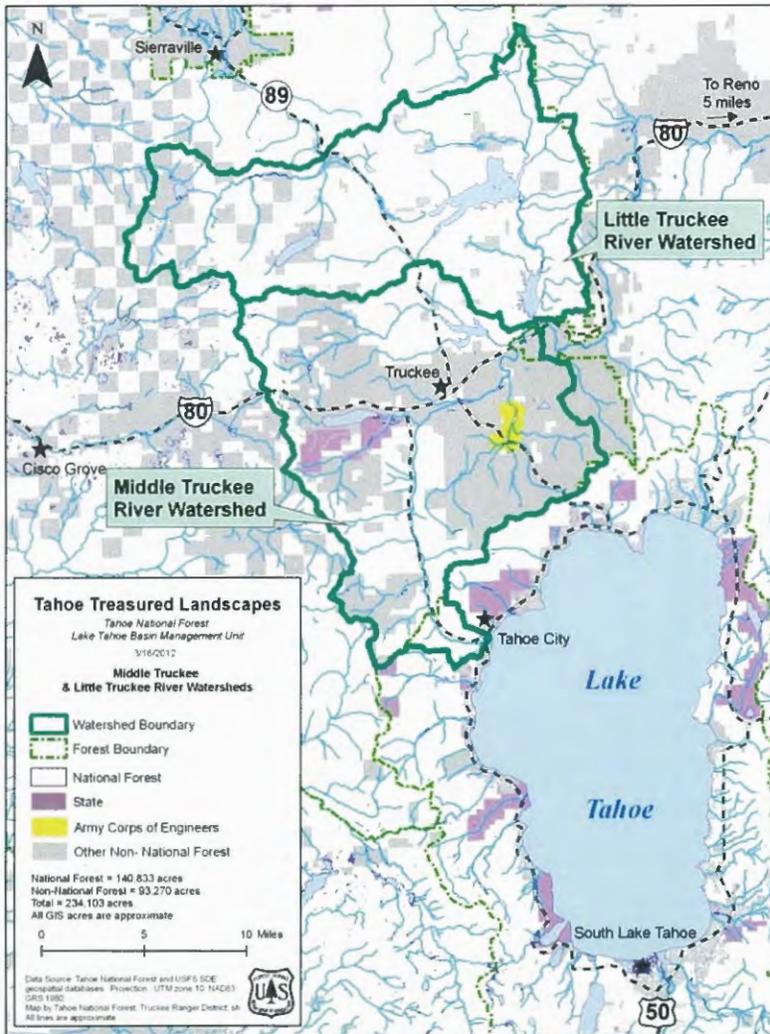


Figure 1: Map of the region showing the Truckee *Treasured Landscapes* site boundary.

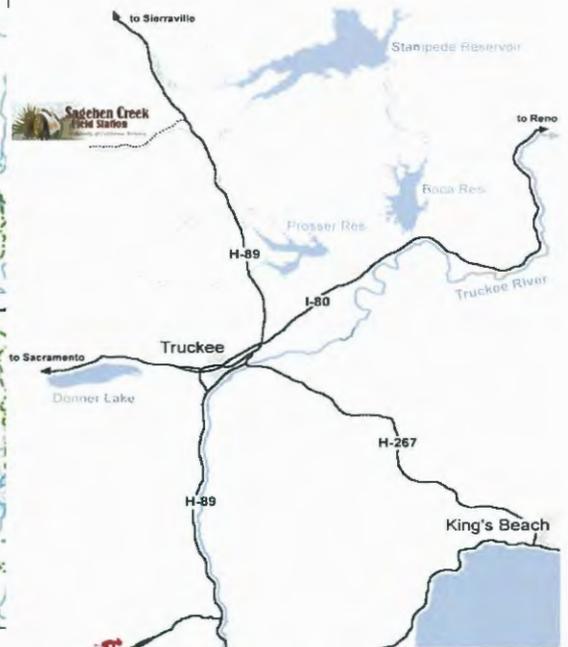


Figure 2: Location of the Sagehen Forest Habitat Restoration Project.

2) Parcel Map

US Forest Service lands do not have parcel maps.

3) Topographic Map



4) Photos of the Project Site

See photos included in Appendix E.

d. Site Plan

The map in Figure 3 shows the portion of the Sagehen project covered by the request to the Sierra Nevada Conservancy Project. There are additional forest stands to be treated as part of this project that the US Forest Service will be contracting separately but treating in approximately the same time frame. The Sierra Nevada Funded portion of the project is part of a much larger project supported by multiple partners.

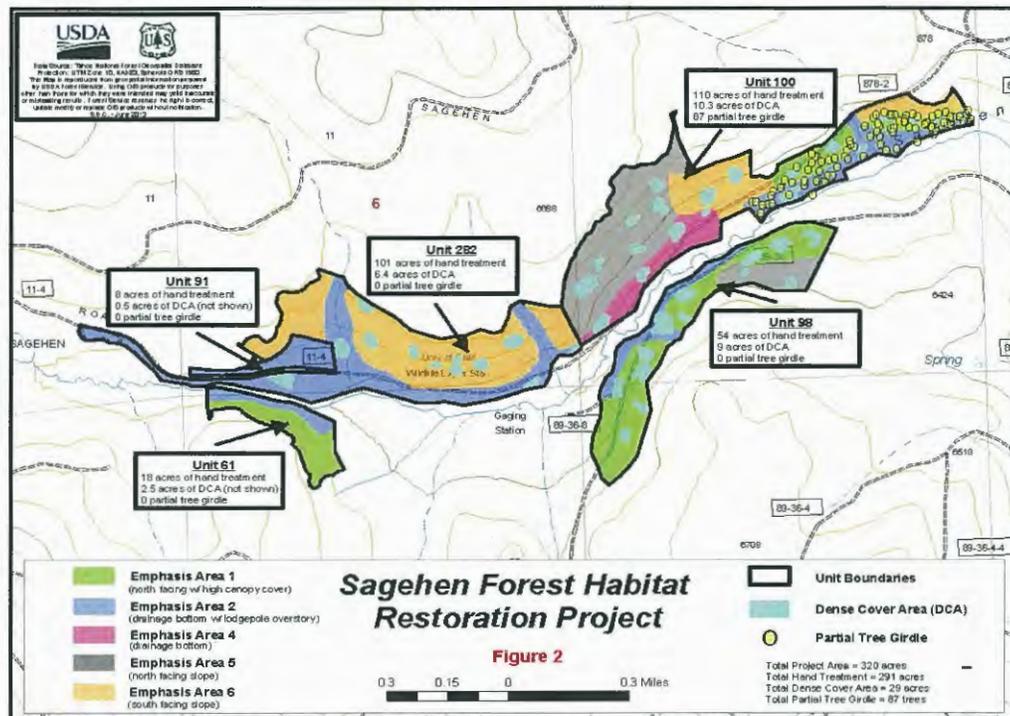


Figure 3: Sagehen Forest Habitat Restoration Project detailed treatment locations and area covered by the requested project to Sierra Nevada Conservancy.

3. Financial Forms

a. Detailed Budget Form

The three items in the budget are divided as below with descriptions on what the costs will cover for each item:

1. **Service Contracts**—Costs for implementing the forest restoration work in the field. As soon as the project is approved we will work with the Forest Service to release a request for bids and contract the party that is able to do the work in a successful, timely and cost-effective manner.
2. **Project Management**—This line item will cover salaries involved in managing the project and ensuring its success. Sagehen Reserve and NFF staff will coordinate project management. The NFF will subcontract any work Sagehen Reserve does but limit University of California to an overhead of 15% as stipulated by our blanket policy.
3. **Operating Costs**—All costs for running the NFF. This includes accounting, legal review of contracts, office supplies and rent and other items. The NFF's blanket policy is an operating cost of 15% of the project costs.

**SIERRA NEVADA CONSERVANCY
PROPOSITION 84 - DETAILED BUDGET FORM**

Project Name: Sagehen Basin Old Forest Sensitive Species Habitat Restoration
Applicant: Truckee Ranger District - Tahoe National Forest

| SECTION ONE DIRECT COSTS | Year One | Year Two | Year Three | Year Four | Year Five | Total |
|-------------------------------------|-----------------|-----------------|-------------------|------------------|------------------|--------------|
| Service Contracts | | | | | \$264,000.00 | \$264,000.00 |
| Project Management | | | | | \$39,600.00 | \$39,600.00 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| DIRECT COSTS SUBTOTAL: | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$303,600.00 | \$303,600.00 |

| SECTION TWO INDIRECT COSTS | Year One | Year Two | Year Three | Year Four | Year Five | Total |
|---------------------------------------|-----------------|-----------------|-------------------|------------------|------------------|--------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| INDIRECT COSTS SUBTOTAL: | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$0.00 |
| PROJECT TOTAL: | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$303,600.00 | \$303,600.00 |

| SECTION THREE Administrative Costs (Costs may not to exceed 15% of total Project Cost) : | | | | | | Total |
|---|--------|--------|--------|--------|--------------|--------------|
| Operating Costs | | | | | \$45,540.00 | \$45,540.00 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| ADMINISTRATIVE TOTAL: | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$45,540.00 | \$45,540.00 |
| SNC TOTAL GRANT REQUEST: | \$0.00 | \$0.00 | \$0.00 | \$0.00 | \$349,140.00 | \$349,140.00 |

| SECTION FOUR OTHER PROJECT CONTRIBUTIONS | Year One | Year Two | Year Three | Year Four | Year Five | Total |
|---|-----------------|-----------------|-------------------|------------------|------------------|--------------|
| SNC Proposition 84 Category 2 Grant | \$7,500.00 | | | | | \$7,500.00 |
| Forest Service Collaboration | \$50,000.00 | \$50,000.00 | \$50,000.00 | | | \$150,000.00 |
| Forest Service NEPA analysis | | | \$100,000.00 | \$100,000.00 | | \$200,000.00 |
| Forest Service marking/contract prep | | | | \$25,000.00 | | \$25,000.00 |
| Forest Service contract admin | | | | | \$25,000.00 | \$25,000.00 |
| Forest Service monitoring | | | | | \$25,000.00 | \$25,000.00 |
| Wildlife Conservation Board Grant | | | | | \$200,000.00 | \$200,000.00 |
| National Forest Foundation Grant | | | | | \$20,000.00 | \$20,000.00 |
| Total Other Contributions: | \$57,500.00 | \$50,000.00 | \$150,000.00 | \$125,000.00 | \$270,000.00 | \$652,500.00 |

b. National Forest Foundation Cost Allocation Plan

The purpose of this cost allocation plan is to summarize, in writing, the methods and procedures that this organization will use to allocate administrative costs to various programs, grants, contracts and agreements.

Direct costs are those that can be identified specifically with a particular final cost objective. Indirect costs are those that have been incurred for common or joint objectives and cannot be readily identified with a particular final cost objective.

Only costs that are allowable, in accordance with the cost principles, will be allocated to benefiting programs by the NFF.

The general approach of the NFF in allocating costs to particular grants and contracts is as follows:

- A. All allowable direct costs are charged directly to programs, grants, activity, etc.
- B. Allowable direct costs that can be identified to more than one program are prorated individually as direct costs using a base most appropriate to the particular cost being prorated.
- C. All other allowable general and administrative costs (costs that benefit all programs and cannot be identified to a specific program) are allocated to programs, grants, etc. using a base that results in an equitable distribution.

ALLOCATION OF COSTS

The following information summarizes the procedures that will be used by the NFF beginning 3/1/14:

A. Compensation for Personal Services – Documented with timesheets showing time distribution for all employees and allocated based on time spent on each program or grant. Salaries and wages are charged directly to the program for which work has been done. Costs that benefit more than one program will be allocated to those programs based on the ratio of each program's salaries to the total of such salaries (see Example 1). Costs that benefit all programs will be allocated based on the ratio of each program's salaries to total salaries (see example 2).

1. Fringe benefits (FICA, UC, and Worker's Compensation) are allocated in the same manner as salaries and wages. Health insurance, dental insurance, life & disability and other fringe benefits are also allocated in the same manner as salaries and wages.

2. Vacation, holiday, and sick pay are allocated in the same manner as salaries and wages.

B. Travel Costs – Allocated based on purpose of travel. All travel costs (local and out-of-town) are charged directly to the program for which the travel was incurred. Travel costs that benefit more than one program will be allocated to those programs based on the ratio of each program's salaries to the total of such salaries (see Example 1). Travel costs that benefit all programs will be allocated based on the ratio of each program's salaries to total salaries (see Example 2).

C. Professional Services Costs (such as consultants, accounting and auditing services) - Allocated to the program benefiting from the service. All professional service costs are charged directly to the program

for which the service was incurred. Costs that benefit more than one program will be allocated to those programs based on the ratio of each program's expenses to the total of such expenses (see Example 3). Costs that benefit all programs will be allocated based on the ratio of each program's expenses to total expenses (see Example 4).

D. Office Expense and Supplies (including office supplies and postage) – Allocated based on usage. Expenses used for a specific program will be charged directly to that program. Postage expenses are charged directly to programs to the extent possible. Costs that benefit more than one program will be allocated to those programs based on the ratio of each program's expenses to the total of such expenses (see Example 3). Costs that benefit all programs will be allocated based on the ratio of each program's expenses to total expenses (see Example 4).

E. Equipment – Equipment – the NFF depreciates equipment when the initial acquisition cost exceeds \$2,500. Items below \$2,500 are reflected in the miscellaneous category and expensed in the current year. Unless allowed by the awarding agency, equipment purchases are recovered through depreciation. Depreciation costs for allowable equipment used solely by one program are charged directly to the program using the equipment. If more than one program uses the equipment, then an allocation of the depreciation costs will be based on the ratio of each program's expenses to the total of such expenses (see example 3). Costs that benefit all programs will be allocated based on the ratio of each program's expenses to total expenses (see example 4).

F. Printing (including supplies, maintenance and repair) – Expenses are charged directly to programs that benefit from the service. Expenses that benefit more than one program are allocated based the ratio of the costs to total expenses. Costs that benefit more than one program will be allocated to those programs based on the ratio of each program's expenses to the total of such expenses (see example 3). Costs that benefit all programs will be allocated based on the ratio of each program's expenses to total expenses (see example 4).

G. Insurance – Insurance needed for a particular program is charged directly to the program requiring the coverage. Other insurance coverage that benefits all programs is allocated based on the ratio of each program's expenses to total expenses (see example 4).

H. Telephone/Communications – Long distance and local calls are charged to programs if readily identifiable. Other telephone or communications expenses that benefit more than one program will be allocated to those programs based on the ratio of each program's expenses to the total of such expenses (see example 3). Costs that benefit all programs will be allocated based on the ratio of each program's expenses to total expenses (see example 4).

I. Facilities Expenses – Allocated based upon usable square footage. The ratio of total square footage used by all personnel to total square footage is calculated. Facilities costs related to general and administrative activities are allocated to program based on the ratio of program square footage to total square footage (see example 5).

J. Training/Conferences/Seminars – Allocated to the program benefiting from the training, conferences or seminars. Costs that benefit more than one program will be allocated to those programs based on the ratio of each program's salaries to the total of such salaries (see Example 1). Costs that benefit all programs will be allocated based on the ratio of each program's salaries to total salaries (see Example

2).

K. Other Costs (including dues, licenses, fees, etc.) – Other joint costs will be allocated on a basis determined to be appropriate to the particular costs. (Grantee should describe methodology for applicable costs).

4. Additional Documents

a. Authorization to Apply

See Appendix F

b. Articles of Incorporation

See Appendix G

c. IRS Determination Letter

See Appendix H

d. Signed Bylaws

See Appendix I

(These are Application Components - included here, and after Appendices)

5. Environmental Documentation

a. Performance Measures

Since the project is located at the Sagehen Field Station there is an extensive dataset of pre-existing conditions, models and measurements for the entire project area that include abiotic and biotic information, e.g., water quantity and quality and an inventory of all trees as well as various remote sensing imagery such as LIDAR.

The attached Monitoring Plan in Appendix C and page 64 of the [Environmental Assessment](#) further describe monitoring that will be carried out by project partners over a time during and beyond the project period.

The project will track the following performance measures as stipulated in Sierra Nevada Conservancy's Detailed Performance Metrics Descriptions:

1. **Acre Feet per Annum of Streamflow Improved.** Given the numerous factors that influence streamflow and the size of the project compared the watershed, it may be difficult to exactly attribute improved streamflow to the project. However, since Sagehen has decades of streamflow data as well as measured biotic and abiotic indicators throughout the watershed, it may be possible to track and show a significant signal.
2. **Acre Feet per Annum of Water Supply Conserved or Enhanced.** This metric will be tracked in a similar fashion to #1 above.
3. **Acres of Land Improved or Restored.** The total acres treated will be counted as the number of acres restored.

4. **Mass of Pollutant Reduced Per Year.** Reduction in sediment from run off in the watershed will be tracked.
5. **Number and Diversity of People Reached.** We will track this indicator through documentation of visitors to the project as well as the workers that participate in implementation.
6. **Number and Type of Jobs Created.** Job created will be tracked through the contracting and implementation process.
7. **Number and Value of New, Improved or Preserved Economic Activities.** The chip and wood products resulting from the project will be measured. Given the general lack of market for chip the project proponents will seek to find additional means to market this product so it does not go to waste.
8. **Number of Collaborative Developed Plans and Assessments.** Additional collaboratively developed plans may arise as a result of the project in the region and will be tracked. Linking these to the project and how it influences and helps to scale up similar efforts is needed to expand similar forest health projects throughout the Sierra Nevada.
9. **Percent of Pre-project and Planning Efforts Resulting in Project Implementation.** Data collection post project will take place over the life of the project and beyond. Reporting of percent project completion will be tracked by the project managers.
10. **Resources Leveraged for the Sierra Nevada.** Project funds from other sources, such as Wildlife Conservation Board and the NFF are indicated in the budget and will be tracked during the life of the project. Any in-kind contributions or volunteer hours contributed to the project will also be recorded.
11. **Tons of Carbon Sequestered or Emissions Avoided.** Carbon sequestered and emissions avoided will be measured during the initial project period then modeled using the Forest Service Forest Vegetation Simulator to show the amounts of each over the timescale of stand development. The project will not, however, register the carbon under California Climate Action Reserve or other carbon registries so will not require verification.

b. Regulatory Permits/Requirements

1) CEQA Documentation

CEQA documentation, complementary to the already completed project NEPA documentation, is currently being prepared and will be completed by the time the board reviews the proposed project.

2) NEPA Documentation

The Sagehen Forest Habitat Restoration Project has been analyzed under the Sagehen Environmental Assessment signed May 6th, 2013. Multiple projects are expected to be implemented under that decision. The first and last page of the 12-page signed Finding of No Significant Impact (FONSI) is attached. Under that decision, the Forest Service will:

- Reduce hazardous fuel loadings and modify landscape-scale wildland fire behavior;
- Maintain and enhance habitat for the marten and other wildlife species associated with late seral forest habitat;

- Create heterogeneous forest stand conditions that would be expected to develop under an active fire regime;
- Enhance the ecological role of fire; and
- Restore declining aspen stands within unit boundaries.

Clicking [here](#) provides access to all of the Tahoe National Forest projects. Sagehen National Environmental Protection Act (NEPA) documents can be found under the Sagehen Project in the Analysis Completed section. Only Lahontan Water Quality Board timber waivers are required for this work to be implemented. Forest Service staff is currently working on obtaining those waivers and are expected to have them filed before contract implementation begins.

See the environmental documentation questionnaire for more information.

CEQA documentation will need to be completed for the project and proponents are currently taking steps to complete the CEQA checklist and file with Department of Fish and Wildlife.

3) Permits

This project complies with the Clean Water Act through use of Best Management Practices designed to minimize or prevent the discharge of both point and non-point source pollutants from Forest roads, developments and activities. Under the Clean Water Act regulations, the Forest Service is required to obtain permits from the Lahontan Regional Water Quality Control Board. The Forest Service is working with the Lahontan Regional Water Quality Control Board to secure the appropriate permit(s).

Requirements for Water Quality under the Sagehen Project include meeting the conditions to attain a Waiver for Timber Harvest from the Lahontan Regional Water Quality Control Board. All required state and federal permitting processes, such as CEQA, any 401 or 404 permits or any prohibition exemptions would be complied with for elements within the proposed actions which may require these measures in particular any proposed restoration that may require these measures.

Under both Alternative 1 and Alternative 3, proper mitigation measures to meet air quality requirements would be implemented by the Sagehen Project. During the implementation of the Action Alternatives, the prescribed fire planner would coordinate with the Air Quality Coordinator to design the smoke management plan. Burning permits would be acquired from the Northern Sierra Air Quality Management District. The Air Quality District would determine days when burning are allowed. The California Air Resources Board provides daily information on burn or no burn conditions. Burn plans would be designed and all fuel reduction burning would be implemented in a way to minimize particulate emissions.

Appendix A :

Specific workplan /
proposed actions

Chapter 2: Alternatives

This chapter describes and compares Alternative 1 (Proposed Action), which has been designed to meet the purpose and need for action described in Chapter 1, Alternative 2 (No Action) and Alternative 3 (Non-commercial Funding). This chapter also details the proposed action's design features and management requirements. The intent of these features and requirements is to minimize adverse environmental impacts and ensure that the proposed action is consistent with Forest Plan standards and guidelines. Finally, this chapter displays the three alternatives in comparative form, defining the differences between them and providing a basis for a choice among the options by the Responsible Officials.

Alternative 1: Proposed Action

Note to reader: As a response to comments raised, the proposed action has been slightly modified: Unit 39 as described in the preliminary EA has been dropped from the proposed action. The acreages displayed in the section below and in Chapter 2 reflect the removal of this unit. In addition, effects of dropping Unit 39 on goshawk habitat in the NE Sagehen goshawk protected activity center (PAC) are addressed in the Biological Evaluation and summarized in Chapter 3 of this EA. Given that dropping Unit 39 results in such a small change in the overall proposed treatment acreage (a decrease of 1.2 percent), other resource analyses presented in Chapter 3 continue to be based on the original assumption that Unit 39 would be underburned only, as initially proposed. Due to the small size of this unit and the original proposal to only underburn this unit, removal of Unit 39 will not measurably change the effects analyses detailed in the Project's specialist reports and summarized in Chapter 3 of this document.

Alternative 1, the proposed action, was developed to meet the purpose and need for the project. The design and treatment methods of Alternative 1 are described in detail below.

Overall Goals and Treatment Objectives

As stated in Chapter 1, one of the main outcomes of the collaborative process was the designation of a number of emphasis areas within the boundaries of the proposed treatment units (original SPLAT boundaries). These emphasis areas became subunits within the treatment units where management would be focused and modified depending on the intent of each emphasis area. Three primary objectives are all reflected emphasis areas 1-7, albeit in different orders of priority. These included: (1) Pacific marten habitat protection and/or enhancement, (2) stand level ecological restoration, and (3) fuels reduction. For emphasis area 8, the objectives were focused on aspen restoration and enhancement.

For emphasis areas 1-7, a common set of metrics were identified to assess different post-treatment stand conditions, which would reflect the primary treatment objectives of that area. The metrics used include: (a) basal area retention, especially in trees greater than 20 inches diameter at breast height (dbh), (b) canopy cover, (c) snag density, (d) large and small down woody material, (e) short snag (or high stump) densities, (f) tree species composition, (g) dense cover areas (DCAs) with multiple tree ages,

and early seral openings (ESOs), and (h) fire behavior modeled values under 90th percentile weather conditions, including flame lengths and predicted crown fire and associated larger tree mortality.

While it is preferred that prescribed and natural fire become two primary management tools over the long term in all the emphasis areas, interim steps are needed so that fuels may be reduced to a more natural level, allowing fire to occur as it would have if fuels had not built up to unnatural levels. In order to facilitate that, near term management goals include the use of silvicultural and fire/fuels prescriptions and treatment methods that can, to a certain extent, mimic the effects of natural fire. Once these treatments have been applied it is hoped that prescribed or natural fire could occur without heavy mortality and uncharacteristically severe effects. These prescriptions and treatment methods and how they apply to emphasis areas (subunits), are detailed in the sections below beginning with "Prescriptions and Treatments". Directly below are sections that explain the overall goals and treatment objectives for each emphasis area.

Sagehen Proposed Action Map

Each emphasis area is represented by a different color on the map of the proposed action in Appendix B. These colors translate into subunits within the proposed treatment unit boundaries. For example, in treatment unit 38, the two discontinuous green areas are both emphasis area 1 and they are both designated subunit 38-1. In another example, treatment unit 213 is comprised of emphasis areas 1 (green), 2 (blue), 4 (fuchsia), 5 (gray), 6 (orange), and 7 (yellow). It therefore has subunits 213-1, 213-2, 213-4, 213-5, 213-6, and 213-7. Unit 80 is comprised only of emphasis area 8 (purple), and therefore is designated 80-8.

Emphasis Areas 1 and 3

Emphasis areas 1 and 3 represent some of the high quality marten habitat (defined in Table 1.1) currently existing within the Sagehen Basin. Emphasis area 1 (green areas on map of Alternative 1, Appendix B) includes high value habitats on north facing slopes, on ridges, and on higher elevation south facing slopes (above 6,725 feet). Emphasis area 3 includes high value habitats on lower elevation south facing slopes. High quality habitat for marten also exists outside the treatment unit emphasis areas, primarily along and south of Sagehen Creek and west of unit 46. There are also some scattered pockets of high value habitat north of Sagehen Creek. Because emphasis area 3 is very limited in total area, it was combined with either emphasis area 1 or emphasis area 2 (also high value marten habitat), whichever was closer. Therefore there is no mapped emphasis area 3 and there are no metrics assigned to it. Because numbers were already assigned to emphasis areas when emphasis area 3 was combined with others, re-numbering was not done. This discussion is intended to reduce confusion as to why emphasis area 3 is not shown on the map and why it will not be discussed further in this document. Within the treatment units, approximately 453 acres are identified as emphasis area 1 (see Table 2.2 below).

Emphasis area 1 values vary above and below 6,725 feet (2,050m), especially on north and east facing slopes in the southwest portion of the Basin (south of Sagehen Creek and west of the Donner Fire area). Areas above 6,725 feet in the southwest portion of the Basin are of relatively higher importance to marten than areas below 6,725 feet and to areas above 6,725 feet in the northeast portion of the Basin.

As stated in Spencer (1981), “martens in the upper basin (>2,050m) preferred stands with larger trees than those in the lower basin, reflecting their affinity for old-growth red fir stands.” and that the change from lodgepole/white fir to red fir occurs at 2,050m in elevation on the north and east facing slopes in the southwest portion (south of Sagehen Creek and west of Donner Fire area) of the Basin. This generally occurs in treatment units 156 and 213 and parts of treatment unit 163, see Alternative 1 map, Appendix B.

The primary goal is to manage emphasis area 1 for both the conservation and restoration of marten habitat values both in the near term and long term. Secondary and tertiary goals include ecological restoration and fuels reduction, respectively. To manage habitats for marten, this emphasis area would maintain relatively higher basal areas, specifically of larger trees, as compared to all the other emphasis areas. Some trees would likely be removed but basal areas would be lowered only to the extent to facilitate the faster creation of a higher proportion of trees greater than 20 inches dbh while at the same time retaining enough basal area and canopy cover to maintain the emphasis area as current high quality habitat. Of the designated emphasis areas, emphasis area 1 retains/recruits the highest number of snags, short snags/high stumps, and existing DCAs. This would maintain components and areas important for resting/denning martens and would ensure future recruitment of important habitat elements and areas. High amounts of large down wood material and high stumps are also important to provide foraging areas and rest sites. In addition, as compared to the rest of emphasis area 1, relatively higher basal areas, more DCAs, and a higher percentage of red fir and white fir are afforded higher prominence in the portions of the emphasis area above 6,725 feet in the southwest portion of the Basin due to the relatively higher habitat values present in this area. Another goal for emphasis area 1 is to maintain reasonable connectivity (i.e. cover from predators and access to adjoining areas) across the area. Recent evidence (Moriarty, pers. comm.) suggests that marten are vulnerable to predation if sufficient cover between preferred resting and foraging sites is lacking.

Even though the primary goal for this emphasis area is to manage for marten use, it is also very important to manage for stand level ecological restoration and a heterogeneous forest which will be more resilient to fire and climate-induced stresses. Treatment objective ranges for basal area retention, canopy cover, percentage of the subunit in DCAs and/or ESOs, and tree species compositions help to ensure that a heterogeneous condition would result post treatment. Also, in order to address fuels reduction and the need to reduce the potential of uncharacteristically severe wildfire effects, treatment objectives that address ladder fuel removal, the spatial arrangement of areas where ladder fuels would not be removed, and the horizontal arrangement of fuels to break up continuous fuel beds help to address these concerns.

Emphasis Areas 2 and 4

Emphasis areas 2 and 4 include the drainage bottoms that currently support high quality marten habitat (emphasis area 2, blue areas on Alternative 1 Map, Appendix B) and the drainage bottoms that do not currently support high quality marten habitat, i.e. the habitat does not currently meet the criteria described in Table 1.1 (emphasis area 4, fuchsia areas on Alternative 1 Map, Appendix B). As stated above, high quality habitat for marten also exists outside the treatment unit emphasis areas. Emphasis areas 2 and 4 include perennial stream courses and other intermittent and ephemeral drainages

throughout the Basin. These locations tend to be relatively more mesic, retain moisture longer through the season and generally support more dense and diverse vegetation conditions than the surrounding stands. Stream courses and other mesic drainage bottom areas are known to be preferable habitat for many wildlife species. They tend to have more herbaceous vegetation cover and microhabitats, provide more escape cover, are accessible to permanent water sources, and support a larger volume and diversity of vertebrates and invertebrates. Thus emphasis areas 2 and 4 intend to maintain and enhance these conditions. In cases where trees are encroaching on meadows or open herbaceous areas, the basal area/crown cover of trees would be reduced to maintain and/or restore meadow habitat as well as encourage herbaceous cover. By contrast, some drainages tend to be relatively more xeric and have fewer to no adjoining wet meadows or similar features. Under these conditions these areas still retain moisture for a longer period of the year than surrounding stands and tend to support denser vegetation and often larger trees. Under these circumstances the objective is to maintain higher basal areas and crown cover and a higher proportion of dense vegetation and structural diversity that these areas tend to provide. Within the treatment units, approximately 103 acres are identified as emphasis area 2 and 173 acres are identified as emphasis area 4 (see Table 2.2 below).

The primary distinction between emphasis area 2 and emphasis area 4 is the consistent presence of greater than 11 inches dbh lodgepole pine as the dominant tree species in most of emphasis area 2 with an average canopy cover of 40% or more. Emphasis area 4 can include perennial and intermittent streams, as well as mesic and relatively xeric ephemeral drainages with a variety of tree cover types. Overall, emphasis areas 2 and 4 are intended to provide higher basal areas of larger trees than the areas surrounding them except for emphasis area 1. They would provide relatively high canopy closures within the treed areas but would also allow enough light for well-developed herbaceous ground cover where sufficient water exists. In addition they would also have higher proportions of snags and short snags/high stumps which would provide resting sites, foraging features, and prey cover for martens. Because of their preferential use for foraging habitat, treatment objectives include the highest retention of large/small down wood components. The differences arise in emphasis area 4 because it includes not only perennial stream courses, but also many intermittent and ephemeral drainages which are highly variable in moisture conditions, vegetation types, position on slope, and aspect. More variation occurs in this emphasis area, thus treatment objectives are also more variable. Relatively more mesic conditions would have more downed logs and high stumps and would be composed of more lodgepole pine; while more xeric conditions would have less dead wood components and would trend on a scale more towards white and red fir and/or ponderosa or Jeffrey pine (depending on slope/aspect).

Even though the primary goal for these emphasis areas is to manage for marten use, especially foraging habitat, it is also very important to manage for stand level ecological restoration and a heterogeneous forest which will be more resilient to fire and climate-induced stresses. Treatment objective ranges for basal area retention, canopy cover, snag, down wood, and short snag densities, percentage of the subunit in DCAs and/or ESOs, and tree species compositions help to ensure that a heterogeneous condition would result post treatment. Also, in order to address fuels reduction and the need to reduce the potential of uncharacteristically severe wildfire effects, treatment objectives that address ladder fuel removal, the spatial arrangement of areas where ladder fuels would not be removed, and the horizontal arrangement of fuels to break up continuous fuel beds help to address these concerns.

Emphasis Area 5

Emphasis area 5 (gray areas on Alternative 1 Map, Appendix B) represents north facing slopes that are not currently high quality marten habitat. The primary goal in emphasis area 5 is to work towards stand level ecological restoration, followed by marten habitat enhancement and fuels reduction. In general the treatment objectives would move the area towards a more heterogeneous forest that would improve resilience to fire and climate induced stresses, while at the same time still providing habitat elements for old forest associated sensitive wildlife species, such as the marten, northern goshawk, and California spotted owl. This emphasis area is also present in some plantations (units 46, 76, 87, and 99). For the Sagehen Project, the objectives in these plantations would be focused on the first steps of achieving a resilient heterogeneous forest. Some examples of this are retaining some young porcupine damaged trees that could grow into trees with split tops and other defects suitable for nesting/resting structures, and retaining residual or legacy trees and areas that are sparsely treed – for plantations, these areas would become similar features to DCAs and ESOs. See the “Prescriptions and Treatments” section below for more detail.

For the remainder of emphasis area 5, outside of plantations, objectives include retaining individual trees, small groups of trees, retaining existing DCAs, and creating ESOs that can support younger cohorts of a variety of species. Due to the more northerly exposure, emphasis area 5 would support more basal area and canopy cover as compared to ridges and south facing slopes. However it would support less basal area and canopy cover than drainages, because of the more xeric conditions, and less than emphasis area 1 because of the objectives to maintain higher basal areas and canopy cover for high quality marten habitat. Overall however, treatment objectives specify that enough basal area, canopy cover, and habitat components such as snags, down wood, short snags, and DCAs would be retained to ensure that the emphasis area retains, or in plantations, facilitates the creation of, important habitat structures for wildlife and provides suitable habitat or moves the habitat towards suitability for old forest species. Also, as in emphasis areas 1, 2, and 4, to address fuels reduction and the need to reduce the potential of uncharacteristically severe wildfire effects, treatment objectives are designed that address ladder fuel removal, the spatial arrangement of areas where ladder fuels would not be removed, and the horizontal arrangement of fuels to break up continuous fuel beds. Within the treatment units, approximately 996 acres are identified as emphasis area 5 (see Table 2.2 below).

Emphasis Areas 6 and 7

Emphasis area 6 (orange areas on Alternative 1 Map, Appendix B) represents vegetation types not identified as high value marten habitat on south facing slopes and emphasis area 7 (yellow areas on Alternative 1 Map, Appendix B) represents vegetation types not identified as high value marten habitat on ridges. In emphasis areas 6 and 7 where fuels reduction is the highest priority, treatments are designed to substantially modify wildfire behavior and reduce the potential of uncharacteristically severe wildfire effects. Although important in all the other emphasis areas, in emphasis areas 6 and 7 especially, the post treatment fire behavior is targeted to meet conditions for SPLATs. SPLATs are designed to achieve, under 90th percentile fire weather conditions, an average of a four foot flame length, that surface and ladder fuels would be removed as needed to meet less than 20 percent fire mortality in dominant and co-dominant trees, and that tree crowns would be thinned to meet less than 20 percent probability of initiation of crown fire (SNFPA ROD 2004, Standard and Guideline #5, pg. 50).

The secondary priority of stand level ecological restoration in these areas is focused on facilitating conditions that would result under an active fire regime, which includes a more heterogeneous forest that is resilient to fire and climate induced stresses. Within the treatment units, approximately 740 acres are identified as emphasis area 6 and 150 acres are identified as emphasis area 7 (see Table 2.2 below).

Overall, in emphasis areas 6 and 7, basal area and canopy cover would be lower than in emphasis areas 1-5. In emphasis area 6, basal area would be reduced to a level that would help increase the pace of tree growth so that a higher percentage of the basal area is in larger (greater than or equal to 20 inches dbh) trees in a shorter amount of time. In emphasis areas 6 and 7, the intent is produce stand conditions that are more similar to those that would have been produced under an active fire regime. A more heterogeneous forest would be created by retaining individual trees, with particular emphasis on tree species more suited to xeric environments, retaining small groups of trees, retaining DCAs, and creating ESOs that can support younger cohorts of a variety of species.

Emphasis areas 6 and 7 are also present in some plantations (units 46, 76, and 87, and emphasis area 6 in unit 99). In plantations, fuels reduction objectives to modify wildfire behavior and reduce severe wildfire effects can usually be achieved in a relatively short timeframe. For the Sagehen Project, the secondary objectives in these plantations would be focused on the first steps of achieving heterogeneous forest. Some examples of this are retaining some young porcupine damaged trees that could grow into trees with split tops and other defects suitable for nesting/resting structures, and retaining residual or legacy trees and areas that are sparsely treed – for plantations, these areas would become similar features to DCAs and ESOs. See the “Prescriptions and Treatments” section below for more detail.

In addition, the third priority of these areas is marten habitat. Because of their topographic position on drier south facing slopes and ridges, usually with shallower soils, it is unlikely these emphasis areas would develop high quality marten denning/resting habitat over the long term. The exposures and soils would likely preclude the development of dense, large treed fir stands. However these areas could provide for marten movement. Therefore the objectives include avoiding the creation of barriers to marten movement (i.e. large openings). Therefore enough basal area, canopy cover, and habitat components such as snags, down wood, and existing DCAs would be retained to allow marten movement in/through these emphasis areas.

Emphasis Area 8

Emphasis area 8 (purple areas on Alternative 1 Map, Appendix B) is unique in that its only goal is stand level ecological restoration of aspen stands. However this goal is solely focused on a small forest stand scale. This does not represent all aspen stands within the Basin. Where small aspen stands exist within the potential treatment units, the goal is to improve/restore the aspen stands. Under a more active fire regime, conifer encroachment into aspen stands would be minimized and the aspens would be able to reproduce through suckering. However, with a lack of fire disturbances, conifers are able to shade out aspens and impede successful reproduction. The only objectives considered in this emphasis area are minimizing direct conifer competition to existing aspens and to remove conifers to the extent that the aspen stand could expand appropriately to the extent site conditions would allow. Within the treatment units, approximately 6 acres are identified as emphasis area 8 (see Table 2.2 below).

Prescriptions and Treatments

The proposed action would apply a suite of integrated silvicultural and fire/fuels prescriptions within each treatment unit. Application of the prescriptions (via various treatment methods) would set the stage for achieving emphasis area treatment objectives, described in the preceding section. The sections below describe the prescriptions and treatment methods proposed for the Sagehen Project. See Table 2.1 *Prescription and Method Summary* below for the units to which each of the following prescriptions applies.

Order of Prescription Application

Implementing the following silvicultural prescriptions involves careful consideration of fire: both the follow-up application of fire/fuels prescriptions as well as the stand structure conditions that would likely develop under an active fire regime. On-the-ground decisions about which individual trees and groups of trees to retain are made in light of (1) ensuring overall stand structure will remain intact following application of prescribed fire and (2) mimicking stand structures that would develop under an active fire regime.

The prescriptions can be highly variable and site-specific, and are set within the context of the existing stand's structure, tree species composition, and as compared to the emphasis area objectives for each subunit. For most units within the Sagehen Project, implementing the following silvicultural prescriptions involves applying each of the first five prescriptions in a step-wise fashion:

- The first step involves identifying both the dense cover areas (DCAs) and early seral openings (ESOs), and laying out their boundaries out on the ground.
- Next, the trees suitable for legacy tree treatments are identified and the surrounding trees proposed for removal are marked.
- After this is done, the variable thinning mark is anchored to DCAs, ESOs, and legacy tree treatments.
- In addition, the suppressed cut prescription is applied to remove suppressed trees contributing to ladder fuels outside of DCAs.
- Finally in subunits where the current snag/short snag densities are substantially below desired densities, decadent feature enhancements (partial tree girdling and/or short snag creation) would be identified for implementation either by machinery or hand.

All five of these prescriptions would be applied, in a step-wise fashion, for each identified unit (see Table 2.1). If there are no trees suitable for legacy tree treatment in a given unit, that prescription would be dropped during marking. The remaining two prescriptions, plantation thinning and aspen restoration are applied specifically to plantations and aspen stands, respectively.

Silvicultural Prescriptions

Dense Cover Areas (DCAs) and Early Seral Openings (ESOs)

Dense cover areas (DCAs) are small areas distributed within treatment units that provide continuous vertical and horizontal cover with a mixture of shrubs and trees along with large and small down wood, snags, and high stumps. DCAs would typically contain clumps of trees of various size classes as well as a

variety of snag and down wood sizes. These existing DCAs, ranging in size from 0.25-1 acre, would contribute to/enhance within-stand horizontal and vertical structural diversity and provide important old forest and/or mid seral habitat elements. For example existing DCAs can be representative of multiple layered late seral conditions with high levels of decadence and dead wood. They can also represent a more mid seral condition with brush and a medium sized tree overstory that provide important hiding and resting cover for wildlife and provide foraging and/or movement cover for martens and other late seral species. ESOs would be comprised of dense young regenerating trees and/or shrubs to provide early successional habitat within larger stands managed for late successional or old forest habitat. ESOs, from 0.25-0.50 acre, would enhance within-stand age and species diversity as well as provide prey and foraging habitat for old forest associated wildlife species. Some DCAs are planned around small fens in units 46, 85, and 98. The area would encompass not only the fen but also some of the surrounding forest stand. Both vertical structural diversity and an early seral stage would be represented.

Two primary methods would be used to retain and create DCAs or ESOs: For DCAs, an area would be designated that has multiple wildlife habitat elements, such as large down woody material, a mixture of tree age classes (including solitary and groups of large trees), large snags, multiple tree canopy layers; and/or trees with features associated with wildlife use (for example, platforms, mistletoe brooms, forked tops, and cavities). No mechanical tree removal would be conducted in these "existing DCAs". For ESOs, by taking advantage of existing conditions, such as areas of sparse tree cover, thinner soils, or pockets of extensive tree mortality, openings would be created by removing most or all of the existing trees and either planting or allowing natural shrub and/or tree regeneration to create an ESO of early successional habitat.

Prescribed fire would be an important management tool within DCAs and ESOs. For DCAs comprised of multiple sizes of trees, snags, and down wood, prescribed fire would be carefully applied to maintain key habitat elements, particularly snags and down wood. While underburning in DCAs would likely result in some mortality of suppressed and subdominant trees, burning prescriptions would be designed to ensure the overall structure of the DCA would remain intact. For ESOs (regeneration areas), prescribed fire would be applied to regenerate shrubs and create suitable areas for shade-intolerant tree species to regenerate.



Photo 1:

Dense Cover Area, on left of photo, before trees to the right were removed under variable thinning and suppressed cut prescriptions. No trees were removed from within the DCA. (photo from Sagehen Test Plots 2010, emphasis area 5)

Photo 2:

Dense Cover Area, on left of photo, after trees to the right were removed under variable thinning and suppressed cut prescriptions. No trees were removed from within the DCA. (photo from Sagehen Test Plots 2010, emphasis area 5)



Legacy Tree Treatment

Legacy trees are the largest and/or oldest trees within a stand. A legacy tree is a large tree (typically greater than 24 inches dbh) that has remained on site while most of the original surrounding trees have been removed by either timber harvest or mortality due to fire, insects, drought, or disease. Hence, a legacy tree tends to be at least a generation older than the trees in the surrounding stand and is one of the largest trees in the stand. Legacy trees can occur singly or in groups, and often represent tree species that would occur under an active fire regime.

Legacy trees are not present within every stand, and, as a general rule, are somewhat rare in the Sagehen Project Area's forest stands, typically occurring at a density of one to two legacy trees per five acres. As with many other forest structural features, this value varies considerably depending on site history and conditions.

As stated above, the legacy tree treatment prescription is applied after the DCAs and ESOs are identified. In some cases legacy trees may occur within a DCA. In this case the DCA trumps the legacy tree treatment and trees surrounding the legacy tree are retained in the DCA. In other cases, a legacy tree may occur on the edge of an ESO. In this case, the ESO would be designed to, in effect, implement a partial legacy tree treatment in that trees removed in the ESO would also be trees that would have been removed in the legacy tree treatment. Legacy tree treatments would not be used to expand the resulting sizes of ESOs.

In some of the Project Area plantations, there are trees that survived the wildfires and subsequent salvage harvest, in these cases the trees are referred to as "residual" trees. While they do meet the definition of legacy trees, they occur in large enough groups that they would be treated differently than individual or small groups of legacy trees, see the Plantation Thinning prescription below.

Legacy tree treatment would involve removing trees up to 30 inches dbh around the legacy tree, however, existing stand structure would dictate the sizes of trees (up to a 30 inch dbh limit) to be removed. For example if the legacy tree was 28 inches dbh, trees up to 28 inches dbh could be removed, or if the legacy tree was 40 inches dbh and it was surrounded by 34 inches dbh trees, the largest tree that would be removed is 29.9 inches dbh. In no cases would trees be removed that are larger than 30 inches dbh, and trees larger than the legacy tree would not be removed. Legacy tree(s) typically occur as individuals when they are pines and occur in small (2-5 tree) clumps when they are firs.

This treatment is designed to increase the resiliency of large legacy trees from the effects of fire, drought, pathogens, and disease. Removing trees from around the legacy tree(s) accelerates tree root and diameter growth, thereby improving overall legacy tree health and resiliency. In addition, the removal of smaller, understory trees, particularly the shade tolerant, less fire-resistant white fir, removes ladder fuels, which could carry fire into the canopy of the legacy tree(s).

The distance of the tree removal around legacy tree(s) would be variable, based on site-specific conditions (such as extent of the drip line, aspect, and topography). For example, legacy tree(s) on slopes greater than 25 percent could have a treatment distance that extended approximately one and one-half tree lengths. In flatter areas, treatment distances could be shorter as flame lengths would be lower compared to those occurring on steeper slopes. Differences also arise on north facing versus south facing slopes. Treatment distances would typically be smaller on north facing slopes. In addition, treatment distance could be longer on the south side of the legacy tree versus the north side of the tree, based on expected topographic effects of the sun. Although varying conditions would dictate a range of proposed tree removal under and around legacy trees, the majority of legacy tree treatments would not extend beyond a half a tree length from the drip line of the tree and would rarely hold a consistent distance from the tree. For example the north side of a legacy tree may only be cleared to the drip line (removal of ladder fuels), while the south side of the tree may extend a half a tree length further. On the

rare occurrences where topographic conditions could increase flame lengths from surrounding trees (i.e. a legacy tree at the high end of a 35 percent slope) treatments may extend as much, but no further, than a tree and half-length only on the downhill side from the bole of the legacy tree. If this situation does occur and the acreage of that treatment exceeds 0.25 of an acre, then this treatment will also be accounted for as early seral opening (ESO) acreage.



Photo 3:

Legacy tree treatment, before surrounding trees were removed (photo from Sagehen Test Plots 2010, emphasis area 5)

Photo 4:

Legacy tree treatment, after surrounding trees were removed (photo from Sagehen Test Plots 2010, emphasis area 5)



Variable Thinning

The variable thinning prescription is highly site-specific, set within the context of the existing stand's structure and tree species composition. In general, variable thinning involves selective removal and retention of individual codominant and subdominant trees and/or small groups of codominant and subdominant trees. Variable thinning would occur throughout the areas outside of dense cover areas, early seral openings, and legacy tree treatment areas, varying by the prescriptions designed for each emphasis area. Thinning would be conducted to meet treatment subunit level objectives of basal area, canopy cover, tree species composition, and fire behavior (as described under "Prescription Metrics" below), and to increase stand level structural heterogeneity. As stated above, and especially for a variable thinning prescription, implementation involves careful consideration of fire: both the follow-up application of prescribed fire, as well as the stand structure conditions that would likely develop under an active fire regime. On-the-ground decisions about which individual trees and groups of trees to retain would be made in light of (1) ensuring overall stand structure would remain intact following application of prescribed fire and (2) mimicking stand structures that would develop under an active fire regime.

Variable thinning objectives include: (a) enhancing stand heterogeneity (by retaining groups of larger trees that can provide valuable wildlife habitat and creating subtle openings by thinning around these groups), (b) reducing fuels, and (c) work towards stand level ecological restoration. The variable thinning approach is based on the GTR 220 principle that varying stem density according to potential fire intensity effects on stand structure can create horizontal heterogeneity inherent to these landscapes. As such, the variable thinning primarily focuses on removing ladder fuels, subdominant and codominant shade-tolerant trees (such as white fir), and some subdominant and codominant shade-intolerant trees (such as Jeffrey or ponderosa pine). It is not based on spacing guidelines but rather works within the context of the existing stand to emphasize retaining desired tree species compositions, basal areas, and desired stand structure elements (such as trees with some level of decadence or "defect").

Variable thinning would be applied using the following guidelines:

- Generally favor retention of pines over firs, especially in southerly facing areas and on ridges. In areas of more fir dominance, give retention preference to red fir over white fir. Retained groups of larger trees (described under the bullet below) may include fir trees. Overall the emphasis for retained groups of trees is preserving or enhancing desirable stand structure rather managing for any particular species composition.
- Retain groups of larger trees, generally comprised of five to ten (or more) trees of roughly similar size. Ideally, some of the retained trees should have desirable habitat features, such as forked or broken tops. Remove trees adjacent to these retained groups to improve the overall health and resiliency of the group to drought, insects and disease.
- Where a few (less than five) trees occur together, or where trees are scattered, retain the more vigorous trees by removing subdominant and, in some cases, codominant trees around them to reduce ladder fuels and competition for light, water, and nutrients.
- In areas of greater fir dominance where large trees tend to grow in more of a clumped nature, emphasize retaining clumps, or groups, of generally five to ten trees, and removing trees adjacent to these retained clumps to create small, variably shaped gaps.

- When making site-specific determinations on individual tree removal/retention preferences, vary the choices made so as to increase the variability at the micro-site scale.



Photo 5:

Combination of variable thinning and suppressed cut prescriptions, before tree removal (photo from Sagehen Test Plots 2010, emphasis area 5)

Photo 6:

Combination of variable thinning and suppressed cut prescriptions, after tree removal (photo from Sagehen Test Plots 2010, emphasis area 5)



Suppressed Cut

A suppressed tree is typically no larger than ten inches dbh (usually ranging between one and five inches dbh) and is a component of a stand's understory, where there is an overstory of dominant, codominant, and subdominant trees. Suppressed trees, in general, have little capacity to release (initiate increased growth rates), even if the overstory is removed. These trees often make up the lower levels of ladder

fuels, and the suppressed tree layer combined with subdominant trees helps connect the forest floor into the crowns of dominant/codominant trees, which can increase fire severity and the potential for crown fire.

The suppressed cut would remove suppressed trees (down to one inch dbh for hand thinning and down to three inches dbh for mechanical thinning), as described above, within treatment units outside of dense cover areas. The suppressed cut prescription would not be applied within dense cover areas. This would retain a percentage of the suppressed tree size class within the treatment units, enhancing within-stand variability from a tree size standpoint. Suppressed tree removal outside dense cover areas would facilitate use of prescribed fire while helping to minimize the risks of crown fire by removing some ladder fuels.

Decadent Feature Enhancement

This prescription encompasses two different treatments; partial tree girdling and short snag creation. Partial tree girdling would occur inside and outside of DCAs and short snag creation would only occur in DCAs. Both treatments would only be applied in subunits where the current snag/short snag densities are substantially below desired densities. In all cases however, this prescription would not be applied in emphasis area 7. In some cases, just the partial tree girdling or the short snag creation would be applied in a given emphasis area (subunit) and in other cases both treatments would be applied; it depends on the existing conditions within the subunit.

Partial tree girdling would involve girdling (cutting off the bark layer deep enough to sever the tree's vascular system in the cambium) of individual trees 15-30 inches dbh. The bark layer would be removed in a 6-12 inch band covering approximately $\frac{1}{3}$ of the diameter of pine trees and $\frac{1}{2}$ of the diameter of fir trees. The goal of this treatment is to selectively wound and therefore weaken trees. These weakened trees would become more susceptible to environmental stresses, insect attack, and/or fungus/rot infection and therefore become snags likely before a neighboring, non-girdled tree would. By partially girdling and wounding trees, it is anticipated that the trees would become snags over a longer timeframe rather than die immediately, like what would happen if a tree were completely girdled.

The selection of trees for partial tree girdling would occur after the above four prescriptions had been applied (marked). Trees selected outside of DCAs for partial girdling would be trees already selected under the variable thinning prescription for removal. Therefore these trees would be accounted for when calculations of basal area removal and trees removed per acre are tallied, however they would be left on site. These trees would be among the largest trees available (under 30 inches dbh). Trees selected for partial girdling in DCAs would be designated based on the site specific conditions in the DCAs and would be trees that would provide needed habitat structure in the DCAs. Between 500 and 600 trees would be treated with partial tree girdling to enhance decadent features in the subunits over the long term.

Short snag creation involves cutting a tree (preferentially a white fir), on the outside edge, but within a DCA, at a height of 10-20 feet above the ground. The height would be based on the highest point a piece of machinery such as a feller buncher, could reach to cut the tree. The top of the tree would be felled into the interior of the DCA and left to contribute to down log densities. Trees selected for this

treatment would be 15-30 inches dbh. The goal of this treatment is to immediately create snags at an intermediate height inside of DCAs. These short snags would be expected to provide suitable perches/rest sites and would be tall enough to be above typical snow levels, thus also providing an access route under the snow for wildlife. Between 100 and 150 trees inside of DCAs would be selected for the short snag creation treatment.

Plantation Thinning

Plantations in the Sagehen Project Area were established in the 1960s and 1970s following the Independence and Donner Ridge wildfires. The plantations are largely comprised of planted Jeffrey pines; however, they also contain young trees that grew in naturally. The plantation thinning prescription is designed to facilitate and accelerate the continued growth of these young trees. The plantations currently contain some trees that survived wildfire and subsequent salvage harvest: these "residual" trees would not be removed. While they do meet the definition of legacy trees, residual trees in plantations would be treated differently than individual or small groups of legacy trees with a focus on removing ladder fuels to protect them during prescribed burning treatments. There also would be an emphasis on removing ladder fuels on the downhill sides of the residual trees where steep slopes may contribute to flame lengths reaching the residual trees.

Plantation thinning would involve mechanical thinning and/or mastication (mechanical grinding and crushing that *rearranges* material on site) of plantation trees and mastication of brush. Mastication changes a vertical large piece of fuel (i.e. a standing tree) into many smaller pieces of horizontal fuel. This is termed "*rearranging*" the fuels to a condition that allows the material to decompose more rapidly. The plantation thinning prescription would primarily focus on removing and/or rearranging trees between one and 12 inches dbh. An occasional tree between 12 and 18 inches dbh could be removed; however, this would occur only where mechanical cutting and removal systems were used. The majority of trees between 12 and 18 inches dbh would be retained. Because of the nature of plantations and the logistics of marking trees in extremely dense brush, trees would be thinned by description and a spacing guideline would be applied. Typically, retained trees would be spaced roughly 14 to 22 feet apart; however, where logistically possible, existing variable stand structure would be used to increase within-stand horizontal heterogeneity such that there would be some more dense and more open areas.

Plantation thinning would retain at least 120 trees per acre. Sufficient tree canopy cover would be maintained to suppress shrub growth under groups of trees; however, retarding shrub growth over the entire treatment unit would not be a specific objective. Although the primary objective of plantation thinning is to accelerate the growth of retained trees, a secondary objective is to foster some within-stand defect trees. To meet this secondary objective, plantation thinning would retain an average of ten to 12 trees per acre with injuries, split tops, and/or porcupine damage.

Shrubs growing under the drip line of retained trees would be masticated. Other areas of snow brush, manzanita, and white thorn outside the drip lines would also be masticated to decrease the fire hazard and provide opportunities for brush regeneration. Further, patches of bitterbrush and *Ribes* outside of tree drip lines would not be masticated unless they posed a fire hazard (ladder fuels) to retained trees/groups of trees. Bitterbrush is a preferred browse species for mule deer and it occurs in some

homogeneous small patches in the plantations. These patches provide valuable foraging habitat. Because bitterbrush and *Ribes* do not regenerate (stump sprout) very well after mastication, unless posing a direct ladder fuels hazard, these species would not be masticated.

In addition to spacing guideline ranges, other measures would be implemented to increase within-stand horizontal heterogeneity. Where less than ten trees per acre are present, no trees would be thinned and shrubs would not be masticated; however, these areas could be underburned. Because the plantations are largely composed of Jeffrey pines, species preference for retention would focus on other species, if they are present. This could mean that a larger pine would be proposed for removal/mastication if it is in close proximity to a tree of another species, such as red fir.

Areas containing “residual” trees as well as areas that currently have less than ten trees per acre, which would not be mechanically thinned or masticated, would serve functions similar to DCAs and ESOs in the treated plantations. In addition, identified drainage bottoms within plantations would not be treated, providing additional areas like DCAs. Based on existing conditions in the plantation treatment units, it is estimated that at least ten percent of the overall plantation acreage would be included in these residual tree zones, sparsely treed areas, and drainages. These areas would enhance heterogeneity in the treated plantations.



Photo 7:

Example of typical plantation thinning area, showing brush that would be masticated and trees that would be thinned. (photo of unit 46, see map of Alternative 1, Appendix B)

Aspen Restoration

An aspen restoration prescription involves selectively removing conifers from stands of aspen that are at risk of loss because they are being crowded and shaded by thickets of small lodgepole pine or they are being overtopped by conifers. These stands typically have a much higher percentage of conifers than aspen, and have little aspen regeneration. Conifer removal would occur by hand cutting or mechanical cutting methods. When treated by hand, typically most conifers from one to 16 inches dbh would be cut and removed from site and larger conifers girdled to create snags. When treated by mechanical means, conifers greater than three inches dbh that are overtopping and/or crowding aspens would be removed.

Photo 8:

Example of typical oспен restoration area, showing conifers that would be removed and/or girdled. (photo of unit 80, emphasis area 8, see map of Alternative 1, Appendix B)



Silvicultural Treatment Methods

Silvicultural prescriptions would be implemented using ground-based mechanized equipment or by hand, as described below.

Mechanical Thinning

Mechanical thinning is a harvest activity, which, under the Sagehen Project would primarily utilize ground-based equipment (tractors, feller bunchers and some chainsaw work) to fell and remove identified trees while retaining and protecting desirable trees to accomplish fuels reduction, marten habitat enhancement and restoration, and stand level ecological restoration objectives set within each treatment unit. A network of skid trails (in the case of ground-based thinning operations), landings, and, in some cases, temporary roads (which are removed following project activities) would be used to transport and collect harvested material. Equipment will be used on slopes no greater than 30 percent with short pitches up to 200 feet on up to 35 percent slopes. Short pitches over 35 percent slope may be agreed to on a site-specific basis. It should be noted that while most work is done primarily by machinery, there also is an inherent hand treatment component as well. For example some hand chainsaw work may be needed to protect specific trees of concern and partial tree girdling would also be done by hand, even in a mechanical thinning area.

Hand Thinning

Hand thinning is an activity that utilizes crews with chainsaws or handsaws that cut understory conifers less than 16 inches dbh to accomplish fuels reduction, marten habitat enhancement and restoration, and stand-level ecological restoration objectives set for the treatment unit. If hand felled material

contributes to unacceptable fuel loading, this material may be hand piled outside the drip lines of desirable trees and burned when conditions permit a minimum amount of mortality.

Mastication

A masticator is a low ground pressure piece of equipment that “chews” up brush and small understory trees to reduce competition. The machine mechanically grinds and crushes this material and down woody fuels and distributes the resulting small pieces around the site. Mastication is also a Fire/Fuels Treatment Method – see below.

Fire/Fuels Prescriptions

Fire/fuels prescriptions would be aimed at reducing hazardous surface and ladder fuels within the treatment units and providing conditions that would enable subsequent use of prescribed fire to maintain suitable fuels conditions. Fire/fuels prescriptions include prescribed surface fire as well as pile burning and lop and scatter prescriptions.

Surface Fire Prescription

A surface fire is a fire that burns live and dead fuels at or near the surface of the ground, mostly by flaming combustion. A surface fire prescription is usually implemented by an underburn. Surface fire prescriptions are typically designed to consume surface and ladder fuels and to mimic fire that would occur in an active fire regime. Surface fire prescriptions can be applied under spring-like and fall-like conditions. Spring-like conditions are defined by relatively high live fuel moistures, high 1000 hour size (“coarse woody debris”, three inches diameter and greater) fuel moistures, and soils that are relatively moist beneath the surface fuels. Under spring-like conditions, it is expected that surface fires would have moderate to high consumption of 1-100 hour size fuels (“fine woody debris”, ranging from 0.00-2.99 inches diameter) and minimal consumption of 1000+ hour fuels with mortality primarily expected in subdominant tree size classes. Fall-like conditions are defined by relatively low live fuel moistures, lower 1000 hour fuel moistures, and drier soils with dry organic layers beneath the litter layer. Under fall-like conditions, it is expected that burning would be primarily surface fires with higher flame lengths, and faster burn times as compared to burning under spring-like conditions. It would have high consumption of 1-100 hour size fuels and moderate to high consumption of 1000+ hour fuels, and with mortality expected in subdominant and some codominant tree size classes. Depending on cycles of drought and wet weather, spring-like and fall-like conditions can occur throughout the year. For the Sagehen Project, spring-like condition surface fire prescriptions would be emphasized, however due to limited suitable burning conditions, surface fire prescriptions under fall-like conditions would be implemented in some cases. In these cases, extra measures to protect large dead wood, such as creating firelines around large logs/snags, would be implemented.

Pile Burn Prescription

A pile burn prescription is designed to remove surface fuels, both fuels generated from silvicultural treatments (activity fuels) and existing fuels on the ground. A pile burn prescription can be implemented by hand or by machinery (typically a grapple piler – see below). In general, small down wood is placed in piles for future burning. Pile location and size is dictated by existing conditions, however piles would be preferentially placed outside of sensitive areas such as riparian conservation areas and cultural resource sites. Piles of fuels typically are burned under fall-like conditions, in winter months, or during periods of

low fire danger. This prescription removes surface fuels in the treatment units and is used to mimic underburning where sensitive areas prevent unit-wide application of underburning.

Lop and Scatter

A lop and scatter prescription does not remove fuels from treated areas. It prescribes changing the size and arrangement of the fuels. Lop and scatter prescriptions usually deal with activity generated fuels as a result of tree removal (tree tops and branches), however it can also apply to brush and standing ladder fuels. The purpose of a lop and scatter prescription, by changing the arrangement and size of fuels, is to take the fuels to a condition that allows the material to break down more rapidly.

Fire/Fuels Treatment Methods

Often, the silvicultural treatment would partially achieve hazardous fuels reduction objectives, and, in the case of mastication, could fully achieve fuels reduction objectives. Most of the silvicultural treatments however would be followed by a fire/fuels treatment, aimed at reducing surface fuels and residual ladder fuels.

Prescribed fire constitutes much of the proposed follow-up fuels treatments for the Sagehen Project treatment units. Prescribed fire refers to any fire ignited by management actions to meet specific objectives. Prescribed fire can include underburning (intentionally set surface and ground fire) and burning of hand and machine constructed piles. Associated activities include creating firelines to prevent fire spread from treatment units as well as prevent the site-specific ignition of key habitat components, such as snags and down logs.

Underburning

Underburning is a generalized term used when applying prescribed fire to large areas and is typically the treatment method for a surface fire prescription. Underburning targets surface fuels, some understory, and, in rare cases, larger trees. Surface fuels are the primary agent of fire spread. The objective is to apply controlled fire under optimum conditions where the treatment can modify fuel conditions to effectively reduce fire behavior and the corresponding intensity of a future wildfire. Within some areas proposed for burning, the goal of the treatment may be to consume a significant portion of the existing surface fuels that could cause high wildfire intensities, and/or the consume understory vegetation (ladder fuels) in order to reduce future fire severity and to create conditions that allow for future prescribed underburning opportunities. In other areas, underburning is used to create new growth of native shrub species and forage opportunities for wildlife. Underburning most closely mimics low-intensity fire that would occur in an active fire regime. Underburning, especially on south and west facing slopes, is typically conducted under spring-like conditions. A more mosaic burn pattern is created by underburning in spring-like conditions as compared to fall-like conditions; with some areas minimally burned and overall less fuel consumption. For the Sagehen Project proposal, underburning would be applied on a unit-wide basis, in other words, where underburning is proposed it would be conducted across the entire treatment unit and across all subunits (emphasis areas) within that treatment unit.



Photo 9:

Example of underburning under fall-like conditions, post tree harvest. (photo from Sogehen Test Plots 2010, emphasis area 5)

Photo 10:

Example of underburning under fall-like conditions, post tree harvest. (photo from Sogehen Test Plots 2010, emphasis area 5)



Hand Piling and Burning

After a hand or mechanical thin, residual activity fuels and some naturally occurring fuels are piled by hand into burn piles. Hand piles of fuels typically are burned under fall-like conditions, in winter months, or during periods of low fire danger.

Grapple Piling and Burning

After a mechanical thin, residual activity fuels and some naturally occurring fuels are piled by a grapple piler into burn piles. A grapple piler is typically an excavator that can pick up fuels from the ground surface, carry the material suspended from the ground, and place it in a pile for burning. Grapple piles of fuels typically are burned under fall-like conditions, in winter months, or during periods of low fire danger.

Mastication

As stated above, a masticator is a low ground pressure piece of equipment that “chews” up brush, small understory trees and downed woody fuels. Mastication does not actually remove wildland fuels from the treated area, but changes the size, continuity, and arrangement of the fuels, leading to an acceleration of decomposition rates of processed material and producing a desired change in fire behavior. Mastication changes a vertical large piece of fuel (i.e. a standing tree) into many smaller pieces of horizontal fuel. This is termed “*rearranging*” the fuels to a condition that allows the material to decompose more rapidly. Mastication can be a mechanized method of implementing a lop and scatter fire/fuels prescription. Mastication is also a Silvicultural Treatment Method – see above.

Unit-Specific Prescriptions and Treatments

Silvicultural and fire/fuels prescriptions and methods proposed for each treatment unit are displayed in Table 2.1 below.

Table 2.1 Prescription and Method Summary

| Unit | Total Acres | Emphasis Area | Unit Emphasis Area Acres | Silvicultural Rx – see <i>Order of Prescription Application section above</i> | Silvicultural Treatment Method | Fire/Fuels Rx | Fire/Fuels Treatment Method |
|------|-------------|---------------|--------------------------|---|--------------------------------|-------------------------------|-----------------------------|
| 33 | 118 | 1 | 4 | Variable Thin, Legacy Tree Treatment, Suppressed Cut, Dense Cover Area, Early Seral Opening, Decadent Feature Enhancement | Mechanical | Pile Burn Rx | Grapple Pile Pile Burn |
| | | 4 | 30 | | | | |
| | | 5 | 28 | | | | |
| | | 6 | 56 | | | | |
| 34 | 68 | 5 | 16 | Variable Thin, Legacy Tree Treatment, Suppressed Cut, Dense Cover Area, Early Seral Opening, Decadent Feature Enhancement | Mechanical | Surface Fire Rx | Underburn |
| | | 6 | 47 | | | | |
| | | 7 | 5 | | | | |
| 35 | 64 | 1 | 8 | Variable Thin, Legacy Tree Treatment, Suppressed Cut, Dense Cover Area, Early Seral Opening, Decadent Feature Enhancement | Mechanical | Pile Burn Rx | Grapple Pile Pile Burn |
| | | 4 | 6 | | | | |
| | | 5 | 7 | | | | |
| | | 6 | 37 | | | | |
| | | 7 | 6 | | | | |
| 36 | 101 | 4 | 18 | Variable Thin, Legacy Tree Treatment, Suppressed Cut, Dense Cover Area, Early Seral Opening, Decadent Feature Enhancement | Mechanical | Pile Burn Rx | Grapple Pile Pile Burn |
| | | 5 | 13 | | | | |
| | | 6 | 56 | | | | |
| | | 7 | 14 | | | | |
| 38 | 210 | 1 | 67 | Variable Thin, Legacy Tree Treatment, Suppressed Cut, Dense Cover Area, Early Seral Opening, Decadent Feature Enhancement | Mechanical | Surface Fire Rx | Underburn |
| | | 4 | 7 | | | | |
| | | 5 | 86 | | | | |
| | | 7 | 50 | | | | |
| 46 | 621 | 4 | 47 | No Treatment | N/A | Surface Fire Rx | Underburn |
| | | 5 | 431 | Plantation Thin | Mechanical Mastication | Lop & Scatter Surface Fire Rx | Mastication Underburn |
| | | 6 | 105 | | | | |
| | | 7 | 38 | | | | |
| 47 | 33 | 5 | 33 | No Treatment | N/A | Surface Fire Rx | Underburn |
| 61 | 20 | 1 | 15 | Variable Thin, Suppressed Cut, Dense | Hand | Pile Burn Rx | Hand Pile Pile Burn |
| | | 2 | 5 | | | Surface Fire Rx | |

| Unit | Total Acres | Emphasis Area | Unit Emphasis Area Acres | Silvicultural Rx – see Order of Prescription Application section above | Silvicultural Treatment Method | Fire/Fuels Rx | Fire/Fuels Treatment Method |
|------|-------------|---------------|--------------------------|---|--------------------------------|-------------------------------|-----------------------------|
| | | | | Cover Area | | | Underburn |
| 73 | 144 | 4 | 6 | Variable Thin, Legacy Tree Treatment, Suppressed Cut, Dense Cover Area, Early Seral Opening, Decadent Feature Enhancement | Mechanical | Surface Fire Rx | Underburn |
| | | 5 | 107 | | | | |
| | | 6 | 27 | | | | |
| | | 7 | 4 | | | | |
| 76 | 91 | 4 | 4 | No Treatment | N/A | Surface Fire Rx | Underburn |
| | | 5 | 37 | Plantation Thin | Mastication | Lop & Scatter Surface Fire Rx | Mastication Underburn |
| | | 6 | 42 | | | | |
| | | 7 | 8 | | | | |
| 80 | 5 | 8 | 5 | Aspen Restoration | Hand | Pile Burn Rx | Hand Pile Pile Burn |
| 85 | 64 | 5 | 10 | Variable Thin, Legacy Tree Treatment, Suppressed Cut, Dense Cover Area, Early Seral Opening, Decadent Feature Enhancement | Mechanical | Lop & Scatter | Mastication |
| | | 6 | 53 | | | | |
| | | 8 | 1 | Aspen Restoration | Mechanical | N/A | N/A |
| 87 | 207 | 5 | 67 | Plantation Thin | Mechanical Mastication | Lop & Scatter | Mastication |
| | | 6 | 130 | | | | |
| | | 7 | 10 | | | | |
| 89 | 34 | 4 | 6 | Variable Thin, Legacy Tree Treatment, Suppressed Cut, Dense Cover Area, Early Seral Opening, Decadent Feature Enhancement | Mechanical | Surface Fire Rx | Underburn |
| | | 6 | 28 | | | | |
| 90 | 40 | 6 | 40 | Variable Thin, Legacy Tree Treatment, Suppressed Cut, Dense Cover Area, Early Seral Opening, Decadent Feature Enhancement | Mechanical | Surface Fire Rx | Underburn |
| 91 | 9 | 2 | 9 | Variable Thin, Suppressed Cut, Dense Cover Area | Hand | Pile Burn Rx | Hand Pile Pile Burn |
| 98 | 63 | 1 | 43 | Variable Thin, Suppressed Cut, Dense Cover Area | Hand | Pile Burn Rx | Hand Pile Pile Burn |
| | | 2 | 9 | | | | |
| | | 5 | 11 | | | | |
| 99 | 67 | 1 | 7 | Variable Thin, Suppressed Cut, Dense | Hand | Pile Burn Rx | Hand Pile Pile Burn |
| | | 2 | 4 | | | | |

| Unit | Total Acres | Emphasis Area | Unit Emphasis Area Acres | Silvicultural Rx – see Order of Prescription Application section above | Silvicultural Treatment Method | Fire/Fuels Rx | Fire/Fuels Treatment Method |
|------|-------------|---------------|--------------------------|---|--------------------------------|---------------------------------|--|
| | | 4 | 11 | Cover Area | | | |
| | | 5 | 37 | Plantation Thin | Mastication | Lop & Scatter | Mastication |
| | | 6 | 8 | | | | |
| 100 | 120 | 1 | 14 | Variable Thin, Suppressed Cut, Dense Cover Area, Decadent Feature Enhancement | Hand | Pile Burn Rx Surface Fire Rx | Hand Pile Pile Burn Underburn |
| | | 2 | 19 | | | | |
| | | 4 | 17 | | | | |
| | | 5 | 46 | | | | |
| | | 6 | 24 | | | | |
| 156 | 84 | 1 | 84 | Variable Thin, Legacy Tree Treatment, Suppressed Cut, Dense Cover Area, Early Seral Opening | Mechanical | Pile Burn Rx | Grapple Pile Pile Burn |
| 163 | 82 | 1 | 29 | Variable Thin, Legacy Tree Treatment, Suppressed Cut, Dense Cover Area, Early Seral Opening, Decadent Feature Enhancement | Mechanical | Pile Burn Rx Surface Fire Rx | Grapple Pile Pile Burn Underburn |
| | | 5 | 49 | | | | |
| | | 7 | 4 | | | | |
| 213 | 268 | 1 | 182 | Variable Thin, Legacy Tree Treatment, Suppressed Cut, Dense Cover Area, Early Seral Opening, Decadent Feature Enhancement | Mechanical | Pile Burn Rx | Grapple Pile Pile Burn |
| | | 2 | 11 | | | | |
| | | 4 | 21 | | | | |
| | | 5 | 18 | | | | |
| | | 6 | 25 | | | | |
| | | 7 | 11 | | | | |
| 282 | 108 | 2 | 46 | Variable Thin, Suppressed Cut, Dense Cover Area | Hand | Pile Burn Rx Surface Fire Rx | Hand Pile Pile Burn Underburn |
| | | 6 | 62 | | | | |

Table 2.2 Summary of Treatment Unit and Emphasis Area Acres within Sagehen Project Area

| Total Area within Project Boundary Acres | NFS Lands within Project Boundary Acres | Total Acres within Treatment Units Acres (Percentage of Total Area in Project Boundary) (Percentage of NFS Lands in Project Boundary) | |
|--|--|--|-----------|
| 9,478 | 8,541 | 2,621 (28%) (31%) | |
| Total Acres of Each Emphasis Area within Treatment Units (Percentage of Emphasis Areas in Treatment Units) | | Emphasis 1 | 453 (17%) |
| | | Emphasis 2 | 103 (4%) |
| | | Emphasis 4 | 173 (7%) |
| | | Emphasis 5 | 996 (38%) |
| | | Emphasis 6 | 740 (28%) |
| | | Emphasis 7 | 150 (6%) |
| | | Emphasis 8 | 6 (<1%) |

Prescription Metrics

As shown in Table 2.1, each treatment unit includes one or more of the seven identified management emphasis areas. Application of the silvicultural and fire/fuels prescriptions described in the preceding section within a given treatment unit would be aligned with the treatment objectives previously described for each emphasis area within the unit. (Each emphasis area within a treatment unit is referred to as a subunit).

Metrics for post-treatment stand structure elements and tree species composition have been developed to guide application of the silvicultural and fire/fuels prescriptions within each emphasis area. Post-treatment stand structure elements include: (a) basal area, particularly in trees greater than 20 inches dbh, (b) canopy cover, (c) snag density, (d) large and small down woody material, (e) short snag/high stump densities, (f) dense cover areas (DCAs) and early seral openings (ESOs), and (g) prescribed surface fire behavior, as indicated by spatial extent and intensity (tree mortality). The site-specifically defined values for the metrics for each subunit are grounded in the scientific literature as well as Forest Plan direction related to emphasis area objectives. The Sagehen Project record provides detailed citations for each defined metric, and this information is available from the Truckee Ranger District.

Post-treatment metric values for each emphasis area represent a range of outcomes that would vary by subunit as prescriptions were applied within the context of the existing stand's structure and tree species composition. For example, although silvicultural and fire/fuels prescriptions for subunits 213-1 and 38-1 are designed to meet emphasis area 1 objectives, post-treatment stand conditions for subunit 213-1, which is occupied by a higher elevation mature red fir stand on a northwest-facing slope, would be different than those for subunit 38-1, which is occupied by a lower elevation mixed conifer stand on an east-facing slope.

The stand structure and species composition metrics apply at the subunit-scale. While these metrics can play out at other spatial scales (for example, microsite or landscape scales), they are meant to be

applied at the subunit-scale. The silvicultural prescriptions would be applied in the step-wise fashion (as described in the "Order of Prescription Application" section above), with variable thinning decisions regarding which trees to retain made at generally a microsite scale by field marking crews. The stand structure and species composition subunit-scale metrics would serve to limit and define the tree marking decision space. Data on the defined metrics would be gathered and assessed during the layout and tree marking phase of the project, with adjustments made to tree marking as necessary to align with emphasis area treatment objectives. This information would also be available to stakeholders and other interested individuals and groups, allowing feedback during the ongoing scoping process, with possibility of making incremental changes to the proposed action, as needed.

Detailed descriptions of each subunit's silvicultural and fire/fuels prescriptions and associated post-treatment stand structure and tree species composition metric values are included in the Sagehen Project record. These detailed descriptions in the project record provide the site-specific information that would be used to guide application of the silvicultural and fire/fuels prescriptions on the ground. The sections below summarize key similarities and differences between the metrics for each emphasis area.

Basal Area

Although site and stand-scale basal areas are relatively homogeneous, existing subunit-scale basal areas are quite variable, both within and between emphasis areas, ranging on average between 100 and 280 square feet per acre across all subunits. However, site conditions can exceed 280 square feet. Emphasis area treatment objectives would be expected to result in a 20 to 25 percent reduction in existing basal area levels at the subunit scale, with the lower end of the range (20 percent reduction) in emphasis area 1 subunits and the higher end (25 percent reduction) in emphasis area 7 subunits. Residual basal areas in emphasis areas 1 through 4 would typically range between 165 and 190 square feet per acre, but could go as high as 300 square feet in DCAs or similar existing dense areas retained in the variable thin prescription (such as groupings of large trees). While emphasis areas 5, 6, and 7 would typically range between 100 and 170 square feet per acre, there could be sites as low as 10 square feet in ESOs, and other areas that would exceed 170 square feet (such as in DCAs or similar existing dense areas retained in the variable thin prescription - groupings of large trees).

In summary, all ranges are presented as overall averages at the subunit level scale. Site-scale conditions influence the average subunit basal areas, but can be outside these ranges. Retained basal area would vary based on existing pre-treatment conditions coupled with emphasis area goals, and would contribute to the increase in site and stand variability. Mechanical thinning treatments would at minimum meet Forest Plan standards and guidelines for basal area retention (SNFPA ROD, pg. 50), and in many cases exceed retention standards.

In addition, reductions in basal area would not be evenly distributed across tree size classes (trees less than ten inches dbh, trees between ten and 19.9 inches dbh, and trees between 20 and 29.9 inches dbh), however. All trees 30 inches dbh and larger would be retained within all treatment units. For all emphasis areas, silvicultural prescriptions focus on removing selected trees less than 20 inches dbh, guided by the emphasis area's treatment objectives. The majority of the retained basal area would be in the largest trees within each subunit, and most trees 20 inches dbh and larger would be retained

following application of the silvicultural and fire/fuels prescriptions. Data from the Sagehen Test Plots show that between 89 and 93 percent of trees between 20.0 and 29.9 inches dbh were retained following application of variable thinning, legacy tree treatment, dense cover area, and early seral opening prescriptions and, in the case one unit, a low intensity surface fire prescription. Similar outcomes would be expected for the Sagehen Project subunits.

Canopy Cover

Tree canopy cover retention would result from retaining basal area as described above. Canopy cover is a stand level average that indicates roughly the percentage of the forest floor that is vertically overtopped with tree canopy. The silvicultural and fire/fuels prescriptions are expected to result in varying canopy cover levels within each subunit. For emphasis area 1 through 5 subunits, canopy cover following application of silvicultural and fire/fuels prescriptions would on average be greater than 50 percent, with reductions of existing canopy cover ranging between 10 and 15 percent. For emphasis area 6 and 7 subunits, canopy cover following application of prescriptions would generally range on average between 40 and 50 percent. However in all emphasis areas, site canopy cover could go as high as 85 percent in DCAs or similar existing dense areas retained in the variable thin prescription (such as groupings of large trees), or as low as 20 percent in ESOs.

In summary, all canopy cover ranges are presented as overall averages at the subunit level scale. Site-scale canopy cover influences the average subunit canopy cover percentages, but can be outside these ranges. Retained canopy cover would vary based on existing pre-treatment conditions coupled with emphasis area goals, and would contribute to the increase in site and stand variability. Mechanical thinning treatments would meet (and, in many cases, exceed) Forest Plan standards and guidelines for canopy cover retention (SNFPA ROD, pp. 50 – 51) and in many cases exceed retention standards.

Snag Density

Snag density levels would be higher within emphasis areas 1 through 5 compared to emphasis areas 6 and 7. Large snags (greater than 15 inches dbh) would be retained within all subunits, regardless of emphasis area. Where currently available within emphasis area 1, 2 and 5 subunits, some decadent firs with declining crown characteristics would be retained for future snag recruitment. Where existing snag levels are low, particularly within the plantations, silvicultural prescriptions retain all snags greater than three inches dbh. Snag retention would meet (and, in many cases, exceed) Forest Plan standards and guidelines (SNFPA ROD, pg. 51).

Snag density goals, especially in emphasis areas 1 and 2, would incorporate findings set forth in Spencer (1981) "Average densities (no. per ha) in known marten habitat was 46 snags (>20cm)". This converts to 18.6 snags per acre greater than 7.9 inches dbh, however this density was in clumps, not as an average across high quality marten reproductive habitat (pers. comm. Wayne Spencer, 2011). The management recommendation from Spencer (1981) of "At least 8 snags/ha \geq 38cm dbh, including at least 1 fir snag/ha 70 cm should be retained" (converted 3 snags per acre greater than or equal to 15 inches dbh, 0.4 fir snag per acre 28 inches dbh) is also incorporated into snag density goals in that all snags greater than 15 inches dbh would be retained and where snags numbers were low, snags would be created through the Decadent Feature Enhancement prescription (see below for subunits with this prescription applied). Emphasis area 1 and 2 long term objectives for snags greater than 15 inches dbh are 18 and 15

snags per acre respectively and the project goal is to move emphasis areas towards the long term objectives.

Silvicultural prescriptions for subunits 33-1, 33-5, 35-1, 35-5, 36-5, 85-5, 100-1, 100-2, 213-1, 213-2, 213-4, and 213-5 call for creating (via partial tree girdling) approximately two to three snags (each between 15 and 30 inches dbh) per acre outside DCAs and one snag (greater than 15 inches dbh) per acre within DCAs.

Hand-constructed fire lines would be placed around large snags before applying low intensity surface fire prescriptions. Each subunit's low intensity surface fire prescription (available in the project record) specifies the numbers of snags to be lined, based on existing numbers of large snags within the subunit. In emphasis area 1 and 2 subunits proposed for underburning, between 10 and 18 large snags per acre would be lined while in emphasis area 4, 5, 6, and 7 subunits, between 2 and 10 large snags per acre would be lined.

In treatment units where hand or grapple piling of fuels would be conducted, piles would be located a sufficient distance from large snags (greater than 15 inches dbh) to ensure the snags did not ignite during pile burning operations.

Down Woody Material

In all subunits, regardless of emphasis area, large down logs (larger than 15 inches diameter and ten feet long) would be retained during implementation of silvicultural treatments (mechanical thinning or mastication). Crushing of large down logs with machinery would be avoided.

Fire/fuels prescriptions are designed to retain specified levels of down woody material, commensurate with emphasis area management objectives. In units proposed for application of low intensity surface fire following silvicultural treatments, the largest down logs per acre would be lined to protect them during underburning operations. Emphasis area 1 and 2 subunits to be underburned have the greatest quantities of large down logs to be lined prior to underburning, ranging from 15 to 20 large down logs to be lined per acre. In emphasis area 4, 5, 6, and 7 subunits generally three to seven large down logs per acre would be lined, with the exception of subunits 163-5, 163-7, and 213-4. In these subunits, approximately 15 to 20 large logs per acre would be lined prior to application of low intensity surface fire.

In treatment units proposed for grapple or hand piling, piles would be located a sufficient distance from large down logs to ensure the logs did not ignite during pile burning operations. In addition, piling would not be conducted on approximately 30 percent of the unit, allowing for retention of small down woody material.

In treatment units proposed for surface fire prescriptions (Table 2.1), approximately 30 percent of each unit's area would not be underburned. Small woody material would be retained in these unburned areas of the treatment units.

Short Snags/High Stumps

Short snags would be created in emphasis area 1 through 6 subunits with silvicultural prescriptions that include existing DCAs. These subunits are located outside the Sagehen Project's plantations. To create short snags, approximately two live trees per acre of DCA, greater than 15 inches dbh, would be cut at a height of ten to 20 feet above the ground. White fir would be the preferred cut species. Felled portions of these cut trees would be retained on site.

Dense Cover Areas and Early Seral Openings

Silvicultural prescriptions call for varying acreages of DCAs and/or ESOs within each subunit, based on emphasis area. (Note that DCAs and ESOs are not included in the plantation thinning prescription.) DCA/ESO acreages are calculated as a portion of each subunit's area, with the highest proportion in emphasis area 1 subunits. In emphasis area 1 subunits, DCAs and ESOs would occupy an average of 15 to 20 percent of the subunit area; in emphasis areas 2 and 6, DCAs and ESOs would occupy an average of five to ten percent of the overall subunit area; in emphasis areas 4 and 5, DCAs and ESOs would occupy an average of ten to 15 percent of the subunit area; and in emphasis area 7, DCAs and ESOs would occupy an average of one to five percent of the subunit area. Subunits 38-1, 73-5, and 213-1 would have the highest acreages of DCAs, ten, eight, and 15 total acres, respectively.

Tree Species Composition

Site-specific objectives for tree species composition are based on existing species composition within the subunits. Relative percentages of tree species to be removed vary by crown class (dominant, codominant, subdominant, and suppressed) within each subunit, as described in detail in the Project Record. Silvicultural prescriptions for all subunits outside plantations, regardless of emphasis area, would be primarily focused on removing suppressed trees (ranging from 50 to 90 percent removal of existing suppressed trees) and some removal of subdominant trees (ranging from ten to 30 percent removal of existing subdominant trees), depending on the existing species composition within the subunit. In general, most dominant and codominant trees of all species would be retained, with some limited site-specific exceptions to provide for removal of three to ten percent of dominant/codominant white fir.

Because the plantations are predominantly comprised of Jeffrey pine, plantation thinning prescriptions are focused on retaining existing white fir and red fir as well as sugar pine and western white pines not infected with blister rust.

Prescribed Surface Fire Behavior

Two metrics are used to define targets for surface fire prescriptions: spatial extent of surface fire and intensity as indicated by the amount of tree mortality caused by surface fire. To facilitate application of surface fire prescriptions, underburning is proposed for entire treatment units (rather than individual subunits within treatment units). Hence, values for the prescribed surface fire metrics are applied at the treatment unit scale, and are the same for all emphasis areas.

The spatial extent for application of low intensity surface fire is approximately 70 percent of the area in a mosaic pattern within each treatment unit. (Table 2.1 above displays the treatment units proposed for surface fire prescriptions.) Approximately 30 percent of the unit's area would remain in an unburned condition. Surface fire prescriptions would be designed to result in mortality of approximately 70

percent of trees less than three inches dbh and approximately five to 15 percent of trees greater than three inches dbh. Mortality in trees greater than three inches dbh would be primarily comprised of trees in subdominant crown classes, with occasional mortality of trees in the codominant crown class.

Road Management

Previously existing Forest Service maintained and county roads within and adjacent to the project area will be used for transportation of equipment and hauling of timber. Alternative 1 includes approximately 3.8 miles of temporary road construction. Final temporary road locations will consider hydrology, slope, soil, and sensitive area restrictions, and will be located in the best available sites that minimize effects to resources.

Restoration of Existing Forest Development Roads

Site-specific watershed improvement needs, typically associated with roads needed to access the units, were identified in some treatment areas. Specific areas of road obliteration (decommissioning) would restore/improve watershed condition. This would be accomplished by re-establishing hydrologic connectivity and reducing current or potential sources of sediment. Specific actions are described below and shown on the map of Alternative 1 (Appendix B) as road obliteration.

Road 11-5, Action 1: Approximately one mile of this road would be obliterated following its use for vegetation treatment activities. Currently this road is choked with vegetation and is not accessible through much of its length. This road would be reopened to access and treat units 85 and 87 for approximately one mile. Upon completion of the treatments in these units, this segment of road would be obliterated. Road obliteration would consist of re-contouring the roadbed to a hydrologically neutral state. This also includes emphasizing protection and neutral landscape configuration above fens, designing drainage to match natural patterns, reducing compaction (sub-soiling), blocking the closed portions from future access, and mulching or otherwise providing slash and soil organic matter to control erosion.

Road 11-5, Action 2: On the section of road 11-5 below the obliteration work described in Action 1 above, where the road crosses through a fen and aspen stand, the road and its associated culvert system would be removed and full restoration measures would be implemented. The existing elevation of the culvert is placed subgrade, such that the water in the fen is draining at an accelerated rate and resulting in an ongoing reduction in fen size. Restoration measures would include filling the culvert alignment and reshaping the roadbed to support the function and hydrology of the fen (currently approximately 1.2 acres). Revegetation activities would be implemented and may include local seed and/or small plugs of sedge mat or other local vegetation obtained adjacent to the fen. Mulching would be provided as needed to control erosion and stabilize the site. This action, in combination with the proposed aspen restoration prescription in subunit 85-8 and the above described road obliteration, would restore fen and wetland hydrology and the area surrounding the fen could be improved over approximately three acres.

Change in Maintenance Level for Road 11-6

Existing Forest Development Road 11-6 is proposed to be changed from Forest Service Maintenance Level 1 to Maintenance Level 2. Maintenance Level 1 roads are typically managed for intermittent, project-related use; whereas Level 2 roads are typically managed for seasonal public and administrative use. The proposed change in road maintenance levels is an administrative change which would more accurately reflect the current conditions on the ground and the existing use that is occurring on the 11-6 road. No changes to the physical environment of the 11-6 road beyond maintenance of existing conditions are proposed in this undertaking.

Alternative 2: No Action

Under Alternative 2, No Action, none of the activities proposed under Alternative 1 or Alternative 3 would be implemented. Selection of the No Action alternative by the Responsible Officials would not preclude activities that have already been approved in this area or those being planned as separate projects.

Alternative 3: Non-commercial Funding

Alternative 3 was developed in accordance with Eastern District Court Judge England's November 4, 2009 order for Case 2:05-cv-00205-MCE-GGH. The order requires the Forest Service to analyze a non-commercial funding alternative in detail for all new fuel reduction projects not already evaluated and approved as of November 4, 2009. To develop this alternative, the proposed treatment areas were revisited to determine (a) if a beneficial fuel treatment was possible and (b) what those treatments would be. See Appendix B for a map of Alternative 3.

A total of 1,132 acres were considered for non-commercial treatments. All units were not considered to be treated under this alternative because the cost would have been too great. Therefore, in order to reduce implementation costs to around one million dollars, the most critical units were chosen for treatment (including fuels only prescriptions on all units would have cost close to twice that amount). The treatments identified only partially meet the purpose and need by addressing hazardous surface and ladder fuels. The following actions are proposed under Alternative 3 (Table 2.3) and are displayed on the map of Alternative 3 in Appendix B. Note that while emphasis areas are displayed here, there are no project goals specifically tied to each emphasis area in Alternative 3 as there are in Alternative 1. The emphasis areas are displayed solely to provide a consistent way to compare the alternatives.

Table 2.3: Summary of Alternative 3 by Treatment Area

| Unit | Total Acres | Emphasis Area | Unit Emphasis Area Acres | Silvicultural Rx – see Order of Prescription Application section above | Silvicultural Treatment Method | Fire/Fuels Rx | Fire/Fuels Treatment Method |
|-------------|--------------------|----------------------|---------------------------------|---|---------------------------------------|----------------------|------------------------------------|
| 33 | 118 | 1 | 4 | No Treatment | N/A | No Treatment | N/A |
| | | 4 | 30 | | | | |
| | | 5 | 28 | | | | |

Appendix B :

Responses to
Public Comment

Sagehen Project Responses to Public Comments Received

A preliminary Environmental Assessment (EA) and supporting environmental analyses (resource specialist reports) for the Sagehen Project were provided to the public for comment during the 30-day comment period, pursuant to 36 CFR 215.6. The following individuals and organizations provided comments or expressed interest in the Sagehen Project during the 30-day comment period:

- Craig Thomas, representing Sierra Forest Legacy (SFL)
- Tom Downing, representing Sierra Pacific Industries (SPI)
- Jeff Brown, representing UC Berkeley Central Sierra Field Research Stations (UCB)

This appendix describes how comments have been considered in the environmental analysis for the Sagehen Project. Comments submitted by Sierra Forest Legacy, Sierra Pacific Industries, and UC Berkeley on the Sagehen Project preliminary EA and Forest Service responses are included in this appendix. Table 1 below identifies the general topics raised in the public comments and provides their page locations within this appendix.

Table 1. Document Contents

| Comment Category | Located on Page(s): |
|----------------------------|---------------------|
| A. Monitoring | 1 - 2 |
| B. Goshawk PAC | 3 - 6 |
| C. Marten | 6 - 8 |
| D. Economics | 9 |
| E. Support for the Project | 10 |

A. MONITORING

Comment #1 (SFL): *There is nothing specific in the EA directly committing to post-treatment monitoring for marten in the Sagehen basin in the short or longer term. Sierra Forest Legacy requests an explicit commitment from the Tahoe National Forest to return to the post-treatment landscape for a period to be determined by the marten research community (post-treatment) and longer term (10 years?) to review the treatment outcomes and get a sense of marten presence in the restored landscape. Sierra Forest Legacy's definition of "the restored landscape" includes the return of marten to these environments where they have been largely extirpated over the past 28 years. It would be a benefit to all collaborative partners to see proof that the Sagehen treatments benefited multiple objectives including fire resilience, increased forest complexity AND the return of this key furbearer to the Sagehen Basin.*

We request the Forest Service, PSW and UC Berkeley create a written, binding instrument in 2013 that commits the parties to two rounds of post-treatment monitoring for marten occurrence and habitat use

in Sagehen Basin. We request the Forest Service acknowledge this commitment in the Decision Notice for the Sagehen project.

Response:

As described in detail in Chapter 1 of the Sagehen Project EA, the project is being proposed to maintain and enhance habitat for the marten and other wildlife species associated with late seral forest habitat and to create heterogeneous forest stand conditions. A formal definition of ecological restoration is “the process of assisting the recovery of resilience and adaptive capacity of ecosystems that have been degraded, damaged, or destroyed. Restoration focuses on establishing the composition, structure, pattern, and ecological processes necessary to make terrestrial and aquatic ecosystems sustainable, resilient, and healthy under current and future conditions”(USDA Forest Service Manual 2020.5). For the Sagehen Project, the concept of stand-level ecological restoration focuses on creating heterogeneous forest stands representative of forest stands that developed under a more active fire regime. Therefore, forest stand species mixes, structures, and densities would vary depending on topographic variables, such as slope position, aspect, and slope steepness. While the project is designed to maintain and enhance habitat conditions for the marten and other wildlife species associated with late seral forests, increasing the marten population in the Sagehen Basin is beyond the scope of the proposal.

Treatment prescriptions under the proposed action (Alternative 1) are designed to create, protect, and maintain specific habitat features (dense cover areas, large woody material, and snags) that are particularly important for late seral species, including the marten and northern goshawk. The desired levels of these habitat features within the treated stands are based upon the relevant scientific literature and negotiations conducted during the collaborative process for the Sagehen Project. Each phase of Sagehen Project implementation would include both monitoring and mitigation measures (described in Chapter 2 of the EA) to ensure the desired numbers and configurations of these habitat features would exist after project implementation (both mechanical treatments and prescribed burning).

The Sagehen Project is unique, with its location within an experimental forest and its landscape-level objectives and treatments to reduce hazardous fuel loading and modify landscape-scale fire behavior, create heterogeneous forest stand conditions expected to develop under an active fire regime, and maintain and enhance habitat for sensitive species, particularly the marten and northern goshawk. The Pacific Southwest Research Station (PSW) and the Tahoe National Forest (TNF) agree, in principle, to collaborate on post-treatment monitoring, with design lead from PSW, that includes conducting a marten survey during the summer and winter after the final unit is treated. The relative contributions of personnel and funding from PSW and the TNF would be determined and negotiated at a later date. The Responsible Officials recognize the importance of species monitoring following treatments, and commit to exploring and attempting to secure sources of funding for this work. Finally, using collaborative expertise from both branches of the Agency and to the extent funding allows, the amount and distribution of predicted high quality habitat for marten in the Sagehen Basin would be tracked over time and a Basin-wide analysis of the connectivity of predicted high quality marten habitat would be conducted.

B. GOSHAWK PAC:

Comment #2 (SFL): *Sierra Forest Legacy does not agree with the prescriptions for the new NE Sagehen Goshawk Protected Activity Center. The NE Sagehen Goshawk PAC is mostly on a north-facing slope (Fire and Fuels report p. 19). An underburn prescription with no silvicultural treatment is what was presented and analyzed in the Fire and Fuels report (p.22 & 27). Table 4 in the Fire and Fuels report, (p.30) displays a surface fire prescription with high levels of snag and log retention (snags/10/ac and logs/5/ac) in the 32-acre burn unit. The NE Sagehen Goshawk PAC along with all the other Goshawk PACs in the Sagehen Basin has the “highest contribution to productivity” and “therefore should have a lower priority for treatment” according to the Forest Plan (Sagehen EA p. 144).*

The Sagehen EA Fire and Fuels report provides no information to suggest that avoiding mechanical treatment in the NE Sagehen PAC would compromise the landscape fire and fuels strategy. Further, the proposed prescribed burning of Unit 39 analyzed in the Fire and Fuels report did not suggest a need to do more aggressive treatments. Therefore, Sierra Forest Legacy rejects the need for a Forest Plan Amendment to mechanically treat the NE Sagehen PAC.

In addition, the underburn proposed in the Fire and Fuels analysis to the NE Sagehen Goshawk PAC better meets the objectives described in PSW-GTR-220 and 237) because it provides for both habitat heterogeneity and conservation of a multiple sensitive species. First, the underburning efforts in Unit 39 will provide the heterogeneity (patchiness) desired in GTR-220 recommendations although it may take 2 treatments to achieve this result. Fire will also achieve some mortality in the smaller size tree classes and will likely “select” less desired trees species such as white fir with lower hanging branches. Second, PSW-GTR-220/237 includes chapters on sensitive wildlife implying that projects should focus on the needs of multiple species. The proposal to override the needs of a newly arriving goshawk for some perceived benefit to Pacific marten is not promoted by these GTRs.

Forest Plan standard 73 allows for fuels treatments needed to meet project fuels objectives. These objectives would, by the nature of ladder fuels on the Sagehen project, target many of the trees that, incidentally, are trees targeted for ecological restoration therefore achieving (as a result of treating surface and ladder fuels) at least a partial restoration objective.

A plan amendment is not defensible unless not treating the PAC truly compromises the project’s landscape level objectives. As clearly shown in the fire and fuels report, limiting treatment of the PAC to prescribed fire would not undermine landscape level fuels objectives. We request the Forest Service reconsider this approach in the NE Sagehen Goshawk PAC. We believe there is room to incorporate this new goshawk location in the project’s landscape objectives and to follow the direction in the forest plan regarding treatment.

Response:

In 2011, an active goshawk nest with one fledgling was discovered, necessitating the designation of a new northern goshawk protected activity center (PAC). This PAC, known as the NE Sagehen goshawk PAC, encompasses all of Unit 39 (32 acres) and those portions of Unit 38 within emphasis areas 1, 4, and

5 (160 acres). The emphasis area 7 portions of Unit 38 (50 acres) are not within the PAC. Under Alternative 1, a portion of this PAC (160 acres in Unit 38) is proposed for mechanical thinning followed by prescribed underburning.

Based on this comment, the fire and fuels analysis for Unit 39 was carefully reviewed and an error was found in the assumptions that were made to model fire behavior in this unit. When the new goshawk nest site was discovered during project planning (which became the activity center for the NE Sagehen goshawk PAC), the originally proposed Unit 39 was expanded into an area that was formerly part of Unit 38, which had been proposed for mechanical thinning. The new treatment for the expanded Unit 39 was changed to prescribed underburning only. However, the fire modeling erroneously assumed that the expanded area of Unit 39 would receive its former Unit 38 treatment, i.e. a mechanical treatment followed up by prescribed underburning. Hence, as the commenter points out, the flame lengths presented in the Sagehen Project Fire/Fuels Report (Map 9, pg. 47) for the assumed mechanically treated portion of Unit 39 were less than 4 feet. The high severity patch within Unit 39 (indicated by flame lengths over 11 feet on Map 9 of the Sagehen Fuels Report, pg. 47) was the portion of the Unit assumed to receive an underburning treatment only (with no prior mechanical treatment). To correct this error, fire modeling (FlamMap) was re-run with the correct treatment (underburning only) for Unit 39. (The detailed analysis is presented in the Sagehen Fire/Fuels Report Addendum, April 29, 2013.) Based on the results of this modeling, which show flame lengths ranging from 17 feet at the cool end of the burn window to 73 feet at the hot end of the burn window, and the experience and professional judgment of the interdisciplinary team's fuels specialist, applying an underburn only treatment to Unit 39 would result in substantial adverse impacts to the habitat in this nest core area of the PAC. Hence, Unit 39 is no longer included in the proposed action and would receive no treatment under Alternative 1.

The NE Sagehen goshawk PAC was re-assessed to consider the feasibility of treating this area with prescribed underburning only, as suggested in this comment. The detailed analysis of underburning in this PAC is presented in the Fire/Fuels Report Addendum (April 29, 2013), which is available in the Sagehen Project Record. BehavePlus Model runs conducted for underburning in this PAC resulted in flame lengths between 6.4 and 8.5 feet, while FlamMap Model runs resulted in average flame lengths weighted across the PAC between 10 and 63 feet. These results indicate that an underburning treatment only would carry a high risk of substantial adverse effects on goshawk habitat in the PAC. Further, the SNFPA ROD standard and guideline for underburning in PACs (2004 SNFPA ROD Standard and Guideline #74, pg. 60) directs managers to minimize potential adverse impacts from prescribed burning on habitat in PACs: "In forested stands with overstory trees 11 inches dbh and greater, design prescribed fire treatments to have a flame length of 4 feet or less." Even at the cool end of the burn window, the potential flame length associated with an underburning only treatment in the PAC substantially exceeds this threshold.

As pointed out in this comment, SNFPA ROD Standard and Guideline #73 (which is proposed for a non-significant plan amendment under Alternative 1) allows mechanical treatments in PACs located in WUI threat zones where prescribed fire is not feasible (as discussed above) and where avoiding PACs would significantly compromise the overall landscape fire and fuels strategy. As part of the Sagehen Project

design, treatments in PACs have been largely avoided: there are five goshawk PACs in the Sagehen Basin. Four of the five PACs are avoided by the landscape pattern of fuels treatments while one PAC (the NE Sagehen goshawk PAC) is proposed for treatment. To answer the question of whether avoiding this PAC would “significantly compromise the overall landscape fire and fuels strategy,” FARSITE Model runs were done to compare landscape-scale fire behavior if the 160 acres of Unit 38 within the PAC were treated (mechanical treatment and prescribed underburning) versus if the entire PAC remained in an untreated condition (since, as described above, prescribed underburning only is not a feasible option). Under a scenario with a fire ignition starting on Highway 89 with a north wind during 90th percentile weather conditions (a threat identified in the purpose and need for the Sagehen Project, EA, page 13), fire would rapidly spread through the untreated PAC within 24 hours and would reach the Sagehen Field Station within 48 hours. Due to the projected fire intensities, suppression resources would be unable to directly attack the fire, allowing further fire growth. In contrast, FARSITE modeling of this ignition with 160 acres of the NE Sagehen goshawk PAC (Unit 38) treated shows the strategic value of treating this area, as fire spread is moderated when the modeled fire reaches treated Unit 38 and the other adjacent treatment units. The lower fire intensities under this scenario would result in the likelihood that suppression resources could use direct suppression tactics before fire reached the Lower Sagehen goshawk PAC, thereby insulating the Field Station from high severity fire. The detailed analysis of these scenarios is presented in the Sagehen Fire/Fuels Report Addendum (April 29, 2013), which is included in the project record.

Finally, the NE Sagehen goshawk PAC has been continuously monitored for occupancy since the nest site was discovered in 2011. Under the proposed action (Alternative 1), this PAC would be monitored to protocol for 2 years following the proposed mechanical treatment. If this PAC was found to be unoccupied after the first year’s survey, suitable goshawk habitat within the Sagehen Basin north of Sagehen Creek would be monitored the following year to assess goshawk presence.

Comment #3 (SFL): *Overall canopy reduction of 71% to 41% [in the NE Sagehen goshawk PAC] is cited in the Wildlife BE (p.125). The BE claims this would not result in a loss of suitable habitat (BE p. 125). This statement sounds like management for minimums and not management for persistence of goshawk as a serious part of the mix of issues in the Sagehen project. Beier and Drennon (1997) found in their study that goshawks preferred sites of >80% cover with mean cover in Ponderosa pine stands of 48% and with an aversion to canopy closure <40%. The authors warned against using 40% cover overage as a target, since that was never the intention of the standard for goshawk or spotted owl (see CASPO Technical Report PSW-GTR-133 p. 25 in bold print).*

Response: The Biological Evaluation (BE) prepared for the preliminary Sagehen Project EA incorrectly reported a post-treatment canopy cover level of 41 percent for the mechanically treated portion of the NE Sagehen goshawk PAC in Unit 38 (Sagehen Biological Evaluation p. 125). This was a typographical error that has been corrected in the BE. The PAC includes emphasis areas 1, 4, and 5 within Unit 38 and it excludes emphasis area 7 in Unit 38. The weighted mean canopy cover of emphasis areas 1, 4, and 5 within the Unit 38 portion of the PAC would be reduced to 50.3% following mechanical treatments. This post-treatment canopy cover level is consistent with Forest Plan canopy cover retention standards and guidelines for mechanical thinning treatments (2004 SNFPA ROD pp. 50-51).

The core area of the PAC lies within Unit 39, and this unit is no longer proposed for treatment under any of the alternatives. Hence, the existing canopy cover of 71 percent in Unit 39 would be retained. The post-treatment canopy cover within the entire PAC, including Units 38 and 39 combined, would be 53.4 percent. This canopy cover level is in concert with recommendations by Beier and Drennan (1997) to manage goshawk habitat for canopy closure values above 40 percent.

C. MARTEN

Comment #4 (SFL): *All known marten natal and maternal dens require protection under the 2004 Framework ROD. Are there known marten dens in the Sagehen project area either identified by Katie Moriarty or past researchers?*

Response: No known marten denning sites have been documented in the Sagehen Project area. During a recent study on the marten population in the Sagehen Basin (Moriarty 2008), there were no recorded sightings of marten use in the northeastern portion of the Basin where the majority of the treatment units are located. Past researchers (Bill Zielinski, Wayne Spencer, and Sandy Martin) did not discover any marten reproductive dens in the Sagehen Basin during the periods when they were conducting their marten studies in this area ((Zielinski, pers. comm., April 12, 2013).

Should a marten den site be discovered during project implementation, a limited operating period would be observed for treatments to avoid conducting project activities during periods of marten denning, consistent with 2004 SNFPA ROD Standard and Guideline #88 (SNFPA ROD, pg. 62). The proposed action protects potential denning structures in the project area and applies specific prescriptions to enhance marten reproductive habitat, including the creation of short snags and the partial girdling of other trees. One of the primary purposes of the Sagehen Project, as described in Chapter 1 of the EA, is to maintain and enhance habitat conditions for the marten and other wildlife species associated with late seral forest conditions.

Comment #5 (SFL): *Fragmentation of key habitats has been a major concern since the remarkable decline in marten detection rates in the early 1980s--65% (Sagehen BE p. 159) to 4% in Moriarty's work in 2007-08 (Moriarty 2009). Past projects reduced canopy cover, patch sizes and arrangement and important structures such as large snags and logs. While the amount of habitat at the coarse scale of a CWHR label may not have changed much (BE p. 159) important features not usually captured by coarse filter habitat sensing (see M. Narth and P. Manly PSW-GTR-237 chapter 6) may have changed significantly (Moriarty et al. 2011). It is these features including distance between features and size and spatial arrangement of patches resulting from the vegetation treatments since the 1980s (Sagehen vegetation report p. 122) which have had lasting impact on marten habitat and occurrence. This is why it is inappropriate to rely upon coarse filter CWHR strata label change as the primary indicator of impact to the marten in the Sagehen project.*

The 2004 ROD p. 53 Standard 27-28 requires the Forest Service to assess impacts from fragmentation and impediments to movement for old forest associated species. The Forest Service concludes that there will only be minimal fragmentation impacts to marten from the Sagehen project (Wildlife BE p. 159). In

order to affirm that marten are likely to traverse the Sagehen landscape the Forest Service must conduct a reasonable corridor and movement analysis based on the best available habitat information and modeling tools. This has not been adequately done for the Sagehen project. Corridor distances of < 2 km may represent impediments to dispersal in a recent marten study in the Sierra Nevada (Kirk and Zielinski 2010). A "least-cost" modeling approach should be applied to the Sagehen project to support the notion that there are minimal impacts (further isolation, impediments to movement) from the proposed treatments (see Spencer and Rustigan-Ramsos 2012 available at: www.sierraforestlegacy.org). Estimates of patch size, distance between patches, retention records of key structures (logs, snags, high stumps) based upon marking records and design layout would also better inform the characterization of fragmentation risk in the short to long term.

Response: The CWHR classification system is one of a number of indicators used to assess the effects of the Sagehen Project alternatives on the marten. The marten analysis presented in the Sagehen Project BE is informed by a mixture of coarse and fine scale information and data. The BE acknowledges that CWHR classes are a coarse scale indicator; however, important microsite habitat components are also described, including the abundance and distribution of snags and down logs, large tree distribution, creation of high stumps, and residual canopy cover estimates. Generally, Alternative 1 would maintain all existing snags larger than 15 inch dbh, except for those needing to be removed for equipment operability or those that posed a risk to public safety. It is expected that there would be no measurable difference in the number of snags greater than 15 inches dbh between the existing condition and the immediate post treatment condition.

The least-cost corridor modeling approach used by Kirk and Zielinski (2010) also used the CWHR classification system to model marten habitat connectivity. While dispersal corridors less than 2 kilometers may pose a risk to dispersing marten, it should be noted that none of the treatments proposed for the Sagehen Project would reduce existing corridor widths. None of the proposed treatments would reduce cover to a point that would prevent marten movement or use across the Sagehen landscape. Although, martens have generally been characterized as preferring habitat with moderate to high canopy cover (greater than 50 percent), they are known to use a wide variety habitats and conditions, including the use of conifer forests with canopy cover less than 30 percent to over 70 percent and areas dominated by shrub cover. Additionally, the majority of studies indicate that marten habitat fragmentation results from large openings created by clearcut harvests, not forest thinning treatments as proposed. Researchers found that landscapes with openings that covered more than 25 percent of the area limited habitat suitability for marten (Heinemeyer 2002, Potvin et al. 2000, Hargis et al. 1999, Chapin et al. 1998). Creation of large openings at this scale is not being proposed for the Sagehen Project; hence, marten habitat fragmentation is not expected under implementation of any of the proposed alternatives. For the Sagehen Project analysis, the distribution, size, and amount of early seral openings on marten habitat fragmentation is described in terms of marten movement impediment (BE, pp. 176 and 181). The BE states that the small size of early seral openings would not impede marten movement, which has been substantiated by preliminary studies on marten movement in the Sierra Nevada indicating that 60 meters may be the maximum size of openings that martens will not cross (Moriarity, pers. comm., April 2013).

Furthermore, project treatments were explicitly developed to maintain and enhance marten habitat within the Sagehen Basin, both at the landscape and microsite scale by maintaining desired canopy cover densities, promoting large legacy trees, maintaining existing coarse wood, creating decadent feature enhancements (partial tree girdling and short snag creation), and designating dense cover areas. Based upon all the project design criteria explicitly designed to enhance marten habitat (legacy tree treatment, dense cover areas, snag and down log retention, snag creation, etc.), habitat connectivity for the marten would be maintained in the short and long term.

To better inform potential marten habitat fragmentation risk associated with the Sagehen Project in both the short- and long-term, FRAGSTAT (Version 4) modeling was conducted to estimate patch size, patch distribution, and distance between patches of high and moderate marten habitat within the Sagehen Basin, in a similar way that Moriarity et al. (2011) assessed marten habitat fragmentation within the Basin. Existing high and moderate quality marten habitat was analyzed immediately post-treatment and 30 years post-treatment to assess effects from treatments on potential marten habitat fragmentation. Overall, the FRAGSTAT modeling results indicate that marten habitat connectivity would be maintained following the treatments and 30 years into the future. Key results from the FRAGSTAT modeling include the following:

- High quality habitat only decreased by 0.1 percent across the landscape immediately post-treatment and increased to by an additional 0.5 percent 30 years after treatment.
- The large patches of habitat remained constant across the landscape both following treatment and 30 years into the future.
- The percentage of core area decreased from 4.12 percent to 3.4 percent initially after treatment and was predicted to increase to 4.9 percent 30 years after treatment.
- The distance to the nearest patch increased slightly immediately following treatment, but decreased to less than existing patch distance 30 years later. The distribution of patches changed very little. Additionally, proximity of high quality patches to one another improved both post-treatment and 30 years into the future.

Details of the FRAGSTAT modeling methodology, assumptions, and results are included in the Sagehen Project BE.

Finally, as suggested in this comment, retention records of key structures (logs, snags, high stumps) based upon marking records and design layout would be kept for this project. Treatment prescriptions under the proposed action (Alternative 1) are designed to create, protect, and maintain specific habitat features (dense cover areas, large woody material, and snags) that are particularly important for late seral species, including the marten and northern goshawk. The desired levels of these habitat features within the treated stands are based upon the relevant scientific literature and negotiations conducted during the collaborative process for the Sagehen Project. Each phase of Sagehen Project implementation would include both monitoring and mitigation measures (described in Chapter 2 of the EA) to ensure the desired numbers and configurations of these habitat features would exist after project implementation (both mechanical treatments and prescribed burning).

D. ECONOMICS

Comment #6 (SPI): *The economic report calculated a mechanical thinning cost for both logs and biomass on a per acre basis. My analysis of these costs for alternatives 1 and 3 are 25% more than the agency's estimate of \$1,066 per acre. Based on my mechanical thinning costs both alternatives would have a project cost well in excess of the budget of \$750,000 over five years the life of NEPA. Revising the mechanical thinning costs for the biomass to include cutting, skidding, and burning, the resulting project cost would be well within the stated five year budget. As a result of the collapse of the current biomass market and higher operating costs associated with its harvest, we request that the agency develop a fourth alternative which requires this material to be removed to a landing and burned.*

Response: In the Sagehen Project Alternatives 1 and 3, biomass is required to be removed to the landing in order to meet project goals. There is no requirement under either alternative for the biomass to be removed from the landing. This was intentional to allow the biomass to either be burned or removed if a market were to become available. The resources that are most affected by these options are project economics and air quality. For other resources, there are minimal to no differences in effects between the biomass remaining on the landing or removing it from the landing.

For the Sagehen Air Quality Report, three options for potentially burning biomass at the landings were considered, with the option resulting in the greatest potential effects on air quality analyzed in detail (Air Quality Report, pg. 9). Emissions from the landings were analyzed for the largest piles that would be burned, where all biomass would be burned at the landing. It was determined in the Air Quality Report that even if all of the biomass were burned at the landing, no significant effects on air quality would result.

We fully recognize that one of the results of the collapse of the current biomass market is higher operating costs associated with biomass harvest. The Sagehen Project Economics Report's primary purpose is to compare the project costs between alternatives. Even though it is stated that, if the project costs greatly exceed \$750,000, the ability for the Truckee Ranger District to implement the decision in full within 5 years is improbable, that estimate is not a "hard cap" on the costs of the project. The District is actively pursuing additional funding for project implementation, which would effectively raise the acceptable operating costs of the project. While markets are continually changing, the analysis presented in the Sagehen Project Economics Report remains valid because it provides a comparison of the alternatives based on the same metrics at the same point in time, thus showing the relative differences between alternatives that can be used to inform the decision.

Even though the biomass market is not available currently, it is the Tahoe National Forest's intention to actively pursue options for biomass utilization, such as the potential new biomass facility in Placer County. If new markets become available, this would allow funds generated from products to go into project service items via stewardship contract authority.

Because the two action alternatives (Alternatives 1 and 3) incorporate the option of burning biomass material at the landing, the fourth alternative suggested by the commenter is not needed.

E. SUPPORT FOR THE PROJECT

Comment #7 (UCB): *The University of California, Berkeley – Sagehen Creek Field Station enthusiastically supports this set of recommendations and strongly supports the stated selected alternative. With this said, we also feel very strongly that for this project to have a chance of meeting its stated objectives, it needs to get fully implemented within a 3 to 5 year period from start to finish.*

The decision by the Truckee Ranger District of the Tahoe NF to employ a collaborative process to design the project is to be commended. The interests of the Sagehen ecosystem were well-represented by this engaged and active collaborative group. I also feel very strongly that this collaborative process was key in helping us work towards a more holistic project design that actively incorporates many complicated needs and objectives.

I will also state that this process was not easy for anyone involved. Ecosystems are very complicated, as we do not yet fully understand how they work; or how pulling on one string will affect the other strings. Working together helped the group to focus and to push everyone's comfort levels. This, in turn, also helped us focus our energies and efforts to clarify what the key issues were, then to work towards effective solutions to adequately address these issues. It is also safe to say that no one got exactly what they wanted out of this. Everyone needed to shift and accept ideas in order get a reasonable project created. This enabled us as a group to come up with a very reasonable approach and much better and more effective proposal/plan. So, maybe we all did actually get what we wanted, a reasonable and well thought out approach to address a very complicated and emotional issue. This is all well-documented in this document.

Response: Thank you very much for your supportive comments. We agree that a 3- to 5-year implementation is the most desirable timeframe. While it is likely that much of the project would be implemented within that timeframe, some items, such as underburning, might not be complete. In order to meet fire/fuels prescription objectives, specific weather conditions need to occur in order to underburn. Since the conditions may not occur every year, timeframes of implementation could be extended.

We agree the collaborative process helped produce a very well thought-out and reasonable project. The collaboration group was very engaged which helped drive the innovation and creative solutions to issues that, in some cases, were perceived as mutually exclusive. Even though, as mentioned in this comment, it was not an easy process, it was a positive experience for the Tahoe National Forest and the Pacific Southwest Research Station. The working relationships forged throughout the process are ones we hope to build upon in the future.

Appendix C:

SMR's

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date | |
|------------|-----------|---------------|------------------------------------|--------------------|---|--|-----------------------|--|---|
| 1 | All Units | All Areas | Aquatic Resources, Soils/Hydrology | All | <p>Implement Best Management Practices (BMPs): These practices are required to meet the regional policy and to be consistent with the provisions of the 1981 Management Agency Agreement between the State Water Resource Control Board (SWRCB) and the Forest Service as the designated Water Quality Management Agency (WQMA) on National Forest System Lands. See SMRs 22-24 for special provisions for the Lahontan Regional Water Quality Control Board (LRWQCB) jurisdiction. The Riparian Conservation Objective (RCO) analysis contains a table to display the relationship of the Riparian Conservation Areas (RCAs) and the Water Body Buffer Zones (WBBZs). Site-specific BMPs and management requirements, unit layout, careful implementation and monitoring of BMP implementation are the primary means of minimizing impact in this project area. Some BMPs in this list are applied during the preliminary project design and therefore are not referenced directly in the SMRs below.</p> <p>1.1 timber sale planning process 1.2 timber harvest unit design 1.3 erosion hazard for timber harvest unit design 1.4 designated protection areas on sale area maps 1.5 limited operating period of timber sale activities 1.6 protecting unstable lands 1.8 streamside management zone designation 1.9 tractor-loggable ground 1.10 tractor skidding design 1.12 log landing location 1.13 timber sale erosion prevention and control measures 1.14 special erosion - prevention - disturbed lands 1.16 log landing erosion control 1.17 erosion control on skid trails 1.18 meadow protection during timber harvesting 1.19 stream course and aquatic protection</p> | <p>1.20 erosion control structure maintenance 1.21 accepting erosion control measures 2.1 travel management planning and analysis 2.2 general guidelines for the location and design of roads 2.3 road construction and reconstruction 2.4 road maintenance and operations 2.5 water source development and utilization 2.6 road storage 2.7 road decommissioning 2.8 stream crossings 2.10 parking and staging areas 2.11 equipment refueling and servicing 2.12 aggregate borrow areas 2.13 erosion control plans (roads and other activities) 5.2, 5.3, 5.6 limitations on tractor operations 5.4 revegetation of surface disturbed areas 5.7 pesticide use planning process 5.8 pesticide application according to label directions and applicable legal requirements 5.9 pesticide application monitoring and evaluation 5.10 pesticide spill contingency planning 5.11 cleaning and disposing of pesticide containers and equipment 5.12 streamside and wet area protection during pesticide application 6.2 water quality and formulating fire prescriptions 6.3 prescribed burning and protection of water quality 7.1 watershed restoration 7.2 conduct floodplain hazard analysis and evaluation 7.3 protection of wetlands 7.4 Forest and Hazardous Substance Spill Prevention Control and Countermeasure (SPCC) Plan 7.8 cumulative off-site watershed effects</p> | | Aquatics Biologist, Hydrologist, Soil Scientist, TSA, Vegetation Officer | As applicable prior to, during, and after all management activities |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|----------------|---------------|------------------------------------|--------------------|---|---|--|---|
| 2 | All Units | All Areas | Aquatic Resources, Soils/Hydrology | All | <p>Emphasis for Riparian Conservation Area (RCA) Protection: Contract administrators and operators will be educated on the importance of minimizing impact while working within the RCA. Units with RCAs having known areas with restricted operations regarding sensitive sites will be identified for review with contract administrators and operators. Contract maps will be reviewed prior to bid to ensure sensitive areas are adequately represented on the map or on the ground. Stream courses and their respective protection limits (tractor keep out - TKO) are shown on the sale area map and/or are flagged on the ground.</p> | 1.1, 1.2, 1.4, 1.8, 1.18, 1.19, 7.1, 7.3 | Aquatics Biologist, Hydrologist, Soil Scientist, TSA, Vegetation Officer | As applicable prior to, during, and after all management activities |
| 3 | All Units, 156 | All Areas | Soils/Hydrology | Mechanical | <p>Equipment Operations - Uplands: Equipment will minimize turning that results in ground disturbance. Equipment will be used on slopes no greater than 30% with short pitches up to 200 feet on up to 35% slope. Short pitches over 35% slope may be agreed to on a site-specific basis, after appropriate interdisciplinary review.</p> <p>Grapple Piling: Grapple piling will be conducted to minimize excessive turning and to maintain undisturbed duff over 20% of the unit area.</p> <p>Soil Dryness Criteria: 1) Equipment rated as low-ground-pressure, which is defined as equipment applying an average ground pressure of 8.0 or less pounds per square inch design load, is restricted to main skid trails until the soil is dry to a depth of 4 inches. 2) Equipment rated as high-ground-pressure equipment which is defined as equipment applying an average ground pressure of 8.0 or greater pounds per square inch design load, is restricted to main skid roads until the soil is dry to a depth of 10 inches. See SMR 24.</p> <p>Benched logging systems: Avoid benched skid trails, landings, and temporary roads. One benched landing is expected to be needed in unit 156. Prior to determining placement, an onsite review will be conducted in this unit with the hydrologist to confirm placement is in the best available location for operability, to minimize resource impacts and to develop required resource protection measures. No other benched temporary roads or landing needs were identified during the IDT process. If, during operations a need for a bench system is identified, then appropriate specialists will be consulted and the necessary mitigations will be implemented.</p> | 1.1, 1.2, 1.9, 1.10, 1.12, 1.13, 2.7, 5.2, 5.3, 5.6 | Hydrologist, Soil Scientist, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation, post-implementation |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|-----------|---------------|------------------------------------|--------------------|--|--|--|---|
| 4 | All Units | All Areas | Aquatic Resources, Soils/Hydrology | Mechanical/ Hand | <p>Equipment Operations in RCAs: Within RCAs, all equipment operations should be limited to slopes $\leq 20\%$ if the slope is directly above, and runs continuously down to a drainage feature. If the slope is $> 20\%$, but does not slope directly into the creek, the 30% rule with no short pitches to 35% as stated in "Equipment Operations - Upland" SMR 3 should be followed. Do not track up and down drainage pathways and minimize all equipment movement through swales. Equipment will avoid seasonally wet areas, but will be allowed to reach into the TKO of these locations to meet site objectives. When equipment is operating inside RCAs near the hydrologic feature, minimize ground disturbance with short perpendicular entries into the RCA. Backblade any berms created by equipment that could concentrate water within areas with topographically low relief (flat) areas. Equipment will not cross seasonal streams except at pre-approved designated crossings. Within RCAs all bare ground resulting from equipment operations will be mulched to standards. When operating in WBBZs all bare ground will be mulched.</p> <p>Grapple Piling and Fuel Piling: No hand, grapple or any type of natural or activity fuel piling (temporary or permanent) will occur in the WBBZ, or within the 100 year flood plain. Piling may occur in the RCA outside of WBBZ where existing landings occur in the RCA or where pre-approved landings occur in the RCA. Grapple piling will follow the same or greater distance restrictions as mechanical operations on wetland features drainages and perennial streams (fish bearing or non-fish bearing), as described in SMRs 2, 17, and 18. Along ephemeral streams and drainages, grapple piling will be maintained a minimum of 25 feet away from the break in slope on all topographically defined drainages. Piling will occur as far away from the drainage as feasible. Avoid creating large piles at the apex of broad swales and locate piles well outside of drainage pathways.</p> <p>Soil Dryness Criteria: Specific harvesting equipment restrictions relating to dry soil are as follows: The operation of tracked equipment within stream and meadow RCAs, and seasonally wet areas shall only be allowed when soils are dry as defined in SMR 24 to 10 inches. Exceptions will be allowed in specific locations in the RCA, in which the hydrologist or soil scientist determine that equipment access when soils are dry to less than 10 inches would not cause resource damage. Tractor, vehicle or equipment operations off-road at approved crossings within approved areas of Water Body Buffer Zones operations must be limited to when soils are dry to a minimum depth of 12 inches.</p> <p>Soil Type Restrictions: All equipment operations will not operate over Aquoll and Boroll soil or Cryumbrepts-wet soil. This addresses the criteria for operations in water body buffer zones required for Category 6 timber waiver criteria, because with the 25 foot buffer from riparian vegetation and the commitment for no operations over Aquoll and Boroll soil or Cryubrepts wet, and the cover the scenario where an equilibrated watertable at 2 feet might be present. In other words we do not operate over soils with an equilibrated water table at 2 feet under mechanical harvest activities.</p> <p>Reference SMRs 1 and 22-24 for BMPs and measures implemented to meet LRWQCB requirements.</p> | 1.1, 1.2, 1.8, 1.9, 1.10, 1.12, 1.13, 1.17, 1.19, 2.2, 2.5, 2.6, 2.8, 2.10, 2.13, 5.2, 5.3, 5.6, 7.1, 7.2, 7.3 | Aquatics Biologist, Hydrologist, Soil Scientist, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation, post-implementation |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----------------------|---------------|------------------------------------|--------------------|--|--|--|---|--|--|--|-----------------------|--|--|--|-----|-----|------|-------|--|-----|------|------|--------|---------|-----------------|--|--|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|-----|-----|-----|-----|-------|-----|-----|----|----|-------|----|----|----|----|-------|----|----|----|----|-------------------------------------|--|--|
| 5 | All Units | All Areas | Aquatic Resources, Soils/Hydrology | Mechanical | <p>Equipment Operations in RCAs (continued): Within the RCA adjacent to perennial streams and special hydrologic features, a variable Tractor Keep Out (TKO) area will be provided based on hydrologic features, and under consultation with the aquatics biologist/ hydrologist/soil scientist during unit layout and contract administration. In general, these TKO areas are designated to be a minimum of 25 feet from a riparian feature as identified by presence of a wet soil type (associated with flood plain, springs or meadows), scour, riparian vegetation, slope break to channel etc. Seasonal drainages not having these features will implement a 25 foot TKO. Widths will increase along incised channels and where the slope to the channel increases. On fens, springs and streams with riparian vegetation, a minimum 25 foot TKO from riparian vegetation will be maintained. The TKO will be increased where hydrologic features merge or drainage becomes complex, where wet soils are present, or as needed to protect spring hydrology.</p> <p>Tractor operations will be excluded from the meadows according to the TKO identified in the field and as identified on the sale area maps. The TKO will be flagged on the ground based on hydrologic features or as mapped and described above. Slash or other material created from activities will be removed from the 100-year floodplain.</p> <p>Reference SMRs 1 and 22-24 for BMPs and measures implemented to meet LRWQCB requirements.</p> | 1.1, 1.2, 1.4, 1.8, 1.9, 1.10, 1.13, 1.16, 1.18, 1.19, 2.8, 2.10, 2.13, 5.2, 5.3, 5.6, 7.1, 7.2, 7.3 | Aquatics Biologist, Hydrologist, Soil Scientist, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation, post-implementation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | All Units | All Areas | Soils/Hydrology | Mechanical | <p>Skid Trail Use: Keep skid trail grades as gentle as possible, avoid straight up and down the slope skidding over distances greater than 200 feet. Skid trail patterns shall be agreed to in advance of felling and main skid trails shall be flagged on the ground in advance of felling. Needed main skid trails will be constructed in advance of skidding. Main skid trails will be spaced no less than 75 feet apart, except when converging. Additional skid trails may be agreed upon when soil conditions permit. Harvest operations will be confined to designated main skid trails until soil conditions are dry. Dry soil is defined as soil that when sampled from a specified depth below the surface and placed in the hand and squeezed, the hand shows no significant moisture stains and follows the dryness criteria in SMR 24. Existing skid trails will be used whenever possible except when they do not meet other resource protection measures.</p> <p>Erosion Hazard Rating (EHR) Table: Skid Trail Spacing</p> <table border="1" style="margin: 10px auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th colspan="5">Guidelines for Waterbars Tractor Skid Trails or Roads</th> </tr> <tr> <th rowspan="2"></th> <th colspan="4">Erosion Hazard Rating</th> </tr> <tr> <th>1-6</th> <th>6-7</th> <th>9-10</th> <th>11-13</th> </tr> <tr> <th></th> <th>Low</th> <th>Med.</th> <th>High</th> <th>V High</th> </tr> <tr> <th>% Slope</th> <th colspan="4">Spacing in Feet</th> </tr> </thead> <tbody> <tr> <td>1-6</td> <td>400</td> <td>350</td> <td>300</td> <td>250</td> </tr> <tr> <td>7-9</td> <td>300</td> <td>250</td> <td>200</td> <td>150</td> </tr> <tr> <td>10-14</td> <td>200</td> <td>175</td> <td>150</td> <td>125</td> </tr> <tr> <td>15-20</td> <td>150</td> <td>120</td> <td>90</td> <td>60</td> </tr> <tr> <td>21-40</td> <td>90</td> <td>70</td> <td>50</td> <td>30</td> </tr> <tr> <td>41-61</td> <td>50</td> <td>40</td> <td>25</td> <td>15</td> </tr> </tbody> </table> | Guidelines for Waterbars Tractor Skid Trails or Roads | | | | | | Erosion Hazard Rating | | | | 1-6 | 6-7 | 9-10 | 11-13 | | Low | Med. | High | V High | % Slope | Spacing in Feet | | | | 1-6 | 400 | 350 | 300 | 250 | 7-9 | 300 | 250 | 200 | 150 | 10-14 | 200 | 175 | 150 | 125 | 15-20 | 150 | 120 | 90 | 60 | 21-40 | 90 | 70 | 50 | 30 | 41-61 | 50 | 40 | 25 | 15 | 1.2, 1.9, 1.10, 1.13, 5.2, 5.3, 5.6 | Hydrologist, Soil Scientist, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation |
| Guidelines for Waterbars Tractor Skid Trails or Roads | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Erosion Hazard Rating | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 1-6 | 6-7 | 9-10 | 11-13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Low | Med. | High | V High | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| % Slope | Spacing in Feet | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1-6 | 400 | 350 | 300 | 250 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7-9 | 300 | 250 | 200 | 150 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10-14 | 200 | 175 | 150 | 125 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 15-20 | 150 | 120 | 90 | 60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 21-40 | 90 | 70 | 50 | 30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 41-61 | 50 | 40 | 25 | 15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|-----------|---------------|------------------------------------|--------------------|--|--|--|---|
| 7 | All Units | All Areas | Aquatic Resources, Soils/Hydrology | Mechanical | <p>Skid Trails in RCAs: Main skid trails will be located outside of the RCAs wherever possible. Do not track up and down drainage pathways and minimize all equipment movement through swales. Avoid locating skid trails parallel to streams when working within RCAs in the near stream zone. Temporary ephemeral stream crossings for skid trails will use brush mats, dips or corduroy. If soil is placed on a crossing for a drivable surface, use filter cloth under the soil to prevent soil from entering stream. Collect soil in filter cloth or otherwise remove soil off site when dismantling the drivable surface structure. Crossing materials will be removed as soon as possible following the treatment and will be implemented by October 15th of that year. All crossing materials on seasonal channels that consist of additional fill will be removed immediately after use when operating after October 15th of that year.</p> <p>Reference SMR 6 EHR Table and SMRs 1 and 22-24 for BMPs and measures implemented to meet LRWQCB requirements.</p> | 1.2, 1.8, 1.9, 1.10, 1.13, 1.19, 2.8, 2.10, 2.13, 5.2, 5.3, 5.6, 7.2, 7.3 | Aquatics Biologist, Hydrologist, Soil Scientist, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation, post-implementation |
| 8 | All Units | All Areas | Soils/Hydrology | Mechanical | <p>Skid Trails for Seasonal Erosion Control: All skid trails over 30% slope will be mulched. Skid trails will have waterbars spaced according to soil maximum EHR and slope per SMR 6. Implement mulching of skid trails using slash, certified weed free rice, straw or wood chips, whichever is available, on soils with very high EHR, and where the residual % ground cover does not meet the ESC requirements as described in the Soil Specialists Report for the Sagehen Project. Mulch will be a minimum of 2 inches to a maximum of 4 inches in depth within WBBZs outside of the 100-year floodplain. This requirement may be modified after an on-site inspection by the soil scientist or hydrologist. If slash is used for mulch, the fuels officer will be involved prior to and during implementation.</p> | 1.2, 1.9, 1.10, 1.13, 1.20, 1.21, 2.13, 5.2, 5.3, 5.6 | Fuels Officer, Hydrologist, Soil Scientist, TSA, Vegetation Officer | Implementation, post-implementation |
| 9 | All Units | All Areas | Aquatic Resources, Soils/Hydrology | Mechanical | <p>Skid Trail Post-Implementation in RCAs: For special conditions with low gradient skid trails within RCAs, berms will be pulled back rather than have water bars placed, as approved by the TSA in coordination with a soil scientist or hydrologist. Mulch all skid trail crossings in RCAs, outside of the 100-year floodplain.</p> | 1.2, 1.8, 1.9, 1.10, 1.13, 1.19, 1.20, 1.21, 2.8, 2.13, 5.2, 5.3, 5.6, 7.3 | Aquatics Biologist, Hydrologist, Soil Scientist, TSA, Vegetation Officer | Implementation, post-implementation |
| 10 | All Units | All Areas | Soils/Hydrology | Mechanical | <p>Landing Construction: Utilize existing landings where possible, new and existing landing locations potentially used are shown in the Sagehen Project Record. Locate all new landings off of main public travel corridors outside of the WBBZ.</p> <p>Landing Locations: landing locations shall be carefully planned to minimize the number needed, and will consider site-specific factors such as topography, watershed and other resource protection concerns, and contract operational needs. For landings that service more than 15 acres of harvest, Purchaser shall stage-log by felling, skidding and removing of included timber in two or more separate operations to limit landing size. Where using existing landings that need to be increased in size for biomass and chip van access the landings will be extended in size away from drainages. If impact may not be minimized the operator will consider feasibility of moving biomass in the upcoming year when biomass can be stored off-site.</p> <p>Where site-specific resource protection concerns are not otherwise limiting, the number of landings should not exceed 1 landing per 30 acres. To minimize the number of landings, utilize roads for skidding unless site conditions rule this out due to possible safety or resource protection concerns.</p> | 1.1, 1.2, 1.10, 1.12, 1.13, 1.16, 2.10, 2.11 | Hydrologist, Soil Scientist, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|-----------|---------------|------------------------------------|--------------------|---|--|--|---|
| 11 | All Units | All Areas | Aquatic Resources, Soils/Hydrology | Mechanical | Landings in RCAs: No new landings will be located within an RCA unless deemed necessary by the interdisciplinary team; when feasible, preferably choose existing landings outside of the RCA. No new landing locations have been identified as needed within RCAs. All existing landings in RCAs will be subsoiled and mulched unless a hydrologist/soils scientist determines it is not necessary. If construction or relocation of a landing within an RCA appears to be necessary, consult with the appropriate resource specialist to ensure potential impacts are mitigated. Biomass, logs, tree tops and logging slash will not be landed such that they obstruct drainages or enter the TKO or WBBZ as is applicable based on LRWQCB stream classification. | 1.1, 1.2, 1.10, 1.12, 1.13, 1.16, 1.19, 2.10, 2.13, 7.2, 7.3 | Aquatics Biologist, Hydrologist, Soil Scientist, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation, post-implementation |
| 12 | All Units | All Areas | Soils/Hydrology | Mechanical | Landings & Skid Trails Post-Implementation: Subsoil with a winged subsoiler on landings and the first 100 feet from the landing's primary skid trails. Subsoiling other skid trails in highly compacted areas will be evaluated on a site by site basis. The need for the tilling of skid trails would be reviewed by a soil scientist or hydrologist, and the timber sale administrator, and would be restricted to areas on slopes less than 25%, where residual trees would not be excessively damaged (root tearing leaving areas open to disease) and on those trails that do not contain excessive rocks unless otherwise agreed with the hydrologist/soil scientist. Subsoiling will always be performed perpendicular to any slope. | 1.12, 1.13, 1.16, 1.17, 1.21, 2.10, 2.13 | Hydrologist, Soil Scientist, TSA, Vegetation Officer | Implementation, post-implementation |
| 13 | All Units | All Areas | Soils/Hydrology, Vegetation Mgmt | Mechanical/ Hand | Application of Sporax® will follow all state and federal rules and regulations as they apply to pesticides, including the Sporax® label requirement. Sporax® will not be applied within 25 feet of running water. Sporax® will be applied to all pine stumps ≥ 14 inch diameter within 4 hours of creation. Sporax® will not be applied during periods of sustained rain. A Pesticide Use Proposal (FS-2100-2) for the application of Sporax® has been completed and approved, and will be present in the project file and contract. In addition, the project file and contract will include a spill plan tiered to the Forest Spill Plan. Mountain yellow legged frog individuals have been sighted in areas associated with unit 61 (Emphasis areas 1 and 2), unit 91 (Emphasis area 2), and unit 213 (Emphasis areas 1, 2, 4, and 6). Unit 213 has the potential to cut trees greater than 14 inches dbh, therefore Sporax® may be applied. An Aquatics biologist will review areas within 500 feet of occupied sites of MYLF to determine if application of Sporax® should be avoided. | 1.19, 5.7, 5.8, 5.9, 5.10, 5.11, 5.12, 7.2, 7.3, 7.4 | Aquatics Biologist, Hydrologist, Soil Scientist, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation |
| 14 | All Units | All Areas | Aquatic Resources, Soils/Hydrology | Mechanical/ Road | Water Sources: <ul style="list-style-type: none"> • Use an approved water source for obtaining water. Water drafting sites in the project area will be established on permanently flowing streams that have sufficient flow to avoid depletion of pool habitat. • Where streams are the sole water source, drafting would be allowed until stream flows reach 2 cfs. Below 2cfs, drafting would only be allowed in previously developed off-site water impoundments and according to guidelines as outlined in the Tahoe National Forest Land and Resource Management Plan (LRMP). • Install screens on water intake lines to prevent entrainment of biota. • To avoid impacts to Mountain Yellow-Legged Frog, identify all drafting sites to be used for project implementation, and report these to the aquatics biologist to allow the implementation of the mitigation measures listed in SMR 31. • Do not overfill tanks when collecting water as this can lead to increased sedimentation to the stream channel. • Do not back water trucks beyond the established access developed to access the water source. • If use of water source creates sediment movement on access route. Apply clean crushed gravel or other means to control sediment, and maintain water quality. • If a water drafting source within the 100-year floodplain is not currently rocked, and added controls are needed to prevent sediment from washing into the water source, use straw bales, staked waddles or other methods to filter sediment. | 1.19, 1.20, 1.21, 2.4, 2.5, 2.11, 2.13 | Aquatics Biologist, Road Engineer, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|-----------|---------------|--|--------------------|--|--|---|---|
| 15 | All Units | All Areas | Soils/Hydrology | Mechanical/Road | <p>Have an approved Spill Prevention Control and Countermeasure plan.</p> <ol style="list-style-type: none"> Plan for appropriate equipment refueling and servicing sites during project planning and design. Allow temporary refueling and servicing only at approved locations, which are well away from water or riparian resources, outside of RCAs. Develop or use existing fuel and chemical management plans (for example, spill prevention control and countermeasures (SPCC), spill response plan, emergency response plan) when developing the management prescription for refueling and servicing sites. Provide training for all personnel handling fuels and chemicals in their proper use, handling, storage, and disposal. Avoid spilling fuels, lubricants, cleaners, and other chemicals during handling and transporting. | 1.1, 1.2, 2.4, 2.10, 2.11, 2.13, 7.4 | TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation, post-implementation |
| 16 | All Units | All Areas | Fuels Mgmt, Soils/Hydrology, Vegetation Mgmt, Wildlife | All | <p>Ground cover requirements for all activities: To protect against accelerated erosion and hydrophobicity and to maintain long-term soil productivity, the following guidelines should be applied during the planning and implementation of fuels treatments and vegetation management.</p> <p>Downed Large Wood Requirements Where grapple piling is proposed, maintain downed wood retention adequate to contribute to organic matter while attaining desired conditions as described in the Sagehen EA. Retain large downed wood as prescribed by emphasis area while meeting fuels objectives (small areas of heavier concentrations that are not continuous on the landscape). Provide for downed wood retention per emphasis area prescription. All down logs greater than 15 inches diameter and 10 feet long will be retained. Crushing of logs with equipment will be avoided. Target down log levels post fuels treatments range from 15-20 logs per acre in emphasis areas 1 and 2 and 3-7 logs per acre in the other emphasis areas. In areas not meeting downed wood requirements, incorporate burn prescription measures such as lining, and contract requirements to maintain existing downed logs (preference to spring burn prescription).</p> <p>Ground Cover - Monitoring The following are used as a general guide that will be practically implemented and assessed using random implementation monitoring and focused monitoring of areas of concern, through the BMPEP monitoring program. If the minimum effective soil cover requirements are not being met (i.e. ground cover requirements are not shown to be effective in controlling erosion) management practices should be reviewed and adjusted as needed to achieve soil cover objectives, and mitigation measures such as mulching will be implemented as needed to reduce soil erosion.</p> <p>General Ground Cover Requirements Outside of RCAs (post-implementation of all treatments to meet Standards and Guides and SMRs)</p> <ul style="list-style-type: none"> On soils with low to moderate erosion hazard ratings (0-25% slope), maintain 45% ground cover. On soils with high erosion hazard ratings (25-50 % slope), maintain 55% ground cover. On soils with very high hazard ratings (greater than 50% slopes), maintain 70% ground cover. <p>SMR 8 regarding mulch depth requirements also applies.</p> | 1.9, 1.13, 1.16, 1.17, 1.20, 1.21, 2.13, 5.4, 6.2, 6.3 | Fuels Officer, Hydrologist, Soil Scientist, TSA, Vegetation Officer, Wildlife Biologist | Project Design, Contract Prep, Contract Layout, Implementation, post-implementation |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|-----------|---------------|---|--------------------|--|--|---|---|
| 17 | All Units | All Areas | Aquatic Resources, Fuels Mgmt, Soils/Hydrology, Vegetation Mgmt, Wildlife | All | <p>Ground Cover Requirements Within the RCAs</p> <p>Mulching will occur over bare ground created by management activities within the RCA with particular attention paid near the hydrologic feature. Upland areas of the RCA will meet the General Ground Cover requirements within the RCAs.</p> <ul style="list-style-type: none"> • On soils with low to moderate erosion hazard ratings (0-25% slope), maintain 70% ground cover. • On soils with very high erosion hazard ratings (greater than 25% slope), maintain 75% ground cover. • In near stream zones for perennial streams and intermittent streams or seasonally wet areas with riparian and meadow features, approximately 75% ground cover will be required. Large patches of bare ground will be mulched. Within Water Body Buffer Zones, ground cover should meet an average of 2 inches in depth and a maximum of 4 inches with 90% ground cover. • Mulch will be required on endline drag channels that exceed 4 inches depth on greater than 5% slopes in RCAs and 10% slopes on adjacent uplands where endlining is required. <p>See SMR 26 regarding weed-free requirement of mulch. SMR 8 regarding mulch depth requirements also applies.</p> | 1.9, 1.13, 1.20, 1.21, 2.13, 5.4, 6.2, 6.3, 7.2, 7.3 | Aquatics Biologist, Fuels Officer, Hydrologist, Soil Scientist, TSA, Vegetation Officer, Wildlife Biologist | Contract Prep, Contract Layout, Implementation, post-implementation |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|-------------------|---------------|---|-------------------------|---|-------------------------------------|---|---|
| 18 | All Units, 46, 76 | All Areas | Aquatic Resources, Fuels Mgmt, Sensitive Plants, Soils/Hydrology, Vegetation Mgmt, Wildlife | Pile Burning/ Underburn | <p>Burn Prescriptions in RCA</p> <ul style="list-style-type: none"> • Design prescribed fire treatments to minimize disturbance of ground cover and riparian vegetation in RCAs. • No active ignitions for underburning would occur within 25 feet of riparian vegetation and 50 feet from fens. Down wood will be retained based on site conditions to achieve riparian conservation objectives and ground cover requirements. If logs need to be removed from channels to achieve fuel objectives the hydrologist or soil scientist will be consulted. • No active ignitions for prescribed burns in Waterbody Buffer Zones but broadcast burns can creep into these areas. • No hand piling or burning would occur within 25 feet from riparian vegetation and stream channels or within meadows. • The fire prescription should target the lowest possible soil temperature increase for the shortest duration of time. • The fire prescription should target the highest duff layer moisture levels consistent with the fuel reduction and soil cover objectives. • Avoid burning road drainage outlets, such as waterbars and rolling dips, and out sloped roads within RCAs. If such areas do get burned, consider mitigations measures such as mulching to reduce sediment transport. • If fire from underburning threatens to burn riparian vegetation and aquatic habitat, and/or the ground cover objectives will not be achieved, then the fire would be controlled or extinguished using minimally ground-disturbing methods and/or water application. • No active ignition or pile burning within 50 feet of fens and springs. This distance may need to be increased depending on ground conditions to prevent burning through wetland features. Fire creep is allowed but not encouraged. • Burning shall be conducted under conditions that facilitate low intensity surface fire. If needed to achieve burn objectives and fen protection objectives, prior to burning, slash remaining from prior logging activities will be modified around the fen to ensure objectives can be met. Prescribed fire prescriptions surrounding springs, fens and wet meadows will avoid application during periods of extended drought conditions. • Underburn prescriptions in mastication units will favor soil moisture conditions of 20% soil moisture (soil is not wet, but is cool by touch) when possible. • To prevent effects to MYLF consult the aquatics biologist about, or do not allow the use of foam during prescribed burning activities within RCAs. | 1.8, 1.19, 2.13, 6.2, 6.3, 7.2, 7.3 | Aquatics Biologist, Botanist, Fuels Officer, Hydrologist, Soil Scientist, TSA, Vegetation Officer, Wildlife Biologist | Contract Prep, Contract Layout, Implementation, post-implementation |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|-----------|---------------|-----------------|--------------------|---|---|---|---|
| 19 | All Units | All Areas | Soils/Hydrology | All | <p>Erosion Prevention Measures in activity areas : Erosion control work is inspected prior to the end of the normal operating season to determine whether the work is adequate. Additional measures will be applied when needed to meet water quality standards.</p> <p>Erosion Control Plan: All phases of project implementation will include a BMP checklist that will be developed based on the measures described in the Sagehen Project Environmental Assessment Appendix A, Standard Management Requirements (SMRs). The project SMRs are considered to be a part of this erosion control plan, and will be kept on site during implementation and be incorporated into an applicable check list. Any ground disturbing activities that are determined to fall outside of the exemption from the requirement to prepare an erosion control plan, will have additional information including maps, illustrations, and wet weather operations as deemed necessary and described under BMP 2.13 of the Erosion Control Handbook.</p> <p>Vegetation Management: All necessary erosion control measures for logging operations will be implemented as soon as possible after logging operations cease in the area and prior to runoff producing rainfall. All erosion prevention measures will be implemented by October 15th. For harvest activities continuing beyond October 15th, erosion control measures on active sites will be implemented at the first opportunity.</p> <p>Roads: Erosion control measures are implemented by the end of the normal operating season, (usually October 15 for this area) and kept current when road construction occurs outside that period. Stabilization of fills and completion of winterization is required by October 15. This includes the removal of temporary culverts, culvert plugs, diversion dams, or elevated stream crossing causeways. It also includes installation and/or removal of crossdrains, energy dissipators, sediment basins, berms, debris racks, mulching, or other items needed to control erosion. Other preventive measures include the removal of debris, obstructions, and spoil materials from channels and floodplains.</p> | 1.1, 1.3, 1.13, 1.14, 1.16, 1.17, 1.19, 1.20, 1.21, 2.4 2.8, 2.13, 7.2, 7.3 | Hydrologist, Road Engineer, Soil Scientist, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation, post-implementation |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|-----------|---------------|-----------------|--------------------|--|--|---|---|
| 20 | All Units | All Areas | Soils/Hydrology | Road | <p>Road Management</p> <p>Coordination with Road Engineer: Before pulling equipment from the sale area, the TSA will coordinate a review period with the road engineer to ensure road features (drainage, surface, etc.) achieve road management objectives.</p> <p>Repair and maintain up to 23 miles (miles determined by GIS and are approximate) of roads, that provide access for the Sagehen Project. This work includes: grading, clearing, ditch and culvert cleaning and repair. The repair work associated with these projects is the maintenance work to repair and restore the road to accommodate the planned traffic and be consistent with the existing traffic service level, water quality objectives, and Road Management Objectives.</p> <p>Low water crossings on Class I and II drainages on existing roads will incorporate additional measures during haul to prevent sediment transport from increased travel through drainages. This may include additional rock and culvert installations based on site conditions. A 1-ft covering of weed-free straw mulch will be placed between the natural channel and imported fill so no additional fill remains in the existing channel. Fill will be removed to the previous existing dip configuration by 10/15 or the first opportunity after this date if conditions allow operations to continue past this date as described below.</p> <p>Road Dust Abatement: Water will be used on major transportation routes for dust abatement.</p> <p>Ephemeral Stream Crossings on Temporary Roads</p> <ul style="list-style-type: none"> Crossings will be designed to provide measures to pass flows, and may include extra protection measures, such as gravel, culverts or drainage controls when needed. Typically, the flow volume through these crossings is low and there is a low risk of significant precipitation during the operating period. Wet weather clauses are included to limit operations in inclement weather, when soils deform or compact, and road rutting and deformation become significant. Temporary crossings will be removed the same season they are installed, and removal will occur no later than October 15th of the season of installation. Temporary roads crossing ephemeral drainages will be designed to pass flow using drainage dips, waterbars or culverts when needed. Removal of temporary roads on ephemeral drainages will include re-establishing drainage passage, mulching, and pulling outside berms to restore overland flows. See "Temporary Roads" for more design elements regarding ephemeral crossings. <p>Traffic Control During Wet Periods: Hauling on all roads would be restricted to the dry season when roads are stable. No Winter Hauling will be conducted, although some operations may continue past 10/15 to 11/30 if conditions permit as determined by the soil scientist/hydrologist and TSA.</p> <p>Hauling on all roads would be restricted to the dry season when roads are stable, or as per the 9/95 Wet Weather/Winter Hauling/Logging Guidelines if that option is implemented.</p> | 1.1, 1.14, 1.19, 1.21, 2.2, 2.4, 2.5, 2.7, 2.8, 2.12, 2.13 | Hydrologist, Road Engineer, Soil Scientist, TSA | Contract Prep, Contract Layout, Implementation, post-implementation |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|-----------|---------------|-----------------|--------------------|--|---|---|-------------------------------------|
| 21 | All Units | All Areas | Soils/Hydrology | Road | <p>Temporary Roads (including previously-tilled temporarily used roads):</p> <ul style="list-style-type: none"> • Only temporary roads identified in the NEPA process will be reused. If additional roads are necessary, the hydrologist will be notified and appropriate documentation and remedial action will be incorporated. • If it is determined that additional stream crossings are needed on temporary roads, they must be approved by the interdisciplinary team. <ul style="list-style-type: none"> • In unit 163, the temporary road will be closed when not in use for project activities (blocked, bermed, or otherwise closed to public access). <p>Design Criteria:</p> <ul style="list-style-type: none"> • Temporary road design and location will follow the following principles: Temporary roads will follow previously-used road beds where available and appropriately located. • Use rolling dips and an out-sloped road template. • Limit the amount of temporary road construction by maximizing the skidding distance. • Minimize the length and width of the roads. Avoid unstable areas where there is potential for mass soil erosion. • During implementation of the proposed action or action alternatives, if vehicles stir up fines in dry streambeds or where needed for support during project activities, additional clean 1"+ gravel will be added to the crossing surface. • Use weed-free straw 1-foot deep under gravel as a barrier between native soils and the gravel within the 100-year floodplain so the material can be removed after use. <p>Restoration (also see SMR 41 for specific actions):</p> <ul style="list-style-type: none"> • Excess materials placed in drainage ways would be removed from drainages after use. • Decommission all temporary roads. Temporary roads will be decommissioned according to Renewable Resources Planning Act (16 USC 1608): appropriately draining the road to establish a hydrologically neutral state, pulling berms (particularly including the mineral soil) and re-establishing the natural contour in necessary areas. Particular attention will be paid to roads within the RCA or when crossing drainages. • Where needed, mulch will be applied to control erosion. Subsoil temporary roads where determined to be necessary after review by a soils scientist or hydrologist. • Decommissioned temporary roads in RCAs will be mulched to control erosion, but mulch will not be placed in the 100 year flood plain. • Block or otherwise prevent long-term access over temporary roads, where needed to deter unauthorized use, place logs and logging slash over the first 200 feet. | 1.1, 1.6, 1.14, 1.19, 2.1, 2.2, 2.4, 2.6, 2.7, 2.8, 2.12, 2.13, 7.1, 7.2, 7.3 | Hydrologist, Road Engineer, Soil Scientist, TSA | Implementation, post-implementation |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|-----------|---------------|-----------------|--------------------|--|------------|--|---|
| 22 | All Units | All Areas | Soils/Hydrology | All | <p>Lahontan Regional Water Quality Control Board (LRWQCB) Provisions: In addition to the following requirements, SMRs 3, 6, 7, 8, 11, 14, 18, 21 and 41 detail measures taken in Waterbody Buffer Zones and 100-year floodplains to insure consistency with LRWQCB requirements.</p> <p>Mechanical equipment: Equipment will only operate on dry soils as defined by the LRWQCB. See SMR 24 detailing work in WBBZs.</p> <p>Activities Conducted Under Category 6: Activities conducted under Category 6 will follow the eligibility requirements and conditions as described in Board Order No. R6T-2009-0029 Condition Waiver of Waste Discharge Requirements for Waste Discharges Resulting from Timber Harvest and Vegetation Management in the Lahontan Region (e.g. 2009 Timber Waiver). The required monitoring and reporting conditions would also be followed as described in the Order.</p> <p>Activities Conducted Under Category 4: Activities conducted under Category 4 will follow the eligibility requirements and conditions as described in 2009 Timber Waiver. The required monitoring and reporting conditions would also be followed as described in the Order.</p> <p>Hand Piles Operating Under Category 2: Piles will not be located within 100-year floodplain of any watercourse. No piles will be located within 25 feet of Waterbody Buffer Zones. No more than 10% of the area within the WBBZ shall be covered in piles. This condition means less than 10% of the WBBZ area is subject to vegetation management activities.</p> <p>Note: activities not following these requirements will apply for an applicable category.</p> <p>Temporary Roads: For temporary roads the proposed action will meet the criteria of Appendix N for the Lahontan Timber Waiver Waste Discharge Prohibition Exemption Information, Page 6 of 6 (Attachment N) Board Order No. R6T-2009-0029 Adopted May 14, 2009. Activities for temporary roads will meet all the following conditions:</p> <ol style="list-style-type: none"> a. Temporary stream crossings are constructed with clean cobbles or logs. If sand or soil is used as running surface, BMPs must be in place (e.g. filter cloth, brow logs) to prevent discharge of earthen materials to surface waters. b. Stream crossings are completely removed at the end of operations, or prior to the winter period (as defined in Attachment A of the Timber Waiver), whichever is sooner. c. Eligibility criteria and conditions of applicable Waiver Category are met. | | Aquatics Biologist, Fuels Officer, Hydrologist, Road Engineer Soil Scientist, TSA, Vegetation Officer | As applicable prior to, during, and after all management activities |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|-----------|---------------|-----------------|--------------------|--|------------|--|--|
| 23 | All Units | All Areas | Soils/Hydrology | All | <p>Lahontan Regional Water Quality Control Board (LRWQCB)(Cont'd)</p> <p>100-Year Floodplains, based on the definition in the 2009 LRWQCB timber waiver Attachment A, are areas determined based on delineations completed or approved by the U.S. Army Corps of Engineers, the Federal Emergency Management Agency, or an individual qualified to make floodplain delineations. If these agencies have not completed formal delineations, the Water Board staff may agree to the use of best professional judgment; field verification by staff may be needed. These areas include land adjacent to waterbodies that extend to the outer perimeter of lands which experience flooding or are inundated with water during 100-year flood events. At a minimum, dischargers shall designate the 100-year floodplain area to encompass the bed and bank of any ephemeral drainage course. If other indicators are present such as wet vegetation on terraces, or other high water indicators, such as stranded debris, these should also be taken into consideration. For cases of unconfined channels, other indicators may need to be considered.</p> <p>The following would apply to all Waiver Categories with Provisions for 100-Year Floodplains:</p> <p>No piling or burning of piles will occur in 100-year floodplains.</p> <p>No new landings will be located in 100-year floodplains.</p> <p>No existing landings are located in 100-year floodplains.</p> <p>No equipment will enter 100-year flood plains except at existing roads and crossings.</p> <p>Chips or masticated material will not be placed within the 100 year flood plain.</p> <p>Prohibited discharges to 100-year floodplains do not occur if activities meet a. or b., and c. below:</p> <p>a. Chips or masticated material is incorporated into the soil, or</p> <p>b. Chips or masticated material do not exceed an average of two inches in depth, with a maximum of four inches, and</p> <p>c. Eligibility criteria and conditions of applicable Waiver Category are met.</p> | | Aquatics Biologist, Fuels Officer, Hydrologist, Road Engineer Soil Scientist, TSA, Vegetation Officer | As applicable prior to, during, and after all management activities |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------------------|---|---|--|---|--|------------------------------------|-----------------------|-------------|------------------------|--|--|-------------------------|-----------|--|---|--|--|------------|---|--------------------------------|--|--|------------|---|---|--|--|------------|---|--|---|--|-----------------|--|---|--|
| 24 | All Units | All Areas | Soils/Hydrology | All | Lahontan Regional Water Quality Control Board (LRWQCB)(Cont'd) Protocol for determining operability of soils based on soil texture when working in WBBZ. | | | | | Aquatics Biologist, Fuels Officer, Hydrologist, Road Engineer Soil Scientist, TSA, Vegetation Officer | As applicable prior to, during, and after all management activities | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Soil Moisture % Increases Downward</th> <th style="width: 20%;">Coarse Soils</th> <th style="width: 20%;">Light Soils</th> <th style="width: 20%;">Med. Soils (<35% clay)</th> <th style="width: 25%;">Heavy Soils (>35% clay)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Dry soils</td> <td>Loamy sands, fine sand loam, very fine sands, coarse sands</td> <td>Fine sandy loams, sandy loams, very fine sandy loam</td> <td>Sandy clay loam, loam, silt loam, sandy clay loam, clay loam</td> <td>Clay loam, sandy clay, silty clay loam, clay</td> </tr> <tr> <td style="text-align: center;">Moist soil</td> <td>Dry, loose, single grained flows thru fingers</td> <td>Dry, loose, flows thru fingers</td> <td>Powdery, dry, sometimes slightly crusted but breaks down into powdery conditions</td> <td>Hard, baked, cracked sometimes has loose crumbs on surface</td> </tr> <tr> <td style="text-align: center;">Moist soil</td> <td>Still appears dry, will not form a ball with pressure</td> <td>Still appears to be dry; will not form a ball</td> <td>Somewhat crumbly, but will hold together from pressure</td> <td>Somewhat pliable; will form ball under pressure. At plastic limit.</td> </tr> <tr> <td style="text-align: center;">Moist soil</td> <td>Still appears dry, will not form a ball with pressure</td> <td>Tends to ball under pressure but seldom will hold together</td> <td>Forms a ball and is very pliable, sticks readily if high in clay.</td> <td>Easily ribbons out between fingers, has a slick feeling. At plastic limit.</td> </tr> <tr> <td style="text-align: center;">Very moist soil</td> <td>Tends to stick together slightly, sometimes forms a very weak ball</td> <td>Forms a weak ball breaks easily, will not stick. Plastic limit or nonplastic.</td> <td>Forms a ball and is very pliable, sticks readily if high in clay. Exceeds plastic limit.</td> <td>Easily ribbons out between fingers, has a slick feeling. Exceeds plastic limit.</td> </tr> <tr> <td style="text-align: center;">Wet soils</td> <td>Upon squeezing, free water may appear. Wet outline is left on hand. Nonplastic.</td> <td>Upon squeezing free water may appear. Wet outline left on hand.</td> <td>Can squeeze out free water. Wet outline left on hand.</td> <td>Puddles and free water forms on surface. Wet outline left on hand.</td> </tr> </tbody> </table> | Soil Moisture % Increases Downward | Coarse Soils | Light Soils | Med. Soils (<35% clay) | | | Heavy Soils (>35% clay) | Dry soils | Loamy sands, fine sand loam, very fine sands, coarse sands | Fine sandy loams, sandy loams, very fine sandy loam | Sandy clay loam, loam, silt loam, sandy clay loam, clay loam | Clay loam, sandy clay, silty clay loam, clay | Moist soil | Dry, loose, single grained flows thru fingers | Dry, loose, flows thru fingers | Powdery, dry, sometimes slightly crusted but breaks down into powdery conditions | Hard, baked, cracked sometimes has loose crumbs on surface | Moist soil | Still appears dry, will not form a ball with pressure | Still appears to be dry; will not form a ball | Somewhat crumbly, but will hold together from pressure | Somewhat pliable; will form ball under pressure. At plastic limit. | Moist soil | Still appears dry, will not form a ball with pressure | Tends to ball under pressure but seldom will hold together | Forms a ball and is very pliable, sticks readily if high in clay. | Easily ribbons out between fingers, has a slick feeling. At plastic limit. | Very moist soil | Tends to stick together slightly, sometimes forms a very weak ball | Forms a weak ball breaks easily, will not stick. Plastic limit or nonplastic. | Forms a ball and is very pliable, sticks readily if high in clay. Exceeds plastic limit. |
| Soil Moisture % Increases Downward | Coarse Soils | Light Soils | Med. Soils (<35% clay) | Heavy Soils (>35% clay) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dry soils | Loamy sands, fine sand loam, very fine sands, coarse sands | Fine sandy loams, sandy loams, very fine sandy loam | Sandy clay loam, loam, silt loam, sandy clay loam, clay loam | Clay loam, sandy clay, silty clay loam, clay | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Moist soil | Dry, loose, single grained flows thru fingers | Dry, loose, flows thru fingers | Powdery, dry, sometimes slightly crusted but breaks down into powdery conditions | Hard, baked, cracked sometimes has loose crumbs on surface | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Moist soil | Still appears dry, will not form a ball with pressure | Still appears to be dry; will not form a ball | Somewhat crumbly, but will hold together from pressure | Somewhat pliable; will form ball under pressure. At plastic limit. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Moist soil | Still appears dry, will not form a ball with pressure | Tends to ball under pressure but seldom will hold together | Forms a ball and is very pliable, sticks readily if high in clay. | Easily ribbons out between fingers, has a slick feeling. At plastic limit. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Very moist soil | Tends to stick together slightly, sometimes forms a very weak ball | Forms a weak ball breaks easily, will not stick. Plastic limit or nonplastic. | Forms a ball and is very pliable, sticks readily if high in clay. Exceeds plastic limit. | Easily ribbons out between fingers, has a slick feeling. Exceeds plastic limit. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Wet soils | Upon squeezing, free water may appear. Wet outline is left on hand. Nonplastic. | Upon squeezing free water may appear. Wet outline left on hand. | Can squeeze out free water. Wet outline left on hand. | Puddles and free water forms on surface. Wet outline left on hand. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 25 | All Units | All Areas | Sensitive Plants | All | Sensitive Plants All occurrences of sensitive plants, including all found at a later time, should be flagged and no ground-disturbing activities should be implemented within the flagged areas. When sensitive plant occurrences are found within fens, the whole fen should be protected and so trees whose roots contribute to the integrity of the fen border shall be retained and the 25 foot TKO would also apply. Monitoring should take place during project activities and directly after project activities culminate in the vicinity of sensitive plant occurrences to ensure protective measures are sufficient. If impacts to a sensitive plant occurrence are detected, monitoring should take place to determine whether or not the occurrence is still extant (has not been extirpated) and to determine whether impacts will have lasting adverse effects. | | | | | Botanist, TSA, Vegetation Officer | As applicable prior to, during, and after all management activities | | | | | | | | | | | | | | | | | | | | | | | | | |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|---|---------------|---|--------------------|--|------------|--|---|
| 26 | All Units | All Areas | Non-Native Plants | All | <p>Non- Native Invasive Plants of Concern This measure will be consistent with the current contract clause provision regarding equipment cleaning. Include known locations of invasive species of concern on Timber Sale Administration maps so that units with noxious weed sites in close proximity can be avoided, to prevent contamination of equipment and adjacent areas. Two occurrences of musk thistle are known in T19N, R16E, Section 32. One is in the NE ¼ of the SW ¼ and the other is in the SW ¼ of the NW ¼. Musk thistle and tall whitetop are known in the NE ¼ of the SW ¼ of Section 29 (T19N, R16E). See Tahoe National Forest GIS Library to find the most recent Invasive Plant Inventory layer. Any materials for erosion control including gravel or straw bales should be weed free certified (although it is not proposed to bring in any materials at this time).</p> <ol style="list-style-type: none"> 1. Prevention/Cleaning: Require all off-road equipment and vehicles (Forest Service and contracted) used for project implementation to be weed-free. The location of equipment's most recent operation shall be disclosed and off-road equipment should be cleaned prior to moving onto Sale Area when equipment is known to be from a potentially infested area. Off-road equipment shall be cleaned prior to moving from a unit shown to be infested with noxious weeds on Sale Area Map. Cleaning is not required for vehicles that will stay on the roadway. 2. Prevention/Road Construction, Reconstruction, and Maintenance: All earth-moving equipment, gravel, fill, or other materials need to be weed free. Use onsite sand, gravel, rock, or organic matter where possible. 3. Prevention/Revegetation: Use weed-free equipment, mulches, and seed sources. Avoid seeding in areas where revegetation will occur naturally, unless noxious weeds are a concern. Save topsoil from disturbance and put it back to use in onsite revegetation, unless contaminated with noxious weeds. 4. Prevention/Staging Areas: Do not stage equipment, materials, or crews in noxious weed infested areas where there is a risk of spread to areas of low infestation. 5. Small infestations identified during project implementation will be evaluated and hand treated or "flagged and avoided" according to the species present and project constraints. If larger infestations are identified after implementation, they should be isolated and avoided with equipment (and equipment washed as in # 1 above). 6. Monitoring: Monitor for noxious weed invasion after timber sale implementation and after piles are burned. | | Botanist, Fuels Officer, TSA, Vegetation Officer | As applicable prior to, during, and after all management activities |
| 27 | 34, 38, 39, 46, 47, 61, 73, 76, 89, 90, 100, 163, 282 | All Areas | Non-Native Plants, Sensitive Plants, Wildlife | Underburn | <p>Shrub Patches: To guard against widespread cheatgrass invasion and to protect important shrub communities for forage production, avoid ignition in shrub patches that are 1/2 acre or larger. Underburning of up to 30% of these shrub patches is acceptable. The shrub communities of concern include low sagebrush flats, mountain big sagebrush communities on flats and within openings on south facing slopes, and bitterbrush communities. When masticating, only target manzanita, snowbrush and white thorn species. Only target remaining species if they are within the drip line of a leave tree or have the potential to act as ladder fuels.</p> | | Botanist, Fuels Officer, Wildlife Biologist | Implementation, post-implementation |
| 28 | All Units | All Areas | Cultural Resources | All | <p>Archaeological and historic sites: Site Specific Special Protection Measures. Any archaeological sites not evaluated prior to logging will be considered as being eligible for the National Register and will be protected. Archaeologist will be consulted during layout of units that have been identified during project reconnaissance. The areas of concern identified during project reconnaissance will be flagged. These areas will be avoided during logging.</p> | | Archaeologist, TSA, Vegetation Officer | As applicable prior to, during, and after all management activities |

Standard Management Requirements (SMRs)

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|------------|----------------------------------|---------------|--------------------|----------------------------|--|----------------|--|---|
| 29 | All Units | All Areas | Cultural Resources | Pile Burning/ Underburn | Cultural Resources: Protect known archaeological sites during prescribed fire activities as designated by archaeologist. All polygon features will not be burned. Some linear features may be burned as designated by archaeologist. This will include hand removal of fuels from sites, and piling and burning fuels outside of sites as needed. | | Archaeologist, Fuels Officer | As applicable prior to, during, and after all management activities |
| 30 | 80, 85 | 8 | Cultural Resources | All | Protect aspens with historical carvings: Any aspens found with historical carvings and needing protection will be identified prior to the start of aspen treatment operations and these trees will be protected. | | Archaeologist, TSA, Vegetation Officer | As applicable prior to, during, and after all management activities |
| 31 | All Units | All Areas | Aquatic Resources | All | <p>Mountain yellow-legged frog:</p> <p>1. To reduce the potential of impacts to mountain yellow-legged frog (MYLF) where sightings establish the presence of MYLF, implement the following management requirements:</p> <ul style="list-style-type: none"> • Within RCAs noted by the aquatics biologist as MYLF habitat or breeding areas, require no ground disturbing activities during the limited operating period (LOP) of November 30 to May 30. This LOP is needed to avoid possible interference with MYLF during a time when they may move away from stream courses. <p>2. To avoid impacts to MYLF, identify all drafting sites to be used, in conjunction with the proposed action, and report these to aquatics biologist, to allow the implementation of the following mitigation measures:</p> <ul style="list-style-type: none"> • Prior to use each year, water drafting sites where frog habitat is present, a survey will be conducted by a aquatics biologist to determine if frogs are present. <p>If MYLF is found to be present, the biologist will determine whether water drafting mitigations measures are needed. Use of any water source on the Sale Area will be agreed to in writing. Drafting sites shall be located to minimize sediment and maintain riparian resources, channel condition, and MYLF habitat. Use suction strainers with screens less than 2 mm in size. Place draft suction strainer in a bucket to avoid substrate and amphibian disturbance. Draft from deepest water source, near bottom.</p> <p>3. To prevent effects to MYLF consult the aquatics biologist about, or do not allow the use of foam during prescribed burning activities within RCAs.</p> <p>4. Individuals have been sighted in areas associated with unit 61(Emphasis areas 1 &2), unit 91 (Emphasis area 2), and unit 213 (Emphasis areas 1, 2, 4, & 6). Units 61 & 91 are proposed for hand treatment. Hand treatment units will cut trees 14 inches dbh or less, and Sporax® would not be applied to stumps. Unit 213 has the potential to cut trees greater than 14 inches dbh, therefore Sporax® may be applied. An Aquatics biologist will review areas within 500 ft of occupied sites of MYLF to determine if application of Sporax® should be avoided.</p> <p>5. If wetting rain (>.25 inch) occurs during, or within two weeks prior to treatment, a biologist should survey treatment units and temporary roads within .25 mile of RCAs. If species are present, determine appropriate mitigation measures to reduce the risk of direct effects to individuals.</p> | 1.5, 1.19, 2.5 | Aquatics Biologist, TSA, Vegetation Officer | As applicable prior to, during, and after all management activities |
| 32 | 33, 34, 35, 36, 38, 39, 156, 163 | All Areas | Wildlife | All | <p>Northern Goshawk Limited Operating Periods: A LOP will be in effect from February 15 to September 15 for Units 33, 34, 35, 36, 38, 39, and 163. This LOP may be modified by the wildlife biologist if surveys determine nesting will not be affected within ¼ mile of the proposed activities.</p> <p>California Spotted Owl Limited Operating Periods: A LOP will be in effect from March 1 to August 15 for Units 156 and 163. This LOP may be modified by the wildlife biologist if surveys determine nesting will not be affected within ¼ mile of the proposed activities.</p> | 1.5 | Fuels Officer, TSA, Vegetation Officer, Wildlife Biologist | As applicable prior to, during, and after all management activities |

Standard Management Requirements (SMRs)

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| 33 | All Units | All Areas | Aquatic Resources, Sensitive Plants, Wildlife | All | TES species: If any Federally threatened, endangered, proposed, or Forest Service sensitive species previously unknown in the project area are detected or found nesting within 0.25 miles of project activities, appropriate mitigation measures would be implemented based on input from the aquatics biologist, botanist, and/or wildlife biologist. Measures can include, but are not limited to, flagging and avoiding a plant site, implementing a species specific LOP, or designating a protected activity center. | 1.5 | Aquatics Biologist, Botanist, Fuels Officer, TSA, Vegetation Officer, Wildlife Biologist | As applicable prior to, during, and after all management activities |
| 34 | All Units | All Areas | Wildlife | All | Nests/Denning Structures: If large stick nests or signs of active denning are observed in or near trees that are designated for removal or in down logs, the occurrence and location should be reported to the wildlife biologist to determine the need for further review. | | Fuels Officer, TSA, Vegetation Officer, Wildlife Biologist | As applicable prior to, during, and after all management activities |
| 35 | All Units | All Areas | Wildlife | Mechanical/Road | 30 inch dbh Trees: Avoid the felling of trees 30 inches dbh or greater during the implementation of temporary roads, skid trails and landings, to maintain large tree wildlife habitat. If this is not possible, the wildlife biologist would be consulted. | | Road Engineer, TSA, Vegetation Officer, Wildlife Biologist | Contract Layout, Implementation |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|---|---------------|-----------------|--|--|------------|--|--|
| 36 | All Units, 163, 213 | All Areas | Soils, Wildlife | Mechanical/ Hand, Pile Burning/ Underburn | <p>Snag Retention: Large snags (greater than 15 inches dbh) would be retained within all subunits, regardless of emphasis area. Where currently available within emphasis area 1, 2 and 5 subunits, some decadent firs with declining crown characteristics would be retained for future snag recruitment. Where existing snag levels are low, particularly within the plantations, silvicultural prescriptions retain all snags greater than three inches dbh.</p> <p>Underburn and Snags: Hand-constructed fire lines would be placed around large snags before applying low intensity surface fire prescriptions. Each subunit's low intensity surface fire prescription (available in the project record) specifies the numbers of snags to be lined, based on existing numbers of large snags within the subunit. In emphasis area 1 and 2 subunits proposed for underburning, between 10 and 18 large snags per acre would be lined while in emphasis area 4, 5, 6, and 7 subunits, between 2 and 10 large snags per acre would be lined.</p> <p>Pile burn and Snags: In treatment units where hand or grapple piling of fuels would be conducted, piles would be located a sufficient distance from large snags (greater than 15 inches dbh) to ensure the snags did not ignite during pile burning operations.</p> <p>Down Woody Material: In all subunits, regardless of emphasis area, the largest available down logs (larger than 15 inches diameter and ten feet long) would be retained during implementation of silvicultural treatments (mechanical thinning or mastication). Crushing of large down logs with machinery would be avoided.</p> <p>Underburn and Woody Material: In units proposed for application of low intensity surface fire following silvicultural treatments, the largest down logs per acre would be lined to protect them during underburning operations. In emphasis area 1 and 2 subunits, line 15 to 20 large down logs per acre prior to underburning. In emphasis area 4, 5, 6, and 7 subunits, line 3-7 large down logs per acre, with the exception of subunits 163-5, 163-7, and 213-4. In these subunits, approximately 15 to 20 large logs per acre would be lined prior to application of low intensity surface fire. In treatment units proposed for surface fire prescriptions, approximately 30 percent of each unit's area would not be underburned. Small woody material would be retained in these unburned areas of the treatment units.</p> <p>Pile Burn and Woody Material: In treatment units proposed for grapple or hand piling, piles would be located a sufficient distance from large down logs to ensure the logs did not ignite during pile burning operations. In addition, piling would not be conducted on approximately 30 percent of the unit, allowing for retention of small down woody material.</p> | | Fuels Officer, TSA, Vegetation Officer, Wildlife Biologist | Contract Layout, Implementation, post-implementation |
| 37 | 33, 34, 35, 36, 38, 73, 85, 89, 90, 100, 163, 213 | All Areas | Wildlife | Mechanical/ Hand | <p>Decadent feature enhancement - Two different treatments; partial tree girdling and short snag creation. Partial tree girdling would occur inside and outside of DCAs and short snag creation would only occur in DCAs. Both treatments would only be applied in subunits where the current snag/short snag densities are substantially below desired densities.</p> <p>Partial tree girdling would involve girdling (cutting off the bark layer deep enough to sever the tree's vascular system in the cambium) of individual trees 15-30 inches dbh. The bark layer would be removed in a 6-12 inch band covering approximately 1/3 of the diameter of pine trees and 1/2 of the diameter of fir trees. The selection of trees for partial tree girdling would occur after the DCA and ESO, legacy tree treatment, variable thinning and suppressed cut prescriptions had been applied (marked). Trees selected outside of DCAs for partial girdling would be trees already selected under the variable thinning prescription for removal. Trees selected for partial girdling in DCAs would be designated based on the site specific conditions in the DCAs and would be trees that would provide needed habitat structure in the DCAs.</p> <p>Short snag creation involves cutting a tree (preferentially a white fir), on the outside edge, but within a DCA, at a height of 10-20 feet above the ground. The height would be based on the highest point a piece of machinery such as a feller buncher, could reach to cut the tree. The top of the tree would be felled into the interior of the DCA and left to contribute to down log densities. Trees selected for this treatment would be 15-30 inches dbh.</p> | | Fuels Officer, TSA, Vegetation Officer, Wildlife Biologist | Contract Layout, Implementation, post-implementation |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|-----------|---------------|--|----------------------------|--|---|--|--|
| 38 | All Units | All Areas | Air Quality | Pile Burning/ Underburn | Air Quality: The fuels officer will coordinate with the Air Quality Coordinator to design the waste fire plan. Burning permits would be acquired from the Northern Sierra Air Quality Management District. The Air Quality District would determine days when burning is allowed. The California Air Resources Board (CARB) provides daily information on "burn" or "no burn" conditions. Burn plans will be designed and all fuel reduction burning will be implemented in a way to minimize particulate emissions. Prescribed fire implementation will coordinate daily and seasonally with other burning permittees both inside and outside the forest boundary to help meet air quality standards. | | Fuels Officer | Implementation, post-implementation |
| 39 | 76, 282 | 2, 4 | Aquatic Resources, Fuels Mgmt, Soils/Hydrology | Hand | Treatment in RCA: Some trees will be hand felled into the intermittent channel to provide channel stability. An aquatic biologist or hydrologist will work with hand crews to determine the distribution and placement of trees. This action would be designed to be consistent with the LWQCB Wildlife Habitat Exemption category as well as all LWQCB provisions (particularly SMRs 22 and 23) stated previously in this appendix. The coarse woody debris marking and potential handfelling actions would not exceed a total of 5 acres in size, would be implemented by manual methods, and would not involve the use of mechanical or tracked equipment. | 1.8, 1.19 | Aquatics Biologist, Fuels Officer, Hydrologist, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation |
| 40 | 213 | 2, 4 | Aquatic Resources, Soils/Hydrology | Mechanical | Marking of RCA: Hydrologist and/or aquatic biologist will assist in the marking and layout of RCAs in emphasis areas 2 and 4 in unit 213. | 1.2, 1.8, 1.18, 1.19, 5.2, 5.3, 5.6, 7.2, 7.3 | Aquatics Biologist, Hydrologist, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation |
| 41 | 85, 87 | All Areas | Sensitive Plants, Soils/Hydrology | Road | Watershed Restoration/Road Decommissioning: <ul style="list-style-type: none"> • Watershed improvements were assessed, identified and incorporated into the proposed action. • All required state and federal permitting processes, such as CEQA, water quality and 404 permits would be complied with prior to implementation of stream and wetland restoration. • The CEQA scoping, document development, noticing and public review will occur prior to obtaining the necessary prohibition exemptions, and address the required basin plan criteria. (BMP 7.1) Road 11-5, Action 1: Approximately one mile of this road would be obliterated following its use for vegetation treatment activities. This road would be reopened to access and treat units 85 and 87 for approximately one mile. Upon completion of the treatments in these units, this segment of road would be obliterated. Road obliteration would consist of re-contouring the roadbed to a hydrologically neutral state. This also includes emphasizing protection and neutral landscape configuration above fens, designing drainage to match natural patterns, reducing compaction (sub-soiling), blocking the closed portions from future access, and mulching or otherwise providing slash and soil organic matter to control erosion. Road 11-5, Action 2: On the section of road 11-5 below the obliteration work described in Action 1 above, where the road crosses through a fen and aspen stand, the road and its associated culvert system would be removed and full restoration measures would be implemented. The existing elevation of the culvert is placed subgrade, such that the water in the fen is draining at an accelerated rate and resulting in an ongoing reduction in fen size. Restoration measures would include filling the culvert alignment and reshaping the roadbed to support the function and hydrology of the fen (currently approximately 1.2 acres). Revegetation activities would be implemented and may include local seed and/or small plugs of sedge mat or other local vegetation obtained adjacent to the fen. Mulching would be provided as needed to control erosion and stabilize the site. | 1.8, 1.19, 2.3, 2.4, 2.7, 2.8, 2.13, 5.4, 7.1, 7.2, 7.3 | Botanist, Hydrologist, Road Engineer Soil Scientist, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation, post-implementation |

Standard Management Requirements (SMRs)

| SMR Number | Unit | Emphasis Area | Concern | Treatment Activity | Includes Best Management Practices (BMPs) and Resource Protection Measures (RPMs) | BMP Number | Responsible Person(s) | Due Date |
|------------|-----------------------------|---------------|--|-------------------------|--|-------------------------------|---|--|
| 42 | 61, 163 | All Areas | Sensitive Plants, Soils/Hydrology | Pile Burning/ Underburn | Prescribed Fire and the Mason Fen: (Downslope from Units 61 and 163) prior to performing prescribed burns the residual amounts of downed woody debris will be assessed to determine whether additional fuel modification is necessary to achieve the following objectives. Accumulation of downed woody debris shall be discontinuous from the edge of the 50 foot buffer to the edge of the fen, or soil moisture in the 50 foot buffer will be high enough to prevent a fast spreading flaming surface fire, a slow moving smoldering surface fire would be acceptable. Soil moisture in fens will be high enough to limit the burning of peat. If necessary, water will be brought to the site and be available to maintain objectives. Ground disturbing methods of fire suppression will be avoided within the 50 foot fen buffer and inside the fen. Also see SMR 42. | 1.8, 1.19, 6.2, 6.3, 7.2, 7.3 | Botanist, Fuels Officer, Hydrologist, Soil Scientist, TSA, Vegetation Officer | Implementation, post-implementation |
| 43 | 46, 61, 80, 85, 98, 99, 163 | All Areas | Sensitive Plants, Soils/Hydrology | All | Fens: Fen areas are located within units 46, 85 and 98 and downstream from units 61 and 163. Other units with fens in close proximity are units 80 and 99. Five fens without known sensitive plant occurrences are located in unit 85. Implement a 25' Tractor Keep Out (TKO) along the periphery of all fens in these areas. The silviculturist has worked with the botanist and hydrologist or soil scientist to extend this as a "no treatment zone" outside the fen area to areas as needed to maximize protection of the fens. A botanist and/or hydrologist will also be present to assist in marking and layout around the fens. For fens in Units 46, 85, 98, and 99, post "Flag and Avoid" mitigations with Tractor Keep Out signs to prevent tractors from operating within 25 feet of the riparian edge of the wet features/fens. The fen areas are located in southwestern edge of 85 and three fens are present in the central portion of 46 within emphasis area 4 and in the central portion of unit 98. Place density cover patches around fens within unit 98. | 1.8, 1.19, 7.2, 7.3 | Botanist, Hydrologist, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation |
| 44 | 80, 85 | 8 | Fuels Mgmt, Sensitive Plants, Soils/Hydrology, Vegetation Mgmt, Wildlife | Pile Burning/ Underburn | Pile Burning in Aspen: Excess remaining project-generated slash would be removed and hand piled outside of the aspen root footprint as determined by botanist or hydrologist, and burned to reduce slash to a level that would not inhibit the aspen suckering response. The location of the piles to be burned would be advised by the hydrologist to maintain water quality and would not be within 25 feet of riparian vegetation. | 1.8, 1.19, 6.2, 6.3, 7.2, 7.3 | Botanist, Fuels Officer, Hydrologist, TSA, Vegetation Officer | Implementation, post-implementation |
| 45 | 80 | 8 | Aquatic Resources, Fuels Mgmt, Vegetation Mgmt | All | Mountain Yellow-legged Frog Limited Operating Period (LOP): To reduce the potential of impacts to mountain yellow-legged frog (MYLF), on stream in 80-8, add a 200 foot limited operating period (LOP) buffer to the standard Riparian Conservation Area (RCA). Within the combined RCA and LOP buffer, no ground disturbing activities would be permitted during the LOP of November 30 through May 30. This LOP is needed to avoid possible interference with MYLF during a time when they may move away from stream courses. -To prevent effects to MYLF consult the aquatics biologist about, or do not allow the use of foam during prescribed burning activities within RCAs. | 1.5, 1.8, 1.19, 6.2, 6.3 | Aquatics Biologist, Fuels Officer, TSA, Vegetation Officer | Contract Prep, Contract Layout, Implementation |
| 46 | 46 | 4 | Sensitive Plants, Soils/Hydrology | Pile Burning/ Underburn | Emphasis area 4 in plantations: Stop ignitions within 25 feet of emphasis area 4 boundary from emphasis areas 5 or 6. Allow but minimize (do not encourage) fire creep into emphasis area 4 in unit 46. | 1.8, 1.19, 6.2, 6.3, 7.2, 7.3 | Botanist, Fuels Officer, Hydrologist, Soil Scientist, TSA, Vegetation Officer | Implementation, post-implementation |

Appendix D:

Letters of Support

530.550.8760
530.725.4407 fax
P.O. Box 8568
Truckee, CA 96162
truckeeriverwc.org



Truckee River Watershed Council

Collaborative solutions to protect, enhance and restore the Truckee River Watershed

California Department
of Fish and Wildlife

California Department
of Parks and Recreation

California Department
of Water Resources

California Fly Fisher
Magazine

Glenshire Homeowners
Association

DMB/Highlands Group, LLC

East West Partners

Friends of Squaw Creek

KidZone Museum

Lahontan Regional
Water Quality
Control Board

Mountain Area
Preservation

Nevada County

North Lake Tahoe
Resort Association

Northstar California

Placer County

Placer County Water
Agency

Sagehen Creek Field
Station - UC Berkeley

Sierra Business Council

Sierra County

Sierra Watch

Squaw Valley and
Alpine Meadows

Tahoe Truckee
Sanitation Agency

Town of Truckee

Trout Unlimited

Truckee Donner
Land Trust

Truckee Donner Public
Utility District

Truckee Meadows
Water Authority

U.S. Army Corps of
Engineers

USDA Forest Service
Tahoe National Forest

Lynn Campbell
Sierra Nevada Conservancy
11521 Blocker Drive, suite 205
Auburn, CA 95603

November 22, 2013

RE: *Sagehen Basin Old Forest Sensitive Species Habitat Restoration Project*

Dear Ms. Campbell,

The mission of the Truckee River Watershed Council is to bring the *community* together for the Truckee. We work collaboratively with public land agencies, land trusts, and private landowners to protect, restore and enhance the Truckee River watershed.

On behalf of the Truckee River Watershed Council, I am writing in support of the Sagehen Basin Old Forest Sensitive Species Habitat Restoration Project and the National Forest Foundation's request for funding to the Sierra Nevada Conservancy. This project aligns with the mission of the Truckee River Watershed Council and as such, the Watershed Council supports it.

This project, developed by a Sierra Nevada Conservancy-supported collaborative, is part of a landscape-scale effort to restore watersheds, forest ecosystems, and habitat in the Middle and Little Truckee watersheds. The interests of the Sagehen ecosystem were represented by the engaged and active collaborative group that put together the plan for the project which also serves as a template for collaboratives conducting similar work.

Working together helped the group to focus their energies and efforts to clarify what the key issues were, then to work towards effective solutions to adequately address these issues. This enabled the collaborative to develop a reasonable approach, more effective and long-lasting plan.

In a similar vein, the project is critical for restoring the Sagehen forest ecosystem through hand vegetation treatments, pile cutting vegetation and excess small down wood, and implementation of prescribed burns. Successful implementation will facilitate the return of mixed severity fire to the landscape and safeguard habitat for nesting, denning, and foraging of old forest sensitive species to the area and serve as a model for needed forest health projects throughout the Sierra.

Please feel free to contact me if you have any questions. Thank you very much for your support in protecting the natural resources in the Sierra Nevada.

Sincerely,

Lisa Wallace
Executive Director

530.550.8760
530.725.4407 fax
P.O. Box 8568
Truckee, CA 96162
truckeeriverwc.org



Truckee River Watershed Council

Collaborative solutions to protect, enhance and restore the Truckee River Watershed

Cc:

Vance Russell, National Forest Foundation

Joanne Roubique, USFS, Truckee Ranger District

California Department
of Fish and Wildlife

California Department
of Parks and Recreation

California Department
of Water Resources

California Fly Fisher
Magazine

Glenshire Homeowners
Association

DMB/Highlands Group, LLC

East West Partners

Friends of Squaw Creek

KidZone Museum

Lahontan Regional
Water Quality
Control Board

Mountain Area
Preservation

Nevada County

North Lake Tahoe
Resort Association

Northstar California

Placer County

Placer County Water
Agency

Sagehen Creek Field
Station - UC Berkeley

Sierra Business Council

Sierra County

Sierra Watch

Squaw Valley and
Alpine Meadows

Tahoe Truckee
Sanitation Agency

Town of Truckee

Trout Unlimited

Truckee Donner
Land Trust

Truckee Donner Public
Utility District

Truckee Meadows
Water Authority

U.S. Army Corps of
Engineers

USDA Forest Service
Tahoe National Forest



United States Department of the Interior

Pacific Southwest Region FISH AND WILDLIFE SERVICE

Nevada Fish and Wildlife Office
1340 Financial Blvd., Suite 234
Reno, Nevada 89502

Ph: (775) 861-6300 ~ Fax: (775) 861-6301



November 21, 2013

Lynn Campbell
Sierra Nevada Conservancy
11521 Blocker Drive, Suite 205
Auburn, CA 95603

Dear Ms. Campbell:

Subject: Support Letter for the Sagehen Basin Old Forest Sensitive Species Habitat Restoration Project, County, California

The Nevada Fish and Wildlife Office fully supports the Sagehen Basin Old Forest Sensitive Species Habitat Restoration Project on the Tahoe National Forest. This project, developed by a Sierra Nevada Conservancy-supported collaborative, is part of a landscape-scale effort to restore watersheds, forest ecosystems, and habitat in the Middle and Little Truckee watersheds.

The interests of the Sagehen ecosystem were well-represented by the engaged and active collaborative group that put together the plan for the project and serves as a template for collaboratives conducting similar work. Working together helped the group to focus their energies and efforts to clarify what the key issues were, then to work towards effective solutions to adequately address these issues. This enabled the collaborative to develop a reasonable approach, more effective and long-lasting plan.

This project is critical for restoring the forest within the Sagehen watershed through hand vegetation treatments, pile cutting vegetation and excess small down wood, and implementation of prescribed burns. Successful implementation will facilitate the return of mixed severity fire to the landscape and safeguard habitat for nesting, denning, and foraging of old forest sensitive species to the area and serve as a model for needed forest health projects throughout the Sierra.

Lynn Campbell

November 21, 2013

Please feel free to contact me or Chad Mellison if you have any questions at (775) 861-6300.

Sincerely,

Chad Mellison

Gov Edward D. Koch
State Supervisor





2 April 2013

Kris Boatner
District Natural Resources Officer and NEPA Coordinator
USDA Forest Service
Truckee Ranger District
10811 Stockrest Springs Road
Truckee, CA 96161

RE: Comments for Sagehen Project – Vegetation Treatments

Dear Kris,

The University of California, Berkeley – Sagehen Creek Field Station enthusiastically supports this set of recommendations and strongly supports the stated selected alternative. With this said, we also feel very strongly that for this project to have a chance of meeting its stated objectives, it needs to get fully implemented within a 3 to 5 year period from start to finish. This includes returning as much fire to this ecosystem as reasonably possible.

As you will recall, this project began in 2004 with a Fire and Fuels research project looking at the feasibility of applying the Strategically Placed Land Area Treatments (SPLAT) on a mountainous and forested landscape using what was to become the Sagehen Experimental Forest (Sagehen EF) as a test location. To oversimplify the results, the concept would work if your objective was to interrupt fire behavior. With the designation of the Sagehen basin as an Experimental Forest in 2005, the key overall purpose/goal for this new Experimental Forest was to understand how this sort of ecosystem functions and then use that understanding to restore as much natural function to the system as possible. Implementing SPLATS would help us reduce the chances of a catastrophic forest fire; however, it might not be the best approach in furthering our stated and much broader purpose for the Sagehen EF.

In our efforts to meet this very complicated goal, the decision by the Truckee Ranger District of the Tahoe NF to employ a collaborative process to design the project is to be commended. The interests of the Sagehen ecosystem were well-represented by this engaged and active collaborative group. Deciding to use a strong facilitator that established a clear set of ground rules, and then ensured that they were maintained was critical. Even-handedly applying these rules ensured all participants were heard, and was both effective and critical to getting to the comment period where we are now. I also feel very strongly that this collaborative process was key in helping us work towards a more holistic project design that actively incorporates many complicated needs and objectives. Continual communication to and from the group, coupled with field visits and the demonstration plots enabled this process to move forward successfully to this point.

I will also state that this process was not easy for anyone involved. Ecosystems are very complicated, as we do not yet fully understand how they work, nor how pulling on one string will effect the other strings. Working together helped the group to focus and to push everyone's comfort levels. This, in turn, also helped us focus our energies and efforts to clarify what the key issues were, then to work towards

effective solutions to adequately address these issues. It is also safe to say that no one got exactly what they wanted out of this. Everyone needed to shift and accept ideas in order get a reasonable project created. This enabled us as a group to come up with a very reasonable approach and much better and more effective proposal/plan. So, maybe we all did actually get what we wanted, a reasonable and well thought out approach to address a very complicated and emotional issue. This is all well-documented in this document.

I look forward to seeing this project fully implemented as well as to the breadth of new information that we will learn from this. Collaborative processes, while messy, are critical in helping us further the needs of these stressed forested ecosystems.

Sincerely,

J R Brown

Jeff Brown,
Director, UC Berkeley – Central Sierra Field Research Stations
Resident at Sagehen Creek Field Station
P. O. Box 939
11616 Sagehen Rd.
Truckee, CA 96160
T: (530) 587-4830
E: Sagehen@berkeley.edu
W: <http://sagehen.berkeley.edu>



United States
Department of
Agriculture

Forest
Service

Tahoe
National
Forest

631 Coyote Street
Nevada City, CA
95959-2250
530-265-4531
530-478-6118 TDD
530-478-6109 FAX

File Code: 1500

Date: December 19, 2012

John Donnelly
Wildlife Conservation Board
1807 13th Street, Suite 103
Sacramento, CA 95811

Dear Mr. Donnelly,

I am writing you to support the Truckee River Treasured Landscapes proposal recently submitted by the National Forest Foundation (NFF), the Tahoe National Forest and multiple local partners from the Truckee area. As you are keenly aware, Tahoe National Forest lands are a high priority for large landscape and comprehensive restoration projects that employ local community members, reduce fire risk, improve habitats for wildlife, increase water quality and quantity and connect the public to our National Forest System lands.

The attached proposal addresses these issues through multiple projects all implementable by local professionals over the course of the proposed 3 years. A team of nonprofit and Forest Service professionals as well as additional agencies have identified the included projects as high priority to help restore the Truckee River and several of its tributaries on the forest.

The total size of the Treasured Landscapes site is an ambitious 234,000 acres but we feel generous support from the Wildlife Conservation Board will make a significant contribution to accomplishing our goals here. Furthermore, NFF and Forest Service are matching contributions to the project at \$2.50: 1 with additional support from partner organizations increasing that leverage to 3:1.

Please do not hesitate to contact me if you have questions about the proposal.

Sincerely,

/s/ <Eli Ilano> for: Tom Quinn
TOM QUINN
Forest Supervisor



COUNTY OF NEVADA
STATE OF CALIFORNIA
BOARD OF SUPERVISORS



Richard Anderson
Supervisor, 5th District
Email: richard.anderson@co.nevada.ca.us

10879A Donner Pass Road
Truckee, California 96161
530.582.7826 | FAX: 530.582.7882

April 5, 2013

Mr. John Donnelly
Executive Director
Wildlife Conservation Board
1807 13th Street, Suite 103
Sacramento, CA 95811

Dear Mr. Donnelly:

I am writing you to support the Truckee River Treasured Landscapes proposal recently submitted by the National Forest Foundation, the US Forest Service and multiple local partners from the Truckee area. As you are keenly aware, Tahoe National Forest lands are in need of high priority restoration projects that employ the local community, reduce fire risk, increase water quality and quantity, and connect the public to our national forest lands.

The Truckee River Treasured Landscapes proposal addresses these issues through multiple projects that are all implementable by local professionals over the course of the proposed three years. A team of nonprofit and Forest Service professionals, as well as representatives from additional agencies, worked together to identify and design projects that will provide real benefit for forest lands, their associated waters, the communities nearby, and the visitors who recreate in this region.

The total size of this particular Treasured Landscapes region is an ambitious 234,000 acres. I believe that generous support from the Wildlife Conservation Board will make a significant contribution toward completing the proposal's goals. Furthermore, the NFF and the Forest Service are matching contributions to the project at \$2.50:1, with additional support from partner organizations increasing that leverage to \$3:1.

I respectfully request your approval of funding for the Truckee River Treasured Landscapes project.

Sincerely,

Richard Anderson
Supervisor, District 5

cc: Vance Russell, National Forest Foundation

950 Maidu Avenue, Suite 200, Nevada City CA 95959-8617
phone: 530.265.1480 | fax: 530.265.9836 | toll free: 888.785.1480 | email: bdofsupervisors@co.nevada.ca.us
website: <http://www.mynevadacounty.com/nc/bos>

Appendix E:

Photos



Figure 1. Unit 61, note the amount of downed fuel.



Figure 2. Unit 61 showing suppressed aspen that will benefit from release.



Figure 3. Unit 91 showing dead and dying lodgepole pine due to mountain pine beetle.

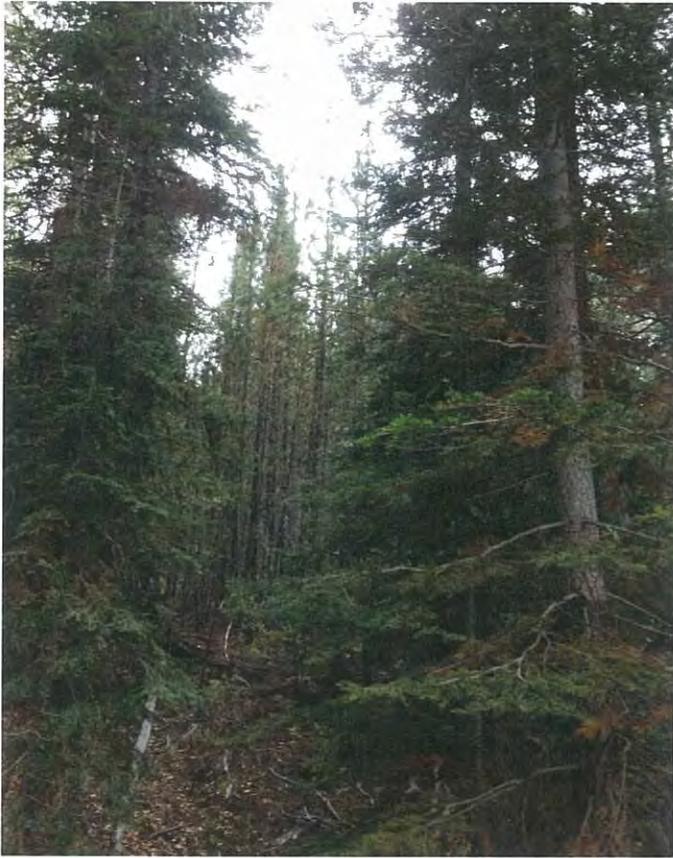


Figure 4. Unit 98 2,000 trees/acre.



Figure 5. Unit 100. Note tree to be girdled banded in white and labeled with a "w".

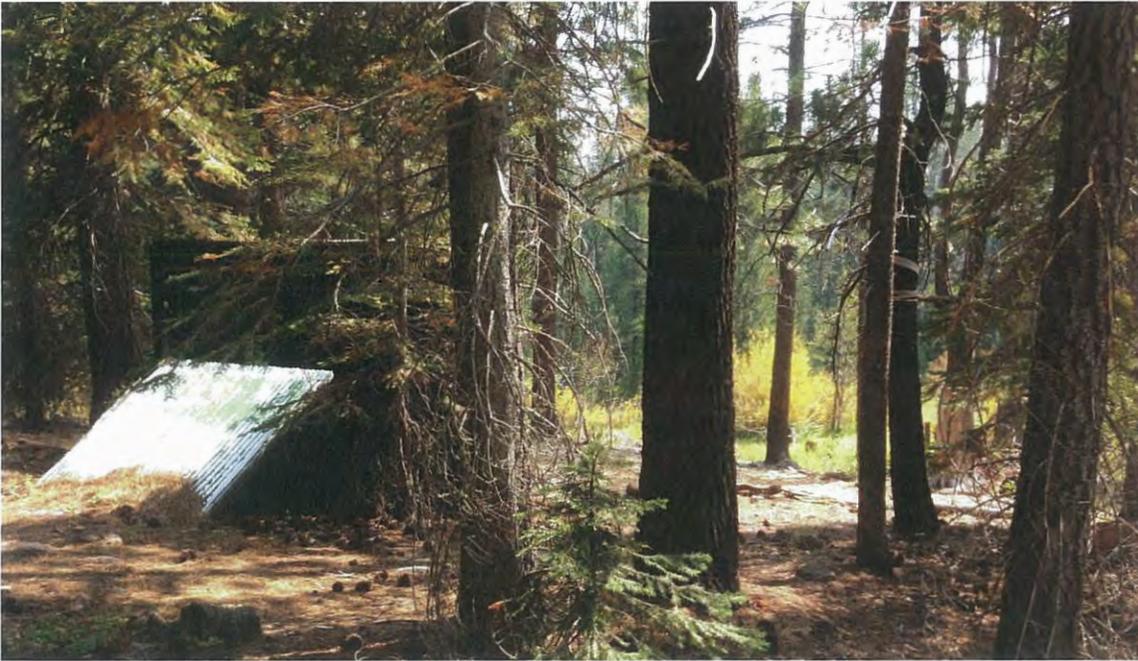


Figure 6. Unit 282. Historic Leopold Camp surrounded by ingrowth of white fir.



Figure 7. Unit 282. Note close proximity of Sagehen facilities to untreated mixed stands.

Application Components:

1. Resolution to Apply
2. Non Profit Documentation
3. Cert. of Qual. - CA
4. Land Tenure:
 - a. Coop agreement : USFS/UC Regents
 - b. MOU : TNF/PSRS/UC Regents
 - c. NFF/USFS
5. PM's / Regulatory requirements : Permits
are addressed on pg 17-18 of
Proposal Narrative.



RESOLUTION No. _____

RESOLUTION OF THE BOARD OF DIRECTORS OF

The National Forest Foundation

FOR THE

Truckee River *Treasured Landscapes* Project Grant Application

WHEREAS The National Forest Foundation intends to work with the United States Forest Service and local nonprofit partners for the conservation, restoration, or enhancement of riparian habitat.

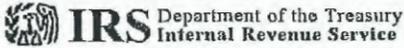
NOW, THEREFORE, BE IT RESOLVED THAT THE BOARD OF DIRECTORS OF The National Forest Foundation HEREBY:

1. Approves the filing of an application for funding from the Sierra Nevada Conservancy; and
2. Certifies that The National Forest Foundation will comply with all federal, state and local environmental, public health, and other appropriate laws and regulations applicable to the project and will obtain all appropriate permits applicable to the project; and
3. Agrees to operate and maintain the project and further commits to the terms and conditions specified in the grant agreement; and
4. Appoints William J. Possiel as representative of The National Forest Foundation to conduct (Authorized Person) negotiations, execute and submit all documents including, but not limited to applications, agreements, amendments, payment request and other documents which may be necessary for the completion of the proposed project.

APPROVED AND ADOPTED THE 5th DAY OF October 2013.

I hereby certify that the foregoing Resolution was adopted by the Board of Directors of the National Forest Foundation


John Hendricks
Chairman
Board of Directors



Department of the Treasury
Internal Revenue Service
P.O. Box 2508
Cincinnati OH 45201

Appendix H

17

In reply refer to: 0248667578
Aug. 26, 2009 LTR 4168C E0
52-1786332 000000 00
00018410
BODC: TE

NATIONAL FOREST FOUNDATION
BLDG 27 STE 3 FORT MISSOULA RD
MISSOULA MT 59804



040084

Employer Identification Number: 52-1786332
Person to Contact: Brian R Bailey
Toll Free Telephone Number: 1-877-829-5500

Dear Taxpayer:

This is in response to your request of Aug. 17, 2009, regarding your tax-exempt status.

Our records indicate that a determination letter was issued in July 1993, that recognized you as exempt from Federal income tax, and discloses that you are currently exempt under section 501(c)(3) of the Internal Revenue Code.

Our records also indicate you are not a private foundation within the meaning of section 509(a) of the Code because you are described in section(s) 509(a)(1) and 170(b)(1)(A)(vi).

Donors may deduct contributions to you as provided in section 170 of the Code. Bequests, legacies, devises, transfers, or gifts to you or for your use are deductible for Federal estate and gift tax purposes if they meet the applicable provisions of sections 2055, 2106, and 2522 of the Code.

If you have any questions, please call us at the telephone number shown in the heading of this letter.

Sincerely yours,

Michele M. Sullivan

Michele M. Sullivan, Oper. Mgr.
Accounts Management Operations I

GOVERNMENT OF THE DISTRICT OF COLUMBIA
DEPARTMENT OF CONSUMER AND REGULATORY AFFAIRS
BUSINESS REGULATION ADMINISTRATION



CERTIFICATE

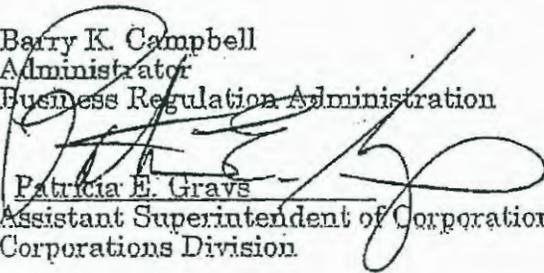
THIS IS TO CERTIFY that all applicable provisions of the DISTRICT OF COLUMBIA NONPROFIT CORPORATION ACT have been complied with and accordingly, this *CERTIFICATE of INCORPORATION* is hereby issued to

NATIONAL FOREST FOUNDATION

as of *JULY 13TH, 1993*.

Larry King
Director

Barry K. Campbell
Administrator
Business Regulation Administration


Patricia E. Graves
Assistant Superintendent of Corporations
Corporations Division

Sharon Fratt Kelly
Mayor

ARTICLES OF INCORPORATION

OF

NATIONAL FOREST FOUNDATION

To: Department of Consumer and Regulatory Affairs,
Business Regulation Administration Corporation Division
614 H Street, N.W., Washington, DC 20001

We, the undersigned natural persons of the age of twenty-one years or more, acting as incorporators of a corporation under the NON PROFIT CORPORATION ACT (D.C. Code, 1981 edition, Title 29, Chapter 5), adopt the following Articles of Incorporation:

FIRST. The name of the corporation is NATIONAL FOREST FOUNDATION.

SECOND. The period of the duration is perpetual.

THIRD. The purpose or purposes for which the corporation is organized are:

To encourage, accept, and administer private gifts of money, and of real and personal property for the benefit of, or in connection with, the activities and services of the Forest Service of the Department of Agriculture; to undertake and conduct activities that further the purposes for which units of the National Forest System are established and are administered and that are consistent with approved forest plans; and to undertake, conduct and encourage educational, technical and other assistance, and other activities that support the multiple use, research, cooperative forestry and other programs administered by the Forest Service.

FOURTH. The corporation shall have no members.

FILED

JUL 13 1993

BY: _____

FIFTH. The directors shall be elected or appointed as follows:

Directors shall be appointed by the Secretary of the Agriculture for terms of 6 years. No individual may serve more than twelve consecutive years as a Director. A vacancy on the Board shall be filled within 60 days of said vacancy in the manner in which the original appointment was made. A person appointed to fill a vacancy occurring prior to the expiration of a member's full term shall be appointed only for the remainder of that specific term

The Secretary of Agriculture, in making the initial appointments to the Board, shall appoint five Directors to a term of 2 years, five Directors to a term of 4 years, and five Directors to a term of 6 years.

SIXTH. Provisions for regulation of the internal affairs of the corporation shall be provided for in the by-laws. Upon dissolution/final distribution assets should be distributed to the United States Forest Service.

SEVENTH. The address, including street and number and zip code of the initial registered office is 1000 16th Street, N.W., Suite 605, Washington, DC, 20036 and the name of the initial registered agent at such address is Corporation Service Company.

EIGHTH. The number of directors constituting the initial board of directors is fourteen and the names and addresses, including street and number and zip code, of the persons who are to serve as the initial directors until the first annual meeting or until their successors be elected and qualified are:

Board of Directors

Mr. Ralph E. Bailey
Chairman, American Bailey
Corp.
695 E. Main St.
Stamford, CT 06901

Mr. Derrick A. Crandall
President
American Recreation Coalition
1331 Pennsylvania Ave. NW,
Suite 726
Washington, DC 20004

Executive Board Member
Dr. James H. Duke, Jr.
Professor of Surgery
University of Texas Medical
School
~~6431 Fannin, Room 4168~~
Houston, TX 77030

Executive Board Member
Mr. Stephen A. Fausel
LaMont Limited
PO Box 399, 1530 N. Bluff Rd.
Burlington, IA 52601

Mr. Raymond L. Friedlob
Brenman Raskin & Friedlob
1400 Glenarm Place, Suite 300
Denver, CO 80202

Mr. W. Grant Gregory
Gregory & Hoenemeyer, Inc.
375 Park Ave., Suite 307
New York, NY 10152

Ms. Judith Herrera
Herrera, Baird & Long, P.A.
684 Callecita Jicarilla
Santa Fe, NM 87505

Mr. Charles A. Howell, III
Trust for the Future, Inc.
2704 - 12th Ave. South
Nashville, TN 37204

Mr. Donald M. Kendall
PepsiCo, Inc.
700 Anderson Hill Rd.
Purchase, NY 10577-1444

James A. McClure
McClure, Gerard &
Neuenschwander
801 Pennsylvania Ave. NW,
Suite 820
Washington, DC 20004

Mr. Robert Model
Mooncrest Ranch
PO Box 158
Cody, WY 83414

Ms. Y. Sherry Sheng
~~Director~~
Metro Washington Park Zoo
4001 SW Canyon Road
Portland, OR 97221

Mr. C. Robert Trowbridge
Chairman, Yankee Publishing
Co.
PO Box 289
Dublin, NH 03444

Mr. Hal Walt
16180 Highway 66
Ashland, OR 97520

NINTH. The name and address, including street number and zip code, of each incorporator are:

| NAME | ADDRESS |
|------------------|--|
| Jane S. Kraye | 1013 Centre Road Wilmington, DE 19805 |
| Lisa G. Mulligan | 1013 Centre Road Wilmington, DE 19805 |
| Lynne Immediato | 1013 Centre Road Wilmington, DE 19805 |

Date: July 9, 1993

Jane S. Kraye
Incorporator

Lisa G. Mulligan
Incorporator

Lynne M. Immediato
Incorporator

I, Janet B. Woznicki, a Notary Public, hereby certify that on the ninth day of July, 1993, Jane S. Kraye, Lisa G. Mulligan and Lynne Immediato appeared before me and signed the foregoing document as incorporators, and have averred that the statements therein contained are true.

Janet B. Woznicki
Notary Public

JANET B. WOZNICKI
NOTARY PUBLIC OF DELAWARE
APPOINTED AUGUST 5, 1992
TERM 4 YEARS

WRITTEN CONSENT TO ACT AS REGISTERED AGENT

TO: THE SUPERINTENDENT OF CORPORATIONS
BUSINESS REGULATION ADMINISTRATION
DEPT. OF CONSUMER & REGULATORY AFFAIRS
WASHINGTON, D.C.

(A) BY A DISTRICT OF COLUMBIA RESIDENT

PURSUANT TO THE DISTRICT OF COLUMBIA BUSINESS CORPORATION ACT AS AMENDED (D.C. CODE, 1981 EDITION, TITLE 29, SECTION 29-310(2),

I, _____
A BONAFIDE RESIDENT OF THE DISTRICT OF COLUMBIA HEREIN CONSENT TO ACT AS REGISTERED AGENT FOR:

(NAME OF CORPORATION) _____

SIGNATURE OF REGISTERED AGENT _____

DATE: _____

(B) BY A LEGALLY AUTHORIZED CORPORATION

THE CORPORATION HEREIN NAMED AS:

_____ CORPORATION SERVICE COMPANY

AN AUTHORIZED CORPORATE REGISTERED AGENT IN THE DISTRICT OF COLUMBIA, PER SIGNATURES OF ITS PRESIDENT/ VICE-PRESIDENT AND SECRETARY/ASSISTANT SECRETARY, HEREIN CONSENTS TO ACT AS REGISTERED AGENT FOR:

(NAME OF CORPORATION) _____ NATIONAL FOREST FOUNDATION

SIGNATURE: Bruce R. Winn ~~OF ITS PRESIDENT~~
~~OR VICE-PRESIDENT~~

NAME: Bruce R. Winn

ATTEST : Lena Panariello OF SECRETARY
~~OR ASSISTANT SECRETARY~~

NAME: Lena Panariello

DATE : _____ July 9, 1993

BYLAWS OF THE NATIONAL FOREST FOUNDATION

ARTICLE I

Name and Office of the Corporation

Section 1. Name. This corporation, to be known as the National Forest Foundation, is a charitable and nonprofit corporation. It is hereinafter referred to as the Foundation.

Section 2. Office of the Corporation. The Foundation shall maintain an office in the Washington, D.C. Metropolitan Area and shall at all times maintain a designated agent authorized to accept service of process for the Foundation.

ARTICLE II

Purposes

The purposes of the Foundation as established in the National Forest Foundation Act, Public Law No. 101-593, hereinafter known as the Act, are:

- (1) to encourage, accept, and administer private gifts of money, and of real and personal property for the benefit of, or in connection with, the activities and services of the Forest Service of the Department of Agriculture;
- (2) to undertake and conduct activities that further the purposes for which units of the National Forest System are established and are administered and that are consistent with approved forest plans, and;
- (3) to undertake, conduct and encourage educational, technical and other assistance, and other activities that support the multiple use, research, cooperative forestry and other programs administered by the Forest Service.

ARTICLE III

Powers, Rights, and Obligations

Section 1. General powers. Control and direction of the Foundation shall be exercised by the Board of Directors (hereinafter referred to as the Board). The Board may exercise the following powers:

- (a) to appoint and remove such officers and employees as the Board may from time to time determine necessary, and charge those officers and employees with such duties as may be required of them;

- (b) to adopt and amend bylaws consistent with the purposes of the Foundation and the provisions of the Act;
- (c) to solicit and accept, by donation, gift, devise, purchase or exchange, any real or personal property or interest therein;
- (d) to accept, receive, hold, administer and use any income, either absolutely or in trust, derived from real or personal property or interest therein;
- (e) unless otherwise required by the instrument of transfer, to sell, donate, lease, invest, reinvest, retain or otherwise dispose of any real or personal property or income therefrom;
- (f) to borrow money and issue bonds, debentures, or other debt instruments;
- (g) to sue and be sued, and to complain and defend itself in any court of competent jurisdiction (except that the Directors of the Board shall not be personally liable, except for gross negligence);
- (h) to enter into contracts or other arrangements with public agencies, private organizations and persons and to make such payments as may be necessary to carry out the purposes of the Foundation;
- (i) to perform all acts necessary and proper to carry out the purposes of the Foundation;
- (j) to enjoy rights of perpetual succession; and
- (k) to conduct business anywhere in the United States, its territories or its possessions, or elsewhere in conformity with applicable law.

Section 2. Seal. The Foundation shall have an official seal selected by the Board that shall be judicially noticed. The President of the Foundation shall at all times have custody of the seal.

Section 3. Report. The Foundation shall, as soon as practicable after the end of each fiscal year, transmit to Congress a report of its proceedings and activities during such year, including a full and complete statement of its receipts, expenditures, and investments and a description of all acquisitions and disposal of real property that is subject to section 4(e) of the Act.

In addition, the Foundation shall be subject to the provisions of Public Law No. 88-504, 36 U.S.C. 1101-1103, requiring an annual audit. The auditor's report shall be submitted to Congress with the annual report.

ARTICLE IV

Board of Directors

Section 1. Establishment and membership. The Foundation shall have a governing Board of Directors which shall consist of thirty (30) Directors, each of whom shall be a United States citizen and majority of whom must be knowledgeable or experienced in natural or cultural resource management law or research.

The membership of the Board, to the extent practicable, shall represent diverse points of view relating to natural and cultural resource issues. The Chief of the Forest Service, U.S. Department of Agriculture, shall be an ex officio, non-voting member of the Board. Appointment to the Board shall not constitute employment by, or the holding of an office of, the United States for the purpose of any federal law.

Section 2. Appointment and terms. Directors shall be approved by Nominating Committee of the Board and appointed by the Secretary of the Department of Agriculture for terms of up to six years. No individual may serve more than twelve years as a Director. A vacancy on the Board shall be filled within 60 days of said vacancy in the manner in which the original appointment was made.

Resignation: Any Director may resign at any time by giving written notice to the Secretary of Agriculture. Any such resignation shall take effect at the time specified therein, or if the time is not specified therein, upon acceptance by the Secretary of Agriculture.

Termination: Failure to attend three consecutive meetings of the Board, unless by reason of illness, shall be cause for termination of the term of office of any Board member. As the final business of the meeting at the end of which such termination becomes effective, the Board shall be notified of the termination and the Secretary shall make appropriate record thereof in the minutes of such meeting and notify the affected Board member of the termination.

Section 3. Compensation. Members of the Board shall not receive any compensation for their services. They may be reimbursed for special services performed at the request and on behalf of the Foundation aside from their duties as members.

ARTICLE V

Officers

Section 1. Appointment and terms. The Foundation shall have the following officers: Chairperson, two Vice Chairpersons, President, one or more Vice Presidents, Secretary, Treasurer, and may have one or more Assistant Secretaries and Assistant Treasurers.

The Chairperson, Vice Chairpersons, Secretary, and the Treasurer shall be elected by the Board from its members, they shall serve in the offices to which they have been elected for two-year terms and they may be re-elected to their respective offices during their terms as a Director of the Foundation.

The President, Vice Presidents, Assistant Secretary, and Assistant Treasurer, appointed by the Board, shall serve at the pleasure of the Board as officers and employees. These officers may be paid employees. The offices of Chairperson and President may not be held by the same person. The Board of Directors may from time to time elect the outgoing Chairperson as Chairperson Emeritus.

Section 2. Powers and duties. The officers each shall have such powers and authority and perform such duties in the management of the property and affairs of the Foundation as from time-to-time may be prescribed by the Board and, to the extent not so prescribed, they shall have the authority and responsibility attached to the office, subject to the control of the Board as normally pertains to their respective office. In addition to those powers and duties normally pertaining to their office, the Chairperson shall have the powers and duties of the senior executive of the Foundation and the President shall serve as the Foundation's chief operating officer.

Section 3. Rules & Regulations. The Board may adopt rules and regulations not inconsistent with these Bylaws or with the authorizing legislation for the administration and conduct of the affairs of the Foundation and may alter, amend, or repeal any such rule or regulation adopted.

Section 4. Compensation. Board members serving as officers shall receive no compensation for such service. The Board shall appoint the President who shall serve, at the pleasure and direction of the Board, as the Foundation's chief operating officer. The President's compensation is determined by the Executive Committee. The Vice President(s), Assistant Secretary, and Assistant Treasurer may receive such compensation as is determined by the President.

Meetings

Section 1. Meetings. The Board shall convene at least twice annually in regular session, as follows:

- (a) The Board shall convene in January, February, March, or April at which time the financial statements for the immediately preceding fiscal year as certified by an

independent public accountant shall be presented to the Board for approval of acceptance;

- (b) The Board shall convene in the months of April, May, June, or July, when officers shall be elected by the Board and committees shall be appointed by the Chairperson of the Board at the annual meeting. The Chairperson, may, however, appoint officers to partial terms and make committee assignments at other times when necessary;
- (c) Other meetings of the Board may be held at such times and at such places as may be fixed by the Board. Special meetings may be called for any purpose at any time by the Chairperson or Vice Chairpersons. The Chairperson or Vice Chairpersons shall call a special meeting at the written request of any three (3) members of the Board;
- (d) If any meeting of the Board is convened, and quorum is not present in person, those present may discuss and vote upon the items of business contained in the notice of the Board meeting. Minutes of such a meeting shall be kept, and those members who were absent shall receive a copy of such minutes, as well as a ballot to vote on the actions taken. Any action approved by a majority of the Board, voting, either in person, or by mail ballot, or by telephone shall constitute the action of the Board; and
- (e) Any business of the Foundation may be transacted in unassembled meetings by providing the members an opportunity to vote on any action by mail. A period of not less than ten (10) days shall be afforded for responses to a request for action by mail and the written affirmative votes of a majority of the Board members shall constitute the action of the Board. All action taken in unassembled meetings shall become a part of the official record of the next regular or special meeting.

Section 2. Notice of Meetings. Notice of all meetings of the Board, both regular and special, shall be given to each member of the Board at least ten (10) days before the meeting, and the notice of any special meeting shall state the business of the meeting.

Section 3. Quorum. A majority of the current members of the Board shall constitute a quorum for the transaction of business. Meetings at which there is no quorum may be held and business transacted, but no action taken shall be valid unless approved subsequently at a meeting in which a quorum is present, or by a majority of the Board by mail or telephone or conference calls.

Section 4. Voting. Each member of the Board, except for the Chief, U.S. Forest Service, shall, at every meeting be entitled to one vote in person or by proxy upon each subject properly submitted to vote.

ARTICLE VI

Committees

Section 1. Creation and types of committees. The Board may create standing and special committees, including an Executive Committee and an Audit and Finance Committee, with such powers and duties as the Board may determine. Committees other than the Executive Committee and the Audit and Finance Committee shall consist of such number of members of the Board as are determined and elected by a majority of the members present at a meeting at which a quorum is present.

Section 2. Executive Committee. The Executive Committee shall consist of from five to ten members of the Board elected by a majority of the Board, and shall have and exercise all the power and duties of the Board including:

- (a) approval of gifts, grants, and similar disbursements over a specific amount of \$100,000, which the Executive Committee has authority to approve;
- (b) modification of existing, or establishment of new, Board policy;
- (c) employment and dismissal of staff, and changes in staff compensation.

The Chairperson of the Board shall be Chairperson of the Executive Committee.

Section 3. Audit and Finance Committee. The Audit and Finance Committee shall consist of three or more members of the Board appointed by the Chairperson, and shall have such duties and responsibilities as are delegated to it by the Board. At least one member of the Committee shall have past employment experience in finance or accounting, requisite professional certification in accounting or other comparable experience or background which results in the member's financial sophistication. This experience may include having served as a chief executive officer, chief financial officer or other senior officer with financial oversight responsibilities of a comparable entity.

The Committee shall:

- (a) oversee the financial reporting process and internal control systems of the Foundation;
- (b) oversee the independent audit function of the Foundation;
- (c) oversee the annual and quarterly financial statements of the Foundation to ensure that they are prepared in accordance with the generally accepted accounting principles of the United States ("GAAP");
- (d) oversee and supervise special investigations;

- (e) appoint, retain, compensate and oversee the independent auditors and annually evaluate their independence;
- (f) review and reassess the adequacy of this Charter as conditions dictate, but no less than once per year, and update this Charter if and when appropriate. Submit the Charter to the Board for approval;
- (g) take the appropriate actions to set the overall corporate "tone" for quality financial reporting, sound business risk practices, and ethical behavior;
- (h) establish a line-of-credit authority subject to approval of both the Executive Director and Audit and Finance Committee Chair, with allowance for delegation to the Audit and Finance Committee Chair providing the Audit and Finance Committee Chair is also on the Executive Committee;
- (i) report to the Board at each meeting;
- (j) maintain and approve minutes of each meeting of the Committee, and;
- (k) perform a self-assessment to evaluate the Committee's effectiveness.

Section 4. Grants Committee. The Grants Committee shall consist of three or more members of the Board, as well as members of the National Leadership Council. The Board, with the recommendation of the Committee, shall determine the number of the National Leadership Council members present on the Committee. A designated member of the Executive Committee shall be designated as Chair of the Committee by the Chairman of the Board.

The Grants Committee shall be responsible for the review of applications and the awarding of gifts, grants, and other similar disbursements up to and including the sum of \$100,000. The award and disbursement of sums for the purposes set forth above in excess of \$100,000 are authorized to be approved by the Executive Committee. Approval may be obtained by email or fax ballot polling of all Board members.

Section 5. Nominating Committee. The Nominating Committee shall consist of the elected members of the Executive Committee. The Committee shall solicit nominations of qualified candidates to the Board and will review qualifications prior to submitting approved nominees to the Forest Service and the Secretary of Agriculture for eventual appointment to the Board.

Section 6. Development Committee. The Development Committee shall consist of five or more members of the Board appointed by the Chairperson. This Committee is responsible for overseeing the organization's overall fundraising activities. This includes:

- (a) working with staff to establish a development plan that incorporates a suite of fundraising activities;

- (b) providing leadership in identifying corporate, foundation and individual prospects for financial support and agreeing to a strategy to generate voluntary gifts;
- (c) designing and oversight of broad-based membership development and renewal activities;
- (d) involving all board members in fundraising and development by generating Board contributions and involving Board members in other fund development activities;
- (e) working with the Marketing Committee through joint meetings to integrate fundraising events and marketing activities to help the organization meet its fundraising goals;
- (f) monitoring fundraising activities to ensure that they are cost effective; and
- (g) establishing and monitoring ethical guidelines for all fundraising activities.

Section 7. Marketing Committee. The duties and responsibilities of the Committee are as follows:

- (a) define, for Board approval, the annual Foundation's marketing goals, and recommend to the full Board approval for the staff's Marketing Plan and operating budgets to achieve those goals;
- (b) conduct a quarterly review of the staff's progress toward achieving the annual Marketing Goals, and shall report progress to the full Board;
- (c) provide counsel and shall support the efforts of the Foundation staff and any outside contracted resources to advance its activities;
- (d) assist the staff to develop and shall approve an annual plan for acquisition and renewal of Foundation "members," and shall coordinate the full Board's efforts in support of the Friends of the Forest™ membership initiative;
- (e) Committee Chair shall coordinate efforts of the Marketing Committee with the fund raising efforts of the Development Committee, especially as they relate to solicitation of Foundation members for added gifts;
- (f) review and approve any contracts related to marketing initiatives that are recommended by staff, subject to review by the entire Board; and
- (g) assist with efforts to identify marketing partners and/or sponsors, providing introductions and sales support.

Section 8. Conservation Committee. The following shall be the common recurring duties and responsibilities of the Committee in carrying out its oversight functions. These duties and

responsibilities are set forth below as a guide to the Committee with the understanding that the Committee may recommend altering or supplementing them to the full Board, as follows.

- (a) review the Foundation's conservation impact through the assessment of an agreed upon set of metrics;
- (b) work with staff to evaluate and recommend amendments to the Board-approved conservation strategy; and
- (c) authorize any and all conservation real estate transactions and/or new initiatives that are proposed by the staff.

Section 9. National Leadership Council and Special Committees. The Board may also establish a National Leadership Council consisting of members who are not Board members of the Foundation. The Council members shall be appointed by the Foundation Board Chairperson. Their terms shall be for a period of three years and they may serve consecutive terms. The Council:

- (a) shall be selected for their interest and support of the Foundation's purposes and activities, but they shall have no authority and in no way participate in the active management of the Foundation; and
- (b) upon approval of the Board may establish additional non-voting committees for specific purposes, with terms of service defined in the charter of the committee.

ARTICLE VII

Membership

Any responsible individual or organization subscribing to the objectives of the Foundation may be eligible for membership. All members shall be non-voting members, but the Board may establish one or more classes of members. These members may become members by acceptance and the payment of annual dues, the amount to be fixed by the Board, or there may also be honorary or complimentary classes of memberships as determined by the Board.

ARTICLE VIII

Execution of Instruments

Section 1. The Board shall have power to designate the officers, employees, or agents who shall have authority to execute any instrument on behalf of the Foundation.

Section 2. Checks and drafts. All checks, drafts, and orders for payment of money shall be issued in the name of the Foundation and shall be countersigned by such Board members, officers, employees, or agents as the Board shall designate for that purpose.

Section 3. Contracts, grants, conveyances, or other instruments. When the execution of any contract, grant, conveyance or other instrument has been authorized without specification of the executing officers, the Chairperson, Vice Chairperson, or the President may execute the same on behalf of the Foundation and may affix the Foundation seal thereto.

ARTICLE IX

Budget & Fiscal Year

Section 1. Budget. The annual budget shall be presented to, and be approved by the Audit and Finance Committee prior to presentation to the Board.

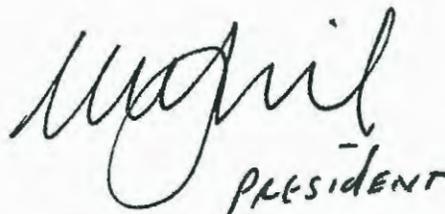
Section 2. Fiscal Year. The fiscal year of the Foundation shall commence on the 1st day of October of each year and terminate on the 30th day of September of each year.

ARTICLE X

Amendments

These bylaws may be amended at any meeting of the Board, provided that notice of the proposed amendment be given in writing to all Board members at least ten (10) days before the meeting. Board members may waive the 10-day notice verbally or in writing.

As amended and adopted at the Board meeting on October 11, 2004.


PRESIDENT

3603907

State of California
Secretary of State

CERTIFICATE OF QUALIFICATION

I, DEBRA BOWEN, Secretary of State of the State of California, hereby certify that on the **9th day of September 2013**, **NATIONAL FOREST FOUNDATION**, a corporation organized and existing under the laws of **District of Columbia**, complied with the requirements of California law in effect on that date for the purpose of qualifying to transact intrastate business in the State of California, and that as of said date said corporation became and now is qualified and authorized to transact intrastate business in the State of California, subject however, to any licensing requirements otherwise imposed by the laws of this State.

IN WITNESS WHEREOF, I execute this certificate and affix the Great Seal of the State of California this day of September 18, 2013.



Debra Bowen

DEBRA BOWEN
Secretary of State

jaw

USDA
Sagehen
Creek

COPY SENT
CONTROLLER

MAY 25 1951

March 2, 1951

A Cooperative Agreement Between the Regents of
the University of California and the Forest Service
of the U. S. Department of Agriculture with Respect
to Development of an Experimental Wildlife and
Fisheries Area in the Upper Sage Hen Creek Basin on
the Tahoe National Forest, California

Since it is the desire of the University of California to engage in field research in wildlife and fisheries problems, and since the Forest Service is interested in these resources as useful products of National Forest lands and waters and since the facts that might be derived from such studies would aid in the administration of these resources on National Forest lands, Forest Service representatives and the Regents of the University of California hereby declare their willingness to cooperate on such an undertaking for the general improvement and welfare of the wildlife and fisheries resources of the State and the Nation.

In order to facilitate work by the University staff and students in these fields of endeavor, the Forest Service agrees to:

1. Permit the University to go upon during any period of the year that portion of the Tahoe National Forest in the drainage of Sage Hen Creek, a tributary of the Little Truckee River, near Truckee, California, above Highway 89 for the purpose of wildlife and fishery studies. Such permission will be granted without charge to the University.
2. Issue special-use permits for such facilities as are indicated in paragraph 1 on page 3 of this agreement for

such land or water areas as may be required for intensive use in field experimental work, for housing or for supplementary facilities essential to the research program developed or for the use of field personnel assigned to the project.

3. Permit the University to install necessary facilities and controls for sampling hunter and angler success in the area; such sampling to be done by University or other personnel in accordance with the needs of the field program. The purpose of such sampling is not to exclude the public from areas not under special use permit, but for gathering creel or bag data, and other desirable types of information pertinent to the wildlife and fisheries studies to be conducted there.

4. Recommend jointly with agents of the University of California to the California Fish and Game Commission any legal stream closures or restrictions on the taking of game needed to effectively carry on the field research program.

5. Should funds or manpower become available to the Forest Service for such purposes it will cooperate in the maintenance and construction of facilities for the operation of the project within the limits of its budgetary restrictions and activity priorities.

The University of California, in turn agrees to:

1. Submit plans for any structures, roads, or other facilities or improvements to the Supervisor of the Tahoe National Forest for approval prior to initiating any construction work.
2. Provide adequate supervision for project workers so as to carry out efficiently the research program and to protect National Forest interests in the area.
3. Provide the Forest Service with an annual summary on January 1 of each year covering briefly the work and findings of the previous year and plans for the ensuing year.
4. Provide the Forest Service with reprints of all papers based on research work conducted in the Sage

Hen Creek Basin.

5. Jointly with the agents of the Forest Service to recommend to the California Fish and Game Commission any legal stream closures or restrictions on the taking of game as needed to effectively carry on the field research studies.

6. Provide such aid to the Forest Service from time to time within the limits of the University budget and requirements of more essential tasks, as might aid this agency in the solution of forest administrative problems relating to fish and game resources.

Other Considerations

Nothing in this agreement binds the University to revise its interpretation of the findings or to orient its research program in line with parallel policies or programs of the Forest Service. The only restriction intended here in the use of the Sage Hen Creek Basin is that the work must be limited to the purposes outlined above.

Nothing in this agreement will prevent the Forest Service from disposing of products of the forest in the usual manner, nor from constructing needed improvements for National Forest administration. However, it is the intention of the Forest Service that such use or improvements shall be so handled that there be the least possible interference with the project.

Nothing in this agreement will prevent the University's staff or students from working on wildlife or fisheries problems or allied

biological projects in areas outside the Sage Hen Creek Basin.

Nothing in this agreement will prevent the University from permitting temporary use of the facilities developed on Sage Hen Creek by scientific workers in the same or allied fields from the same or other educational institutions.

It is further understood that this agreement may be cancelled upon one year's notice by either party, or in a less period by mutual agreement. Upon cancellation of the agreement or termination of the work, the University will be given one year, or such time as may be agreed to be reasonable, within which to remove improvements constructed in the basin.

It is mutually agreed that the term of this agreement shall remain indefinite or until such a time as circumstances require the development of a new cooperative agreement or the termination of the agreement as outlined in the above paragraph.

It is agreed that much permanent good can accrue to the management of fish and game resources from the use of the Sage Hen area in the manner proposed in new findings, ideas, facts, and applications. This agreement represents an opportunity for the Forest Service and the University to more adequately serve the fields of wildlife and fisheries than has been possible in the past.

No member of or delegate to Congress or Resident Commissioner shall be admitted to any share or part of this contract or to any benefit that may arise therefrom unless it be made with a corporation for its general benefit.



The Regents of For/the University of California For the Forest Service

Edward M. DeLoach President Chairman
W. B. Crenshaw Acting Regional Forester
Mary Jo Wachner Controller Assistant Secretary

Attorney

Chairman, Zoology Department

Date April 12, 1951

APPROVED AS TO FORM:
A. H. Conard
A. H. CONARD
ASSOCIATE ATTORNEY FOR THE REGENTS
OF THE UNIVERSITY OF CALIFORNIA

MEMORANDUM OF UNDERSTANDING
RELATING TO THE SAGEHEN EXPERIMENTAL FOREST
by and among
TAHOE NATIONAL FOREST
FOREST SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE
and
PACIFIC SOUTHWEST RESEARCH STATION
FOREST SERVICE, UNITED STATES DEPARTMENT OF AGRICULTURE
and
THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

THIS MEMORANDUM OF UNDERSTANDING ("MOU") is made this 2nd day of January 2008 (Effective Date) by and among the Tahoe National Forest, U.S. Department of Agriculture (hereinafter referred to as "Tahoe Forest" or "Forest Service"), the Pacific Southwest Research Station, Forest Service, U.S. Department of Agriculture (hereinafter referred to as "PSW") and The Regents of the University of California, a California corporation acting on behalf of its Office of the Vice Chancellor for Research, University of California, Berkeley (hereinafter referred to as "University"). Each party hereto is sometimes hereinafter referred to singly as the "Party" or collectively as the "Parties."

PURPOSE OF MOU

The Parties intend for this MOU to foster communication, the exchange of information, and the sharing of resources among themselves, and to provide a framework within which the Parties can collaboratively manage the Sagehen Experimental Forest as provided herein below. Nothing in this MOU shall modify or supersede existing statutory or regulatory direction or policies of any Party.

SAGEHEN EXPERIMENTAL FOREST ("EXPERIMENTAL FOREST")

The Sagehen Experimental Forest was established in November, 2005, to foster and conduct applied and basic research on the function and operation of the natural and managed ecosystems of the Sierra Nevada. The objectives include: (1) providing lands for conducting research that will serve as a scientific basis for the management of forest lands and the resources they contain; (2) providing a location for education facilities for the general public and Forest Service staffs, and (3) serving as site providing local, regional, and global long-term environmental monitoring data.

PERIOD OF AGREEMENT

This MOU shall commence on the Effective Date and shall remain in effect until amended or terminated in writing by one or more of the Parties. This MOU may be terminated by any Party upon twelve (12) months prior written notice of such termination to the other Parties.

PARTIES

The Tahoe National Forest represents the national forest system branch of the Forest Service and is one of 18 national forests in California. The Tahoe National Forest is responsible for managing, protecting and enhancing forest resources. The Forest also serves the American public by providing services such as recreation that connect the American public with its national forest resources.

The Pacific Southwest Research Station (PSW) represents the research and development branch of the USDA Forest Service in the states of California and Hawaii and the U.S. affiliated Pacific Islands. Our primary work occurs in California (the most populous state with the fifth largest economy in the world) and Hawaii (a strategic location in the Pacific Rim economies and tourism). We develop and deliver science-based information, technologies, understanding, and applications to help people make well-informed decisions about natural resource management, conservation, and environmental protection.

University is a California public educational institution that has operated the Sagehen Creek Field Station ("Sagehen Station") within the Experimental Forest under a Special Use Permit for teaching, research, and public outreach purposes since 1951. Sagehen Station is managed on a day-to-day basis by University's Berkeley campus, and is also a unit of University's Natural Reserve System ("NRS"). The mission of the NRS is to contribute to the understanding and wise management of California's natural ecosystems by supporting University-level teaching and research, and public service at protected areas throughout California.

GUIDING PRINCIPLES: The Parties desire to:

- a) Protect and build upon a 50-year legacy of data, research infrastructure, and natural resources.
- b) Make the Experimental Forest an ongoing laboratory of collaborative learning between science and management.
- c) Protect short-term and long-term on-going research.
- d) Make research results and educational opportunities within the Experimental Forest and the Field Station available to a broad group of users.
- e) Keep their operating principles succinct and simple.
- f) Revisit MOU one (1) year from the Effective Date, then thereafter, review it every five years.
- g) Collaboratively guide the management of the Experimental Forest, and involve future partner(s) who can provide both intellectual and/or appropriate financial support.
- h) Keep management processes, including NEPA and CEQA, simple to the extent practicable.

- i) Disseminate research results timely and broadly, sometimes before such results are published formally.

COLLABORATIVE EFFORTS, ROLES, AND RESPONSIBILITIES

In light of their respective programmatic and/or fiscal limitations, and except as otherwise provided in this MOU, it is a condition hereof that nothing herein shall be construed as obligating any Party to expend funds in excess of appropriations authorized by law or internal policy. Any agreement to expend funds or incur debt will be in a separate writing signed by the Party who will assume said obligation.

a) The Parties jointly agree to:

1. Develop an informal organizational structure that encourages collaboration.
2. Prepare a revised management plan.
3. Meet semi-annually to address the business of this MOU including each Fall to:
 - i. Update research findings through an exchange between scientists and managers, trying to capture anecdotal managerial experience into scientific framework.
 - ii. Develop an annual operating plan for the coming field year.
4. Develop and endorse a Research Plan for the Experimental Forest.
5. Endorse University's Management and Facility Plans when they are completed and approved.
6. Share data (where appropriate and reasonable), meta-data, and research and management information (e.g., inventories, surveys, and research, natural diversity data base, and Geographical Information System Programs).
7. Delegate day-to-day management of their respective program responsibilities to the Faculty Director and District Ranger, or their designees.
8. Make reasonable efforts to assist, share, or combine their resources with respect to specific projects to the extent practicable for more effective and efficient implementation of such projects.
9. Inform the other Parties of unusual events, conditions, or activities within the Experimental Forest that may affect any aspect of research, management, maintenance, protection, or administration of the Experimental Forest or the Sagehen Station. A Party may inform the other Parties by e-mail, facsimile, or other written transmission.

b) Subject to the condition set forth above, Tahoe Forest agrees to:

1. Broadly support the use of the Experimental Forest for research, scientific, and educational purposes consistent with MOU goals and objectives.
2. Provide administrative, maintenance, protection, and management services as needed to the protection and management of the Experimental Forest and for the accomplishment of research objectives outlined in the Research Plan.
3. Implement National Forest Management Activities, such as maintaining roads and campgrounds.
4. Take the lead on NEPA needed for specific projects.

5. Oversee Special Use Permits and other instruments used to guide activities on the Experimental Forest.
6. Identify opportunities for and participate in developing research agenda.
7. Implement experimental land management treatments.
8. Share staff, research and management information, and provide financial assistance to University and PSW to the extent practicable to support research and management projects within the Experimental Forest.

c) Subject to the condition set forth above, PSW agrees to:

1. Provide leadership and direction on the research program for the Experimental Forest in collaboration with University and Tahoe Forest.
2. Conduct research within the Experimental Forest.
3. Assist Tahoe Forest with NEPA related to research or other PSW projects.
4. Take the lead on developing research plan ("Research Plan"), in collaboration with University and Tahoe Forest.

d) Subject to the condition set forth above, University agrees to:

1. Participate in PSW's development of research agenda.
2. Prepare Management Plan for Sagehen Field Station.
3. Prepare Facilities Management Plan that encourages the development of facilities that are compatible with the environment, and which support research, teaching, and outreach activities within the Experimental Forest.
4. Conduct research, teaching, and other appropriate activities within the Sagehen Station and the rest of the Experimental Forest.
5. Manage Sagehen Field Station facilities.
6. Manage on-line central application for the Experimental Forest.
7. Create and maintain central storage of meta-data.
8. Provide logistical support for Sagehen Station researchers and educational users.

GENERAL PROVISIONS

- a) Any notice required or permitted to be given under this MOU shall be in writing and shall be conclusively deemed given or delivered and received when personally delivered or deposited in the United States mail, registered or certified, postage prepaid, addressed to the other Party at the following respective address, or at such other address(es) or to such other person(s) as the Parties may from time to time designate by written notice to the other:

To Forest Service: Forest Supervisor
Tahoe National Forest

631 Coyote Street
Nevada City, CA 95959

with a copy to:

District Ranger
Truckee Ranger District - Tahoe National Forest
9646 Donner Pass Rd.
Truckee, CA 96161

To PSW: Station Director
Pacific Southwest Research Station
P.O. Box 245
Berkeley, CA 94701

To University: Vice Chancellor for Research
University of California at Berkeley
119 California Hall #1500
Berkeley, CA 94720-1500

with a copy to:

Station Manager
Sagehen Creek Field Station
11616 Sagehen Rd
P.O. Box 939
Truckee, CA 96160

- b) Nothing in this MOU supersedes or alters the 1951 Special Use Permit issued by the United States, Forest Service to University.
- c) This MOU may be executed in counterparts, each of which when so executed shall be deemed to be an original. Such counterparts shall, together, constitute one instrument.

IN WITNESS WHEREOF, the Parties have executed this Memorandum of Understanding as of the date first written above.

TAHOE NATIONAL FOREST
Forest Service, United States Department Of Agriculture

By _____

Its: FOREST SUPERVISOR

PACIFIC SOUTHWEST RESEARCH STATION
Forest Service, United States Department Of Agriculture

By _____

Its: STATION DIRECTOR

THE REGENTS OF THE UNIVERSITY OF CALIFORNIA

By _____

Its: _____

NATIONAL FOREST FOUNDATION ACT

SECTION 401.SHORT TITLE.

This title may be cited as the National Forest Foundation Act Amendment Act of 1990.

SEC. 402. ESTABLISHMENT AND PURPOSES OF FOUNDATION 16 USC 583j

- (a) ESTABLISHMENT.-There is established the National Forest Foundation (hereinafter referred to as the "Foundation") as a charitable and nonprofit corporation domiciled in the District of Columbia.
- (b) PURPOSES.-The purposes of the Foundation are to-
 - (1) encourage, accept, and administer private gifts of money, and of real and personal property for the benefit of, or in connection with, the activities and services of the Forest Service of the Department of Agriculture;
 - (2) undertake and conduct activities that further the purposes for which units of the National Forest System are established and are administered and that are consistent with approved forest plans; and
 - (3) undertake, conduct and encourage educational, technical and other assistance, and other activities that support the multiple use, research, cooperative forestry and other programs administered by the Forest Service.
- (c) LIMITATION AND CONFLICTS OF INTERESTS-
 - (1) The Foundation shall not participate or intervene in a political campaign on behalf of any candidate or public office.
 - (2) No director, officer, or employee of the Foundation shall participate, directly or indirectly, in the consideration or determination of any question before the Foundation affecting-
 - (A) the financial interests of the director, officer, or employee, or
 - (B) the interests of any corporation partnership, entity, or organization in which such director, officer, or employee-
 - (i) is an officer, director, or trustee; or
 - (ii) has any direct or indirect financial interest

SEC. 403. BOARD OF DIRECTORS OF THE FOUNDATION. 16 USC 583j-1.

- (a) ESTABLISHMENT AND MEMBERSHIP.-The Foundation shall have a governing Board of Directors (hereinafter referred to as the "Board"), which shall consist of fifteen Directors, each of whom shall be a United States citizen. At all times, a majority of members of the Board shall be educated or have actual experience in natural or cultural resource management, law, or research.

To the extent practicable, members of the Board shall represent diverse points of view relating to natural and cultural resource issues. The Chief of the Forest Service shall be an ex officio nonvoting member of the Board.

- (b) APPOINTMENT AND TERMS.-Within one year from the date of enactment of this title, the Secretary of Agriculture (hereinafter referred to as the "Secretary") shall appoint the Directors of the Board. Directors shall be appointed for terms of six years; except that the Secretary, in making the initial appointments to the Board, shall appoint one-third each of the Directors to terms of two, four, and six years respectively. A vacancy on the Board shall be filled within sixty days of such vacancy in the manner of which the original appointment was made. No individual may serve more than twelve consecutive years as a Director.
- (c) CHAIRMAN.-The Chairman shall be elected by the Board from its members. A chairman shall serve for a two-year term, and may be re-elected to the post during his tenure as a Director.
- (d) QUORUM.-A majority of the current voting membership of the Board shall constitute a quorum for the transaction of business.
- (e) MEETINGS.-The Board shall meet at the call of the Chairman at least once a year. If a Director misses three consecutive regularly scheduled meetings, that individual may be removed from the Board by majority vote of the Board of Directors and that vacancy filled in accordance with subsection (b) of this section.
- (f) REIMBURSEMENT OF EXPENSES.-Voting members of the Board shall serve without pay, but may be reimbursed for the actual and necessary traveling and subsistence expenses incurred by them in the performance of their duties for the Foundation. Such reimbursement may not exceed such amount as would be authorized under section 5703 of title 5, United States Code, for the payment of expenses and allowances for individuals employed intermittently in the Federal Government service.
- (g) GENERAL POWERS.-The Board may complete the organization of the Foundation by appointing employees, adopting a constitution and bylaws consistent with the purposes of the Foundation and the provisions of this subtitle, and undertaking other such acts as may be necessary to function and to carry out the provisions of this title.
- (h) OFFICERS AND EMPLOYEES.-Officers and employees may not be appointed until the Foundation has sufficient funds to pay their services. Officers and employees of the Foundation shall be appointed without regard to the provisions of title 5, United States Code, governing appointment in the competitive service, and may be paid without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates.

SEC. 404. CORPORATE POWERS AND OBLIGATIONS. 16 USC 583j-2.

- (i) **IN GENERAL.**-The Foundation-
 - a. shall have perpetual succession;
 - b. may conduct business throughout the several States, territories, and possessions of the United States and in foreign countries;
 - c. shall have its principal offices in the Washington, D.C. metropolitan area; and
 - d. shall at all times maintain a designated agent in the District of Columbia authorized to accept services of process for the Foundation.
- (j) **NOTICE AND SERVICE OF PROCESS.**-The serving of notice to, or service of process upon, the agent required under this paragraph, or mailed to the business address of such agent, shall be deemed as service upon or notice to the Foundation.
- (k) **SEAL.**-The Foundation shall have an official seal selected by the Board which shall be judicially noticed.
- (l) **POWERS.**-To carry out its purposes, the Foundation shall have, in addition to powers otherwise authorized under this title, the usual powers of a corporation in the District of Columbia, including the power to-
 - a. accept, receive, solicit, hold, administer and use any gift, devise, or bequest, either absolutely or in trust, or real or personal property or any income therefrom or other interest therein;
 - b. acquire by donation, gift, devise, purchase or exchange any real or personal property or interest therein;
 - c. unless otherwise required by the instrument of transfer, sell, donate, lease, invest, reinvest, retain or otherwise dispose of any property or income therefrom;
 - d. borrow money and issue bonds, debentures, or other debt instruments;
 - e. sue and be sued, and complain and defend itself in any court of competent jurisdiction (except that the Directors of the Board shall not be personally liable, except for gross negligence);
 - f. enter into contracts or other arrangements with public agencies, private organizations, and persons and to make such payments as may be necessary to carry out the purposes thereof; and
 - g. do any and all acts necessary and proper to carry out the purposes of the Foundation.
- (m) **PROPERTY.**-(1) The Foundation may acquire, hold and dispose of lands, waters, or other interests in real property by donation, gift, devise, purchase or exchange. For the purposes of this title, an interest in real property shall include, but not be limited to, mineral and water rights, rights of way, and easements, appurtenant or in gross. A gift, devise, or bequest may be accepted by the Foundation even though it is encumbered, restricted, or subject to beneficial interests of private persons if any current or future interest therein is for the benefit of the Foundation.

- (2) No lands or waters, or interest therein, that are owned by the Foundation and are determined by the Chief of the United States Forest Service to be valuable for purposes established in this title shall be subject to condemnation by any State or political subdivision, or any agent of instrumentality thereof.
- (3) The Foundation and any income or property received or owned by it, and all transactions relating to such income or property, shall be exempt from all Federal, State, and local taxation with respect thereto.
- (4) Contributions, gifts, and other transfers made to or for the use of the Foundation shall be treated as contributions, gifts, or transfers to an organization exempt from taxation under section 501(c)(3) of the Internal Revenue Code of 1986.

SEC. 405. ADMINISTRATIVE SERVICES AND SUPPORT. 16 USC 583j-3.

- (n) **STARTUP FUNDS.**-For the purposes of assisting the Foundation in establishing an office and meeting initial administrative, project, and other startup expenses, the Secretary is authorized to provide to the Foundation \$500,000, from funds appropriated pursuant to section 410(a), per year for the two years beginning October 1, 1992. Such funds shall remain available to the Foundation until they are expended for authorized purposes.
- (o) **MATCHING FUNDS.**-In addition to the startup funds provided under subsection (a) of this section, for a period of five years beginning October 1, 1992, the Secretary is authorized to provide matching funds for administrative and project expenses incurred by the Foundation as authorized by section 410(b) of this title including reimbursement of expenses under section 403, not to exceed the current Federal Government per diem rates.
- (p) **ADMINISTRATIVE EXPENSES.**-At any time, the Secretary may provide the Foundation use of the Department of Agriculture personnel, facilities, and equipment, with partial or no reimbursement, with such limitation and on such terms and conditions as the Secretary shall establish.

SEC. 406. VOLUNTEERS. 16 USC 583j-4.

The Secretary may accept, without regard to the civil service classification laws, rules, and regulations, any director, officer, employee or agent of the Foundation as a volunteer for purposes of the Volunteers in the National Forests Act of 1972 (16 U.S.C. 558a through 558d, 86 Stat. 147).

SEC. 407. AUDITS AND REPORT REQUIREMENTS. 16 USC 583j-5.

- (q) AUDITS.-For the purposes of the act entitled "An Act for audit of accounts of private corporations established under Federal law," approved August 30, 1964 (36 U.S.C. 1101 through 1103; Public Law 88-504) the Foundation shall be treated as a private corporation established under Federal law.
- (r) ANNUAL REPORTS.-The Foundation shall, transmit each year to Congress a report of its proceedings and activities of the previous year, including a full and complete statement of its receipts, expenditures, and investments.

SEC. 408. UNITED STATES RELEASE FROM LIABILITY. 16 USC 583j-6.

The United States shall not be liable for any debts, defaults, acts of omissions of the Foundation nor shall the full faith and credit of the United States extend to any obligations of the Foundations.

SEC. 409. ACTIVITIES OF THE FOUNDATION AND UNITED STATES FOREST SERVICE. 16 USC 583j-7.

The activities of the Foundation authorized under the provisions of this Act shall be supplemental to and shall not preempt any authority or responsibility of the United States Forest Service under any other provision of law.

SEC. 410. AUTHORIZATION OF APPROPRIATIONS. 16 USC 583j-8.

- (a) START-UP FUNDS.-For the purposes of section 405 of this title, there are authorized to be appropriated \$1,000,000.
- (b) MATCHING FUNDS.-For the purposes of section 405 of this title, during the five-year period beginning October 1, 1992, there are authorized to be appropriated \$1,000,000 annually to the Secretary of Agriculture to be made available to the Foundation to match, on a one-for-one basis, private contributions made to the Foundation.

Approved November 16, 1990.
Amended October 12, 1993.