

**DECISION MEMO
FOR IMPLEMENTATION OF THE
ANGORA HAZARD TREE REMOVAL PROJECT**

**EL DORADO COUNTY, CA
LAKE TAHOE BASIN MANAGEMENT UNIT
USDA, FOREST SERVICE**

DECISION:

Based on the analysis contained in this Decision Memo (DM) and associated project planning record, it is my decision to implement the Angora Hazard Tree Removal Project as described in the proposed action (DM, pp. 4-8). My decision incorporates project design features, monitoring, and Best Management Practices as contained in this DM.

The project area encompasses approximately 256 acres along Forest Service System (FSS) roads and trails within the 3,100 acre Angora Fire. Within the project area, about 167 acres are proposed for a combination of mechanical removal and hand felling of dead or dying trees, while 89 acres are proposed for a combination of hand felling or monitoring tree mortality only (DM, pp. 5-7).

The project includes “Unit Specific Actions” that include activities that meet the project’s Purpose and Need (DM, pp. 7-8). Activities include:

- hand felling hazard trees and leaving them on site,
- mechanical removal of hazard trees,
- monitoring vegetation (i.e. trees) areas for post-fire mortality,
- hand felling trees and leaving greater amounts on the ground within stream environment zones (SEZs) for water quality and habitat considerations,
- hand felling hazard trees and burning excess activity fuels,
- hand felling hazard trees using endlining for removal in sensitive areas, and
- decommissioning non-system roads used for tree hauling

Project implementation will begin in the late Spring with hazard tree and boundary marking. The timing of the major project activities are as follows:

- Tree removal is expected to occur in the Summer through Fall of 2008.
- Specified mechanical units 2a, 4, and 5 will be implemented as a one time entry. This means that specific to this project, after initial removal and rehabilitation activities are complete within these units, hazard tree removal using ground-based mechanical equipment is not required.
- Burning excess activity fuels is expected to occur in 2009.

The key considerations I used in making my decision include:

- The project meets the purpose and need and addresses site-specific resource concerns by employing unit specific actions, project design features, and Best Management Practices as described in this DM.

- The project is consistent with the LTBMU Land and Resource Management Plan, as amended. The consistency check is documented in the project planning record (Project Record Exhibit G1).
- The project was coordinated with the Tahoe Regional Planning Agency and Lahontan Regional Water Quality Control Board. Both regulatory agencies had input into the design of the project and concur with the project as described in this decision.
- The “Scoping and Public Involvement” section provides a summary of our efforts for this project (DM, pp. 21-22). I received written and verbal input supporting this project as proposed. I received 5 letters from individuals and/or organizations during the 30 day comment period expressing their concerns on the project. On November 30, 2007, I, along with two members of my staff met with six members of the public and environmental groups to listen to their comments and concerns. As a result of this discussion and written comments, I made the following adjustments to the project:
 - Clarified the hazard tree marking guidelines to further define the criteria to the public (DM, Appendix A). We clarified that the marking guidelines only apply to hazard trees (i.e. those with sufficient height to reach a road or trail). Additionally, we clarified that trees would not be cut only because of the presence of a defect, but due to the combination of a weakening defect(s) and severe fire damage. Finally, we clarified that the marking guidelines apply to all hazard trees regardless of diameter. These guidelines were developed to provide transparency to the public on how hazard trees were being identified specific to this project.
 - Agree to keep documentation associated with marking hazard trees 30”dbh and larger. In addition, prior to cutting, the project Forester or Silviculturist will review each unit for these large trees to ensure they meet the marking guidelines.
 - Offer a public field trip with my staff on one unit to view marked hazard trees prior to treatment to inform and explain why trees were marked for removal. The purpose of the field trip is educational and informational.
- Our response to public comment is contained in the project planning record (Exhibit D1 and E8). I want to emphasize two concerns that I feel have been addressed but continue to resurface in comments:
 - My decision to remove hazard trees is not driven by the economics of merchantable sawtimber or biomass. However, I was asked through public comment to disclose information related to the economics (i.e. amount, volume) of removing hazard trees which is described in this DM (p. 16).
 - There will be no widening of roads or trails as an end result of the project. My decision incorporates design features that describe rehabilitation of roads and trails (DM, p. 9).

BACKGROUND:

On the afternoon of June 24, 2007, the human-caused Angora Fire began on National Forest System (NFS) land managed by the Lake Tahoe Basin Management Unit (LTBMU). The Angora Fire burned 3100 acres and destroyed or damaged more than 250 structures on the South Shore of Lake Tahoe. Adjacent to designated FSS roads and trails, fire killed and damaged trees have created an increased risk to public life and property in the event of a falling tree. Within the first few days of fire start and suppression efforts, some imminent hazard trees within urban areas and

travel routes were felled and left on the ground as public utilities were restored and public traffic around the burned area has increased.

The post fire suppression rehabilitation and Burned Area Emergency Rehabilitation (BAER) efforts assessed an immediate need to initiate actions for watershed and erosion protection measures such as aerial hydromulching, road drainage maintenance and monitoring, and fire suppression route rehabilitation. Due to the timing of these efforts the actions have occurred prior to this project being implemented as this project requires environmental analysis and documentation. A few of the roads and trails that received drainage maintenance and suppression route rehabilitation coincide with travel routes used in this project. As such, the project would require that post project rehabilitation be consistent with the purpose and intent of the BAER treatments.

Utilizing Landsat imagery associated with the BAER effort, the project area vegetation condition after the Angora Fire is: 166 acres or 65% of the project area is classified as having greater than 75% basal area mortality, 42 acres having 25-75% basal area mortality, 34 acres having 0-25% basal area mortality, and 14 acres having no basal area mortality.

This Landsat analysis corresponds closely to the mechanical removal portion of the project associated with >75% basal area mortality. The moderate to low vegetation severity areas (<75% basal area mortality) correspond to the project acreage that would contain hand felling mitigation and delayed tree mortality monitoring (Exhibit B6).

PURPOSE AND NEED:

As a result of the recent Angora fire, hazard trees pose a safety concern to people and property adjacent to the fire edge and on roads and trails within the fire perimeter. Permanently closing system roads and trails is outside the scope of this analysis because these travel routes provide multiple use access, and this would not eliminate hazards nor provide for safety on designated system roads and trails. Prior to the fire, the neighborhood and city population adjacent to the fire area used the road and trail network for hiking, bicycling, cross-country skiing, snowmobiling, and other activities. It is estimated that the road and trail system within and adjacent to the fire perimeter has experienced approximately 1000 visitors per day during peak use prior to the fire (Villanueva, personal communication, 08/2007). In addition to the road and trail system being used by the public for foot traffic, system roads within the fire perimeter are also used for special use access for Angora Lakes Resort, administrative access, and public utility access (LTBMU Gate Management Plan 2005). The classification, status, and length of roads and trails within the project area are shown in Table 1. There are a total of 6 system roads and 3 system trails that would receive hazard tree treatment. Recreation, special use access, research, and post-fire rehabilitation are expected activities within the fire area. These activities will involve people functioning around/within hazard trees unless the hazards are mitigated.

Within the Angora fire perimeter there is high tree mortality surrounding system roads and trails. The high level of tree mortality has created a hazard to human life and property in the event of falling trees or limbs. Mortality has also lead to trees that are available as a product, thus minimizing hazard tree removal costs. For these reasons, there is a need to remove standing hazard trees that pose risk to life and property while using commercial methods that would offset costs for removal.

Table 1. Angora Hazard Tree Removal Project classification, status, and length of roads and trails

| Road or Trail Number | System Status | Length (feet) | Maintenance Level |
|----------------------|------------------------------|---------------|-------------------|
| Roads | | | |
| | National Forest System Road | | |
| 12N20 | (NFSR) | 2,947 | 1 |
| 12N27 | NFSR | 5,409 | 1 |
| 12N19 | NFSR | 6,988 | 2 |
| 12N23 | NFSR | 2,212 | 2 |
| 12N31 | NFSR | 1,616 | 2 |
| 1214 | NFSR | 6,139 | 3 |
| Trails | | | |
| | National Forest System Trail | | |
| 17E49 | (NFST) | 10,454 | N/A |
| 17E78 | NFST | 3,085 | N/A |
| 17E79 | NFST | 7,738 | N/A |

PROPOSED ACTION:

Who

The USDA Forest Service LTBMU proposes to do the following:

What & How

On approximately 256 acres within the Angora Fire area along FSS roads and trails,

- Mitigate hazard trees for public safety along FS system roads and trails
 - Remove approximately 4500 CCF (1CCF = 100 cubic feet (~2.7 MMBF)) of hazard trees through contracting
- Fell and leave hazard trees to meet resource objectives

For the purpose of this project a hazard tree is defined as any dead, dying or living tree, that because of fire damage, insect attack, disease, or mechanical damage poses or will pose a hazard to people, structures or other personal property if it is to fall and is within striking distance of a road or trail (See Appendix A, Hazard Tree Marking Guidelines). Striking distance is considered to be 1 ½ times the height of a tree due to the potential for airborne limbs and the domino effect of one tree striking another. Trees that were felled as hazards during and immediately after the fire are no longer hazards and would remain on the ground with the exception of unit 4 (DM, pp. 7-8). Stressed trees with green foliage may die within three years if severe cambium scorch occurred, nutrient transport is lacking, and less than average precipitation occurs in years leading up to and

after the fire. Trees that die and become a hazard based on Appendix A. Marking Guidelines will subsequently be removed or mitigated by felling through this project. Reforestation will not occur as part of this project but may occur through other future projects as proposed by the Forest Silviculturist.

Removal and hazard mitigation methods may include use of chainsaws for felling, hand piling and burning, feller-bunchers, skidders, cut to length harvesters, forwarders, de-limbers, masticators, chippers, and de-barkers. Approximately 4 existing and 6 new landings may be required to process the hazard trees. New landing construction will occur in a manner to locate landings in existing openings where cut live trees will be minimized.

Existing system and non-system roads are needed for hauling (transport) logs and biomass from the landing to a paved road. System roads will require approximately 2500 feet of maintenance. Maintenance may include aggregate for road surface stabilization, installation of drainage structures, or culvert replacement/maintenance. In addition, there is about ½ mile of non-system road being used as temporary road to remove hazard trees within the project area. Of the total non-system road use, there are approximately 1600 feet that will require road bed upgrading to aid truck access (See map 4, Appendix D). Non-system roads used in the project will be decommissioned after operations are complete. If future ecosystem restoration planning efforts determine the need for the non-system road to stay open for access over the next 4 years, the road will be partially decommissioned now and Best Management Practices will be applied. If this non-system road is not needed for future restoration it will be decommissioned with this project. Decommissioning may involve subsoiling, returning the road prism area to existing grade, road surface drainage control, and/or providing ground cover such as slash, wood chip or masticated material.

Separate from this proposal, hazard trees were also removed on National Forest urban lots and parcels (ULM) to provide for immediate public safety around neighborhoods. Landings used for ULM hazard tree removal are being used for this project so as to minimize new landing construction.

Where

Hazard tree removal and mitigation will take place on NFS land within 150 feet on either side of forest system roads and forest system trails (See Figure 1). During hazard tree removal, if a dead tree poses a hazard to the equipment operator beyond 150 feet of the road or trail, that tree will be felled and left on site. Some hazard trees within stream environment zones (SEZs) adjacent to system roads and trails will also be removed. Mechanical equipment use will be excluded from working in SEZs. An exception to this is where the trail crosses the SEZ; equipment will be limited to use of the trail and not travel outside of the trail. Hazard trees cut in the SEZ will be felled by chainsaw and winched by cable out of the SEZ (endlining). See attached map of SEZs where trails cross the SEZ and where SEZ end lining will occur. Not all trees will be removed within 150 feet of forest system roads and trails. Only hazard trees that are within 1 ½ times striking distance of the system road or trail will be removed or felled and left on the ground.

In areas where felling and leaving trees will exceed fuel loading objectives, hazard trees will be removed using contracting. Felled hazard trees will be left in areas where it has been determined that fuel loading objectives will not exceed 15 tons/acre (DM, pp 7-8).

When

Project activities may last up to three years and the majority of removal will occur over three to four months in the Summer of 2008. Monitoring for recently dead or dying hazard trees would occur along the system roads and trails that are a part of this project for three years (until

November 15, 2010) and additional hazard tree removal or mitigation by felling may occur within this time. Hazard tree removal would take place during appropriate conditions to ensure protection of the public and soil and water resources. For example, operations would take place when soils meet operable soil moisture or freeze conditions as determined by soil scientist or hydrologist.

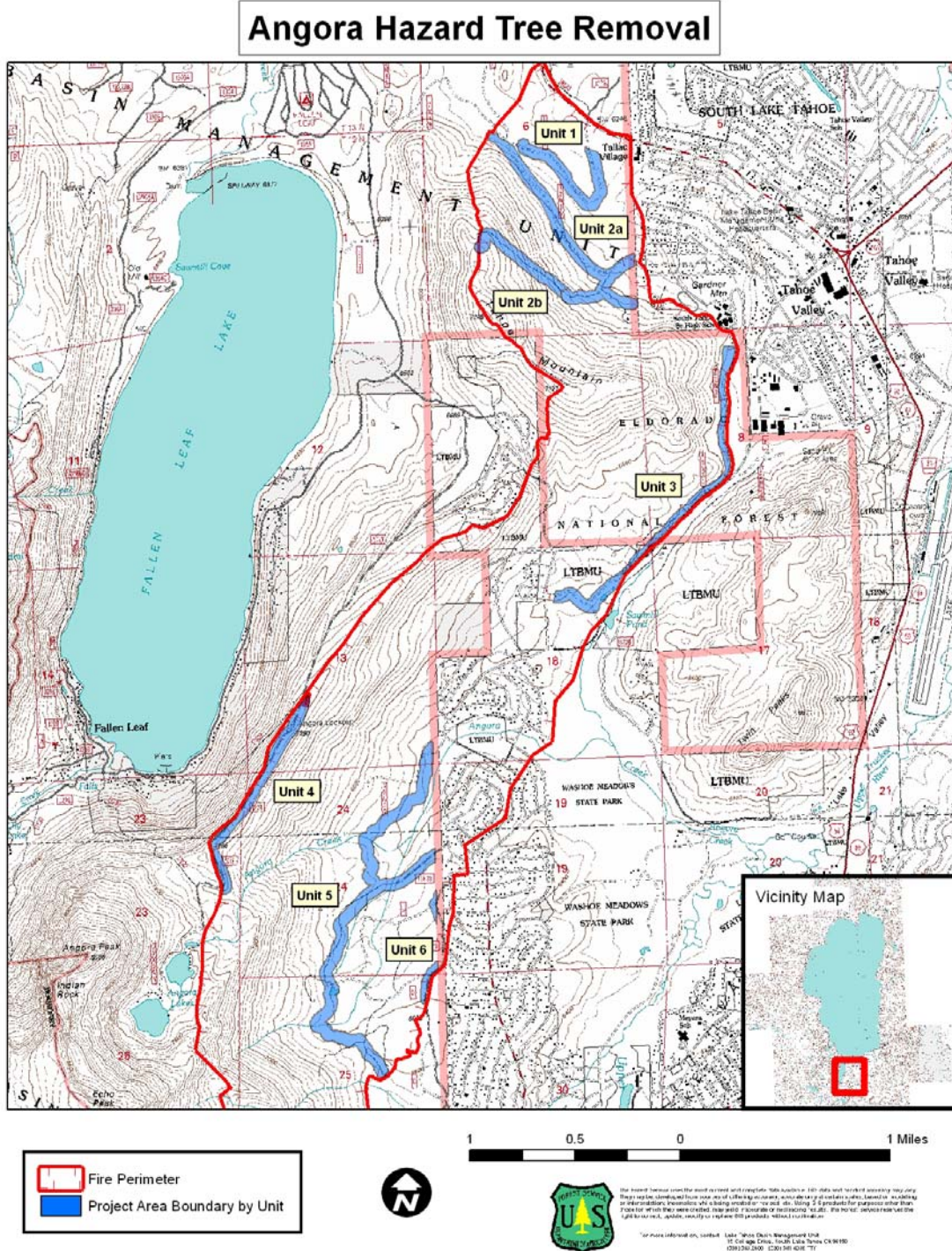


Figure 1. Angora Hazard Tree Project Area Map.

Unit Specific Actions - See Figure 1 for unit location and Appendix D: map 1 for potential skid trail haul routes, and landing locations; map 2 for project area slope; and map 3 for road and trail locations.

Unit 1 (28 Acres, FS system road 12N27)

- Fell hazard trees using chainsaws and leave trees on site
- Hand pile and burn smaller trees and limbs less than 14" diameter in areas where fuel loading exceeds 15 tons/acre
- Monitor for increase in post-fire mortality that may have resulted from cambium scorch, drought, disease, or insect infestation
- Determine the need for additional hazard tree mitigation by felling or removal using mechanical equipment (may include up to 2250 linear feet of road maintenance on FS 12N27 and up to two new landings ~1 acre each)

Unit 2a (47.5 Acres, FS system road 12N19 and system trail 17E78) Approximately 1900 CCF (1CCF = 100 cubic feet) of hazard tree volume would be removed

- Remove hazard trees by mechanical methods using whole tree or cut to length harvesting on slopes less than 30% (41.5 acres)
- Hand fell hazard trees using chainsaws and utilize endlining with equipment on slopes greater than 30% (6 acres)
- Utilize approximately one existing landings and two new landings
- Maintain/Upgrade up to 2000 feet of forest system road 12N19

Unit 2b (20 Acres, FS system trail 17E78)

- Fell hazard trees using chainsaws and leave trees on site
- Hand pile and burn smaller trees and limbs less than 14" diameter in areas where fuel loading exceeds 15 tons/acre

Unit 3 (38.5 Acres, FS system trail 17E79) Approximately 280 CCF of hazard tree volume would be removed.

- Remove hazard trees by mechanical methods using whole tree or cut to length harvesting along approximately 500 feet of the road closest to Tahoe Mountain Blvd (~3.5 acres).
- Fell hazard trees using chainsaws and leave trees on site (beyond the 500 feet of trail as described above) (35 acres)
- May utilize one existing landing
- Monitor for increase in post-fire mortality that may have resulted from cambium scorch, drought, disease, or insect infestation
- Determine the need for additional hazard tree mitigation by felling and leaving or removal using mechanical equipment

Unit 4 (28 Acres, FS system road 1214). Approximately 425 CCF of hazard tree volume would be removed.

- Hand fell hazard trees using chainsaws and endlining with equipment on slopes greater than 30% (16 acres).
- Remove hazard trees by mechanical methods using whole tree or cut to length harvesting methods on slopes less than 30% (12 acres).

- Remove 10-15 of the downed trees within 50 feet of the power line with endlining, where hazard trees were felled during and post fire suppression. This will aid safe access for utility crews during line maintenance and pole replacement.
- No landings would be used

Unit 5 (88 Acres, FS system road 12N23 and system trail 17E49). Approximately 1925 CCF of hazard tree volume would be removed.

- Remove hazard trees by mechanical methods using whole tree or cut to length harvesting methods.
- Within SEZs and areas containing aspen, hand fell hazard trees away from the SEZ or aspen stand using chainsaws and utilize endlining for removal only where fuel load standards necessitate removal
- Utilize approximately two existing landings and two new landings. Based on field surveys, Unit 5 landings will require that up to 10 non-hazard trees (all of which are less than 23" diameter) be cut to safely facilitate the processing of trees at the landing per OSHA standards.
- Maintain/Upgrade up to 500 feet of forest system road 12N23
- Re-construct up to 1600 feet of non-system road for log hauling and biomass removal
- Decommission ½ mile or approximately 1 acre of non-system road after operations are complete

Unit 6 (5.5 Acres, FS system road 12N20)

- Fell hazard trees using chainsaws and leave trees on site
- Monitor for increase in post-fire mortality that may have resulted from cambium scorch, drought, disease, or insect infestation
- Determine the need for additional hazard tree mitigation by felling or removal using mechanical equipment

PROJECT DESIGN FEATURES:

Project design features are elements of the project design that are applied in treatment areas. These features were developed to reduce or avoid negative environmental effects of the proposed action on forest resources. Project design features are listed in two groups. The first group of design features applies to the whole project area. The second group of design features are specific to each individual unit.

Design Features Applied to the Whole Project

Fuels:

1. Activity fuels (< 3 inches diameter) generated from hazard tree removal would be left for soil stabilization up to 5 tons per acre. Amounts greater than this would be manipulated through chipping, mastication, piling, prescribed burning, or removal.
2. Leave larger diameter trees (i.e., large coarse woody debris) on the ground (including recently felled trees) averaging 10 tons/acre across the unit (approximately 4 logs 20 inches diameter and 60 feet long per acre)

Air Quality:

1. A burn plan would be prepared and reviewed by the Lake Tahoe Basin Management Unit Forest Fire Management Officer prior to implementation of any prescribed burning. This

burn plan includes a Smoke Management Plan which is the basis for obtaining a burn permit from the El Dorado County Air Quality Board. In order to minimize the effects of prescribed burning on air quality; monitoring, mitigation and contingency measures will be identified in the Smoke Management Plan. Desirable meteorological conditions such as favorable mixing layer and transport wind speeds are required in the Smoke Management Plan to facilitate venting and dispersion of smoke from populated areas.

Recreation: A recreation analysis was conducted for the project and developed the following design features to facilitate the return of system roads and trails to their pre-project conditions. Features are also included to reduce the potential for user-created trail development (Exhibit B1).

1. Leave, on the ground, felled logs and woody debris irregularly placed adjacent to system roads and trails to discourage creation of user-defined trail use. Quantity of downed logs should be consistent with fuel loading objectives averaging 10 tons/acre across the unit.
2. Following management activities, utilize felled logs of 12" minimum diameter across system trails, and notch out to a 60" trail width. The number of felled logs to be treated this way should average one per 250 linear feet of trail (approximately 1 every 1.5 acres of project area along roads/trails). This is especially important near trail entry points to discourage off highway vehicle use.
3. Following removal operations, install drainage dips on system trails approximately every 150 linear feet. Locate drainage dips to prevent discharge of sediment to surface waters where feasible.
4. Following removal operations, decompact trail widths, with the exception of a 24" wide tread located along the original trail alignment.
5. Implement Forest Closures of travel routes where mechanical work is occurring to protect public from potential hazards associated with management activity.
6. Implement signage along non-system travel routes within the fire perimeter, where hazards have not been mitigated and provide clear maps and information on where safe access can occur.

Scenic Resources: A scenic resource analysis was conducted for the project and developed the following design features to minimize project impacts to scenic resources (Exhibit B2).

1. Leave dead standing trees (snags) within the 150' buffer that do not pose a hazard to travel route users. Where non-hazard trees must be removed to facilitate management activities, select for retention of larger standing non-hazard trees.
2. Leave on the ground felled logs and woody debris irregularly placed within the 150' buffer, avoiding cross-contour felling. Quantity of downed logs should be consistent with fuel loading objectives averaging 10 tons/acre across the unit.
3. Spread slash and/or chips within landing areas. Also spread limited quantity of slash into areas adjacent to landing areas to minimize contrast between landings and surrounding areas once project is complete. Volume of spread slash should be consistent with fuel loading design features over time, not to exceed 5 tons/acre. Refer to BMPs Appendix B for details.
4. Limit height of cut stumps to 6" maximum as measured from the uphill side.

Wildlife:

1. Leave, on the ground, felled logs and woody debris (> 3 inches diameter) irregularly placed within the project area boundary, avoiding cross-contour felling and emphasizing retention of the largest logs in decay classes 1, 2 and 3. Quantity of downed logs should be consistent with fuel loading objectives averaging 10 tons/acre across the unit (~4-5 logs 20 inches diameter and 60 feet long or fewer of larger size per acre; see fuels section above). Where available, retain all large (>~30 in diameter) hollow logs.

2. In areas where coarse woody debris fuel loading would exceed acceptable levels, reduce fuel loads to the maximum acceptable level by removing felled hazard trees in the smallest size classes while retaining logs in the largest size classes available. Emphasize retention of coarse woody debris in decay classes 1, 2, and 3.
3. Leave dead standing trees (snags) within the 150' buffer that do not pose a hazard to travel route users or project operations (i.e., plan operations appropriately to minimize incidental knock down of non-hazard trees). Where non-hazard trees must be removed to facilitate management activities, select for retention of the largest diameter standing non-hazard trees and those with broken tops, twin tips, heavy decay or other diverse decadence features (e.g., sloughing bark, cavities, hollow stem) and removal of smaller diameter and lesser featured snags.
4. To the extent possible, additionally plan operations to result in snag distributions that are clumped and irregularly spaced across the treatment units. Take advantage of naturally occurring clumps for retention intermixed with areas of more widely distributed snags.
5. Where fuel loading and fire protection guidelines for SEZs would be exceeded by leaving all felled hazard trees, removal of necessary felled hazard trees would occur by end-lining. Use the same criteria for coarse woody debris retention as specified above emphasizing retention of largest logs in decay classes 1, 2, and 3.
6. Implement California spotted owl and northern goshawk limited operating periods (LOPs) in areas within specified treatment units where suitable habitat for these 2 species exist (1, 2a, 2b, 4 and 5), unless surveys indicate lack of species presence (see unit specific design features below).

Botany:

1. All off-road equipment used on the project would be washed before moving into the project area to ensure that the equipment is free of soil, seeds, vegetative material, or other debris that could contain or hold seeds of noxious weeds. "Off-road equipment" includes all logging and construction equipment and such brushing equipment as brush hogs, masticators, and chippers; it does not include log trucks, chip vans, service vehicles, water trucks, pickup trucks, and similar vehicles not intended for off-road use. However, it is recommended that all vehicles, especially large vehicles, are cleaned when they come into the project area. Equipment would be considered clean when visual inspection does not reveal soil, seeds, plant material, or other such debris. When working in known weed infested areas equipment would then be cleaned at a washing station before moving to other Forest Service system lands which do not contain noxious weeds.
2. All gravel, fill, or other materials are required to be weed-free. Use onsite sand, gravel, rock, or organic matter when possible. Otherwise, obtain weed-free materials from gravel pits and fill sources that have been surveyed and approved by Nevada Department of Agriculture or by a botanist or ecologist at the Lake Tahoe Basin Management Unit. If used, mulch and seeds must be weed free.
3. Staging areas for equipment, materials, or crews will not be sited in weed infested areas.
4. Weed infestations identified before project implementation that are within the project area or along travel routes near the project area will be hand treated or "flagged and avoided" according to the species present and project constraints. LTBMU Noxious Weed Coordinator will be notified immediately prior to implementation.
5. After the project is completed the LTBMU Noxious Weed Coordinator must be notified so that the project area can be monitored for 3 years subsequent to project implementation to ensure additional weed species do not become established in the areas affected by the project and to ensure that known weeds do not spread.

Soil and Hydrology:

The Forest Service hydrologist, in consultation with Forest Service soil scientist and Tahoe Regional Planning Agency (TRPA) soil scientist conducted field assessments to determine site specific project BMPs and design features as seen below. In addition, a cumulative watershed effects analysis (CWE) was completed as part of the soil and hydrology report (Exhibit B5) to determine the impacts from the proposed project on water resources. The proposed treatments, with the proper implementation of design features and applicable BMP's as described in the proposal (See appendix B), are expected to result in little to no increase in erosion or negative impacts to soil and water resources in the area. Below are project design features for soil and hydrology.

1. Meet the Riparian Conservation Objectives of the Forest Plan (1988), as amended by the SNFPA (2004).
2. Implement Best Management Practices during and following project activities. See Appendix B for a list of project specific BMPs.
3. Allow forwarding/skidding operations only when soil moisture conditions are such that compaction, gullyng, and/or rutting will be minimal, or when snow conditions are at depth and temperatures, as determined by a Watershed Specialist, are suitable for over-the-snow operations.
 - a. Soil moisture conditions would be determined at the 6-10 inch depth and dry to moist soils at this depth, as determined by a USFS Watershed Specialist, will indicate operable moisture conditions (See Soil and Hydrology Report for detailed protocol).
4. Perennial streams will not be crossed with ground based equipment. The perennial channels in the project area include Angora Creek and its main tributary just south of Seneca Pond, both in Unit 5.
5. Along perennial streams within SEZs, fell and leave trees on the floodplain adjacent to but not crossing the stream channel in order to sustain stream channel physical complexity and stability, to increase floodplain roughness, to prevent disturbance to streambanks caused by recreation, and to minimize exposure of bare soil in SEZs. Quantity of coarse woody debris along stream channels in SEZs should be consistent with fuel loading and fire protection objectives.
6. Felled trees would be kept out of intermittent and perennial streams.
7. Existing downed trees that are in perennial or intermittent stream channels would be left in place.
8. Ground based equipment would be restricted within SEZs to existing system trails and roads. SEZs would instead be treated with hand crews, leaving the resulting logs in place.
 - a. If fuel loading in a given SEZ warrants removal of the felled material, trees would be directionally felled and end-lined out of the SEZ after consultation with a Watershed Specialist to determine appropriate trees and locations for end-lining.
 - i. To the extent practicable, end-lining should occur at approximately a 45° angle from the stream channel until material is outside of the SEZ boundary.
 - ii. End-lining of material would not take place within 25 ft of the stream channel unless direct contact between the tree and the ground could be avoided.
 - iii. Where there is potential for sediment delivery, the berms from ruts created with end-lining would be hand raked to fill in the resulting depression, and ground cover would be distributed over these areas, such as slash, wood chip, or masticated material.
9. Where system roads or trails are used for forwarding/skidding, they would be returned to the standard Forest Service road or trail width (10 ft and 5 ft clear width, respectively) after operations are completed in the area. The methods for narrowing may include subsoiling to the desired width and/or installing physical barriers along the desired width to prevent user created access off the road or trail.

10. One existing non-system road would be decommissioned after operations are complete (number 11 on the SEZ/stream crossing map).
11. Use chipping or mastication to provide approximately 70% soil cover in sections of the treatment units that fall within the aerial hydromulch extent in order to protect the soil in areas that equipment operations disturbed. This will be limited to the steeper portions of Unit 4 and 5 only.
12. To the extent practicable (if skidding occurs), where slopes exist above 10%, skid material along slope contours (i.e. cross-slope) to avoid creating ruts in the soil oriented downhill.
13. Where ruts are created during forwarding/skidding operations and the Watershed Specialist identifies the need, the berms of the ruts would be hand raked to fill in the resulting depression, and ground cover would be distributed over these areas, such as slash, wood chip, or masticated material.
 - a. The need for hand raking of berms would be determined based on the length and depth of ruts, the proximity to SEZs, and the angle of the rut in relation to the hillslope angle.
14. Hazard trees that will not be removed from the area should be felled cross-slope rather than cross-contour wherever possible.
15. No ground based equipment operations would occur on slopes greater than or equal to 30%. Where these steeper slopes occur within the treatment area for this project (i.e. Unit 4 and portions of Unit 2a) material would be hand felled and end-lined to the road.

Heritage Resources:

1. Flag and avoid equipment operations in known heritage sites, use hand treatments in these areas.
2. In the event that any new sites are discovered during project implementation, the Forest Archaeologist would be notified and the procedures in accordance with the 36 CFR Part 800 would be implemented.

Design Features Specific to Unit

The following list of design features applies to each unit individually.

Unit 1

- Hand piling and burning of slash would be located beyond 50 ft of any stream channel or standing water.
- If mechanical treatment is deemed necessary based on monitoring for additional mortality, the design features detailed below for Unit 5 would be applied to similar SEZ and other features found within Unit 1.
 - If mechanical treatment occurs within this unit, up to 1 acre of the area disturbed by forwarding/skidding operations may require subsoiling, blading, returning the area to existing grade, and/or providing ground cover to return the area to the condition that existed prior to operations. The need for rehabilitation work would be determined by a Watershed Specialist.
- Implement a spotted owl LOP (March 1 – August 15) adjacent to the westernmost 300 feet of trail in this unit, unless R5 protocol surveys indicate no spotted owls are present.
- Implement a northern goshawk LOP (February 15 – September 15) adjacent to the westernmost 300 feet of trail in this unit, unless R5 protocol surveys indicate no goshawks are present.

Unit 2a

- No SEZ crossings occur along this road.
- Where there is potential for sediment delivery, the berms from ruts created with end-lining (i.e. areas with >30% slope) would be hand raked to fill in the resulting depression.
- For slopes greater than 25%, an average of 50% ground cover would be distributed, such as slash, wood chip, or masticated material.
- Up to 1.8 acres of the area disturbed by forwarding/skidding operations may require subsoiling, blading, returning the area to existing grade, and/or providing ground cover to return the area to the condition that existed prior to operations. The need for rehabilitation work would be determined by a Watershed Specialist.
- Implement a spotted owl LOP (March 1 – August 15) in the westernmost ¼ of this unit, unless R5 protocol surveys indicate no spotted owls are present.
- Implement a northern goshawk LOP (February 15 – September 15) in the westernmost ¼ of this unit, unless R5 protocol surveys indicate no goshawks are present.

Unit 2b

- Hand piling and burning of slash would be located beyond 50 ft of any stream channel or standing water.
- Implement a spotted owl LOP (March 1 – August 15) in the westernmost 1/3 within this unit, unless R5 protocol surveys indicate no spotted owls are present.
- Implement a northern goshawk LOP (February 15 – September 15) in the westernmost 1/3 within this unit, unless R5 protocol surveys indicate no goshawks are present.

Unit 3

- No SEZ crossings occur along this road.
- Up to 1.5 acres of the area disturbed by forwarding/skidding operations may require subsoiling, blading, returning the area to existing grade, and/or providing ground cover to return the area to the condition that existed prior to operations. The need for rehabilitation work would be determined by a Watershed Specialist.

Unit 4

- Implement the following Limited Operating Period (LOP): May 20- September 31 to allow for public access to Angora Lakes Resort unless otherwise agreed to by Forest Service and contractor.
- Implement temporary forest road closure to road 1214 to allow for public safety during operations. The temporary forest road closure would not occur during the LOP as described above.
- Limit equipment use to rubber tired or other low impact equipment to reduce risk for damage to Angora Road (1214)
- To the extent feasible, felled trees would be left in place as long as ground fuel conditions permit. Where ground fuel conditions warrant removal, the material would be end-lined to the road.
- Where there is potential for sediment delivery, the berms from ruts created with end-lining (i.e. areas with >30% slope) would be hand raked to fill in the resulting depression.
- For slopes greater than 25%, an average of 50% ground cover would be distributed, such as slash, wood chip, or masticated material.
- Up to 1 acre of the area disturbed by forwarding/skidding operations may require subsoiling, blading, returning the area to existing grade, and/or providing ground cover to return the area to the condition that existed prior to operations. The need for rehabilitation work would be determined by a Watershed Specialist.

- Implement a spotted owl LOP (March 1 – August 15 within this unit, unless R5 protocol surveys indicate no spotted owls are present.
- Implement a northern goshawk LOP (February 15 – September 15) within this unit, unless R5 protocol surveys indicate no goshawks are present.

Unit 5

- Up to 3.3 acres of the area disturbed by forwarding/skidding operations may require subsoiling, blading, returning the area to existing grade, and/or providing ground cover to return the area to the condition that existed prior to operations. The need for rehabilitation work would be determined by a Watershed Specialist.
- For slopes greater than 25%, an average of 50% ground cover would be distributed, such as slash, wood chip, or masticated material.
- Implement a spotted owl LOP (March 1 – August 15) adjacent to the southernmost 600 feet of trail in this unit, unless R5 protocol surveys indicate no spotted owls are present.
- Implement a northern goshawk LOP (February 15 – September 15) adjacent to the southernmost 600 feet of trail in this unit, unless R5 protocol surveys indicate no goshawks are present.
- Refer to Appendix D, Map 4 for the location of each numbered feature below.
 - 1) The meadow SEZ that parallels Angora Creek along the Unit 5 trail and includes approximately 150 feet of trail length.
 - Wire back silt fencing and weighted coir logs would be installed along this trail, on the downhill side, to prevent sediment movement into the meadow.
 - If soils are not dry enough for equipment operations, metal landing mats (or an alternative approved by a Watershed Specialist) would be placed along the trail to protect the soil from compaction and displacement.
 - If the soils are dry enough for equipment operations, the entire length of the trail adjacent to this meadow would be subsoiled to the system trail width (5 ft) after project completion in order to mitigate compaction caused by project operations and ground cover would be provided.
 - 2) The Angora Creek stream crossing. Equipment would not cross the creek here, but would rather forward/skid material in either direction toward the landing on that side of the channel.
 - The SEZ delineation for this stream SEZ would be completed prior to implementation, and would incorporate the overflow network of channels on the north side of the creek.
 - 3) An ephemeral drainage swale crosses the trail after the Angora Creek crossing. It does not exhibit defined banks or SEZ vegetation indicators; however it would be crossed with metal landing mats (or an alternative approved by a Watershed Specialist) to prevent compaction so that future water flow would not be impaired.
 - 4) Another drainage feature lacking defined banks or SEZ vegetation crosses the trail beyond the first, and appears to be man made. After operations are completed along this section of the trail, this area would be returned to existing grade so that future water flow would not be impaired.
 - 5) A small grassy SEZ is crossed by the trail before the junction with the system road 12N23. This grassy meadow SEZ would be crossed with metal landing mats (or an alternative approved by a Watershed Specialist) to avoid compaction and soil and vegetation disturbance.
 - 6) Along system road 12N23, the main tributary to Angora Creek is crossed. A 4ft culvert exists at this crossing, which will provide adequate protection to the channel banks.
 - A combination of wire backed silt fencing and weighted coir logs would be installed along the road on either side of the culvert crossing to prevent sediment delivery to the channel from hauling operations.

7) A smaller drainage feature is also crossed along system road 12N23, which has defined banks, and will require a “Humboldt” crossing to protect the banks from compaction and damage during equipment operations. The logs from the “Humboldt” crossing would be removed prior to the winter season, and if a large storm event is expected during project implementation.

8) One intermittent channel is crossed by the trail, with defined banks and a depth of approximately 2 ft. This feature would require a “Humboldt” crossing to protect the defined banks from compaction and damage during equipment operations. The logs from the “Humboldt” crossing would be removed prior to the winter season, and if a large storm event is expected during project implementation.

9) A grassy SEZ is crossed by the trail just north of Seneca Pond, approximately 75-100 ft wide. This area would be crossed with metal landing mats (or an alternative approved by a Watershed Specialist) to avoid compaction and soil and vegetation disturbance.

10) A small creek (approximately 2 ft wide) is crossed to the west of Seneca Pond. This creek would be adequately protected with a modified Humboldt crossing, including installation of a pipe for water flow, and covering the crossing with a geotextile fabric to avoid sediment delivery into the wet channel.

11) The haul route to the southern landing in Unit 5 crosses the main tributary to Angora Creek. This crossing is a rocky swale, without defined banks. The channel would be crossed only when it is dry.

12) A drainage feature crosses the trail south of Seneca Pond. It exhibits no SEZ vegetation or wet soil indicators. This area would be returned to existing grade after operations are complete to avoid water flowing down the trail from this location. A berm may need to be installed on the downhill side of this feature, as determined by a Watershed Specialist or Roads and Trails engineer.

13) The main tributary to Angora Creek crosses the trail south of Seneca Pond. This area exhibits approximately 50 ft of SEZ vegetation surrounding it on either side of the channel.

- Material would be forwarded/skidded in either direction of the delineated SEZ toward a landing on that side of the channel.
- The SEZ delineation for this stream SEZ would be completed prior to implementation, and would incorporate the overflow network of channels adjacent to the creek.

14) and 15) 2 ephemeral drainage features cross the trail (about 100 ft apart) between the main tributary to Angora Creek and the southernmost haul route. Neither area exhibits SEZ vegetation or wet soils. Both would be crossed with equipment and would be returned to their existing grade so future water flow would not be impaired.

16) At the southernmost portion of Unit 5 (near the burn area boundary) there is a steep, rocky section of the trail that contains a drainage swale directing water onto the adjacent forested land. This drainage swale would be protected with a “Humboldt” crossing, or would be re-graded after operations are complete to allow for unimpeded water flow off the trail.

Unit 6

- If mechanical treatment is deemed necessary, up to 0.2 acres of the area disturbed by forwarding/skidding operations may require subsoiling, blading, returning the area to existing grade, and/or providing ground cover to return the area to the condition that existed prior to operations. The need for rehabilitation work would be determined by a Watershed Specialist.

ECONOMIC ANALYSIS

Project analysis of economics is based on public comment requesting disclosure of an economic analysis. Though the project is not driven by maximizing economic return on a product (timber and biomass) the project discloses the merchantable volume of hazard trees that could be removed. The project is also consistent with regards to Forest Plan direction.

The LTBMU Land and Resource Management Plan (1988 LRMP) as amended, prescribes the use of salvage as a practice for removing dead, dying, deteriorating, or highly susceptible trees where fire and other mechanisms have caused damage. A purpose of this practice is to provide safer conditions for public life and property on NFS Lands within managed areas. In addition, the 1988 LRMP (page IV-31) and the Sierra Nevada Forest Plan Amendment (2004) (Record of Decision page 52, #13) emphasize recovering the economic value of dead and dying trees.

Cruise plots were established to estimate the volume of hazard trees that could be removed by this project. The cruise plot data were input into the USFS National Cruise Processing Program (2007) to obtain the timber volume for each unit of the project for which tree removals are identified (See table 2).

Table 2. Merchantable (cut) tree species volume in CCF for Angora Hazard Tree Removal Project.

| Tree Species Volume in CCF (1 CCF = 100 cubic feet) | | | | | | | |
|---|--------------|-----------|---------------|----------------|------------|-------|-------|
| Unit | Jeffrey Pine | White Fir | Incense Cedar | Lodgepole Pine | Sugar Pine | Fiber | Total |
| 2a | 970 | 452 | 285 | 0 | 0 | 182 | 1,889 |
| 3 | 238 | 0 | 0 | 36 | 0 | 6 | 280 |
| 4 | 77 | 304 | 0 | 0 | 0 | 43 | 424 |
| 5 | 853 | 665 | 0 | 201 | 21 | 185 | 1,925 |

The input data for economic evaluation consists of volumes for each unit which includes sawlogs (> 6 in. diameter inside bark (dib)) and non sawlog biomass (fiber) (< 6 in. dib). Other input data to be evaluated prior to contracting are tree species, average delivered log prices, stump to truck logging costs, log haul distances, road maintenance costs (pre- and post harvest maintenance), contractual costs (e.g. brush disposal, erosion control, road rehabilitation, etc.), specified road construction (including construction, reconstruction, engineering), market values, and quality of timber volume (e.g. deterioration). Costs used in this economic analysis will be derived from average costs across California.

Merchantability standards that will be used prior to contracting are not part of the hazard tree marking guidelines (see appendix A). Contracting options include timber sale, service contract, or stewardship contract. Determination of which contract type(s) to use will depend on numerous considerations. These include down log retention levels (soils), wildlife habitat, unavoidable and/or unnecessary damage to resources if removed (i.e. botanical, watershed, archaeology, residual, improvements, etc.), rehabilitation work, stumpage value, and location (equipment accessibility).

MONITORING:

1. The project would utilize implementation monitoring to ensure that all pertinent and prescribed design features and BMP's are met.
2. Each year, the Lake Tahoe Basin Management Unit completes evaluations for the Best Management Practices Evaluation Program (BMPEP), as part of the Pacific Southwest Region's effort to evaluate the implementation and effectiveness of BMPs created for

protecting soil and water resources associated with timber, engineering, recreation, grazing, and revegetation activities. During the Spring, fuel treatment units that were treated the previous field season are evaluated for BMP implementation and effectiveness. The Angora Hazard Tree Removal Project BMPs will be included in the pool for random BMP evaluations under the BMPEP program. It is very likely that some of the Angora Hazard Tree Removal Project BMPs will be evaluated with this program, and certain that those BMPs will be included in the random sampling pool for selection. A summary of the BMPEP program along with historical BMP monitoring results can be found in Appendix C.

PERMITTING:

An application with an inspection plan for coverage under Lahontan Timber Waiver category 5 will be submitted with this project prior to project implementation. My staff collaborated with Lahontan Regional Water Quality Control Board staff to satisfy water quality regulations within the Lake Tahoe Basin that are specific to this project. The project design meets the Timber Waiver of Waste Discharge requirements and would continue to involve Lahontan staff review during project implementation (Exhibit E10). My staff collaborated with the Tahoe Regional Planning Agency (TRPA) staff and TRPA concurs with the project as proposed (Exhibit E11).

REASONS FOR CATEGORICALLY EXCLUDING THE PROPOSED ACTION:

I have determined that no extraordinary circumstances exist related to this project that may result in a significant environmental effect. Thus, my decision is to categorically exclude this project from documentation in an environmental impact statement or environmental assessment as it is a routine activity within a category of exclusion. My decision is supported through the information presented in this decision document and supported in the project planning record.

Decisions may be categorically excluded from documentation in an environmental impact statement or environmental assessment when they are within one of the categories identified by the U.S. Department of Agriculture in 7 CFR part 1b.3 or by the categories identified by the Chief of the Forest Service in Forest Service Handbook (FSH) 1909.15 Chapter 30, and there are no extraordinary circumstances related to the decision that may result in a significant environmental effect.

This project is consistent with categories established by the Chief of the Forest Service in the FSH 1909.15 Chapter 30 for categorical exclusions. The category is:

- Section 31.2, Categories of Actions for Which a Project Case File and Decision Memo are Required.
“11. Post-fire rehabilitation activities, not to exceed 4,200 acres to repair or improve lands unlikely to recover to a management approved condition from wildland fire damage, or to repair or replace minor facilities damaged by fire.

By analyzing this project under category #11, I ensured that project activities met three conditions:

1. The project is consistent with agency and Departmental procedures (see decision section on “Findings Required by Other Laws”) and applicable land and resource management plans (Exhibit G1);
2. The project does include the use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure; and

3. The project will be completed within three years following the Angora wildland fire (declared out on November 15, 2007).

This project could fall under category #13 “Salvage of dead and/or dying trees not to exceed 250 acres, requiring no more than ½ mile of temporary road construction”. I selected category #11 because the project emphasis is tied to continuing to provide safe access along designated forest system roads/trails for administrative and recreating public use by removing adjacent hazard trees and rehabilitating these roads/trails after hazard tree removal. The project is still consistent with category #13 recognizing that the project area is 256 acres with hazard tree removal expected to be on or less than 250 acres and no more than ½ mile of temporary road reconstruction.

RELATIONSHIP TO EXTRAORDINARY CIRCUMSTANCES:

I have determined that there are no extraordinary circumstances associated with this project that may cause the project to have significant effects. The following is a description of each potential extraordinary circumstance in relation to the proposed action:

1. Federally listed threatened and endangered species or designated critical habitat, species proposed for Federal listing or proposed critical habitat, or Forest Service sensitive species

The potential effects of this decision on listed wildlife, fish, and plant species have been analyzed and documented in a Biological Assessment (BA) and Biological Evaluation (BE). No effects to threatened or endangered species will occur as these species and their suitable habitats do not occur in or adjacent to the project area. Forest Service sensitive wildlife species (e.g., bald eagle, California spotted owl, northern goshawk and American marten.) occur, or may occur, in the project area as described in the project record. Project design features, described in this memo, are intended to minimize potential effects to sensitive species. The proposed action, including these design features, may allow for minimal impact to some individuals, but is not likely to result in a trend toward federal listing or loss of viability for any sensitive species. Effects to wildlife and fisheries are discussed in the Wildlife and Aquatic Species BE/BA found in the project record (Exhibit B3).

According to the project’s Biological Evaluation for plant species (Exhibit B4) there is no critical habitat to threatened or endangered species. In addition, no sensitive plant species with potential habitat were found within the project area. Therefore there would be no affect to threatened and endangered plant species or designated critical habitat, and LTBMU sensitive plant species with the project.

2. Floodplains, Wetlands, or Municipal Watersheds

Floodplains: Executive Order 11988 is to avoid adverse impacts associated with the occupancy and modification of floodplains. Floodplains are defined by this order as, “. . . the lowland and relatively flat areas adjoining inland and coastal waters include flood prone areas of offshore islands, including at a minimum, that area subject to a one percent [100-year recurrence] or greater chance of flooding in any one year.”

The project area contains floodplains in unit 5. This has been validated by map and site-review of Angora Creek and tributaries. To ensure that floodplains-related impacts are minimized, Best Management Practices will be incorporated (Appendix B) along with project design features which will not result in extraordinary circumstances.

Wetlands: Executive Order 11990 is to avoid adverse impacts associated with destruction or modification of wetlands. Wetlands are defined by this order as, “areas inundated by surface or ground water with a frequency sufficient to support and under normal circumstances does or will support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.”

The project area does support some wetland habitat with a seasonally high water table in units 5 and 1. This has been validated by map and site-review. To ensure that wetland-related impacts are minimized, Best Management Practices will be incorporated (Appendix B) along with project design features. These include but are not limited to operating when soils are sufficiently dry or frozen, and monitoring to ensure soil moisture standards are met which will not result in extraordinary circumstances.

Municipal Watersheds: There are no municipal watersheds located within the project area.

3. Congressionally designated areas, such as wilderness, wilderness study areas, or national recreation sites.

There are no congressionally designated areas such as wilderness, wilderness study areas or national recreation areas in the project area.

4. Inventoried roadless areas

There are no inventoried roadless areas (IRA) within the project area.

5. Research Natural Areas

There are no research natural areas within the project area.

6. Native American Religious or Cultural Sites

Surveys were conducted for Native American religious or cultural sites, archaeological sites, and historic properties. These sites will not be affected as they are to be flagged and avoided as a project design feature.

7. Archaeological Sites, or Historic Properties or Areas

Surveys were conducted for archaeological sites, and historic properties. These sites will not be affected as they are to be flagged and avoided as a project design feature.

FINDINGS REQUIRED BY OTHER LAWS:

My decision will comply with all applicable laws and regulations. I have summarized some pertinent ones below.

National Forest Management Act (NFMA) – This proposed action is located in the Fallen Leaf and Tahoe Valley Management Areas within prescriptions 10-Timber Maintenance and 11-Reduced Timber. Activities associated with the proposed action are consistent with the direction provided in the Lake Tahoe Basin Management Unit Forest Plan for these Management Areas and Management Area Prescriptions (Exhibit G1).

Sensitive Species (Forest Service Manual 2670) - This Manual direction requires analysis of potential impacts to sensitive species, those species for which the Regional Forester has identified population viability is a concern; the project biological review contains the sensitive species list. Potential effects have been analyzed and documented in a Biological Evaluation (BE) (Exhibit B3 and B4). According to the BE potential impacts of the proposed action to sensitive species will not result in a trend toward federal listing or loss of viability.

Clean Water Act - This Act is to restore and maintain the integrity of waters. The Forest Service complies with this Act through the use of BMPs (see appendix B). This decision incorporates BMPs to ensure protection of soil and water resources. In addition, hydrologist and soil scientist field assessments and a cumulative watershed effects analysis (CWE) were completed to determine site specific BMPs and project design features. An Erosion Hazard Rating (FSH 2509.22) was completed in order to determine project specific protection measures (see project record Exhibit B5). Forest Service staff collaborated with Lahontan Water Quality control board staff to satisfy water quality regulations within the Lake Tahoe Basin that are specific to this project. The project design meets the Timber Waiver for Waste Discharge requirements and would continue to involve Lahontan staff review during project implementation (Exhibit E10).

Wetlands (Executive Order 11990) - See Relationship to Extraordinary Circumstances, DM, p. 19.

Floodplains (Executive Order 11988) - See Relationship to Extraordinary Circumstances, DM, p. 18

Clean Air Act - Under this Act areas of the country were designated as Class I, II, or III air sheds for Prevention of Significant Deterioration purposes. Impacts to air quality have been considered for this decision. Class I areas generally include national parks and wilderness areas. Class I provides the most protection to pristine lands by severely limiting the amount of additional human-caused air pollution that can be added to these areas. The Desolation Wilderness, adjacent to the project is a Class I airshed. The remainder of the Forest is classified as Class II airsheds. A greater amount of additional human-caused air pollution may be added to these areas. Any prescribed burning in this decision will coordinate with the El Dorado County Air Quality Management District to protect air resources; including obtaining and following air quality permits.

National Historic Preservation Act - Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effect of a project on any district, site, building, structure, or object that is included in, or eligible for inclusion in the National Register. Section 106 of the National Historic Preservation Act (P.L. 89.665, as amended) also requires federal agencies to afford the State Historic Preservation Officer a reasonable opportunity to comment. Surveys were conducted for Native American religious or cultural sites, archaeological sites, and historic properties or areas that may be affected by this decision (refer to project record Exhibit B6). Results of the surveys have been submitted to the State Historic Preservation Officer and a report with their findings of eligibility will be provided in the project record prior to implementation as well as concurrence with the determination from Nevada State Historical Preservation Office.

Archaeological Resources Protection Act - The Archaeological Resources Protection Act covers the discovery and protection of historic properties (prehistoric and historic) that are excavated or discovered in federal lands. It affords lawful protection of archaeological resources and sites that are on public and Indian lands. During the Burned Area Emergency Rehabilitation Assessment, a resource advisor from the Washoe Tribe assisted in site surveys. Surveys were conducted for Native American religious or cultural sites, archaeological sites, and historic properties or areas that may be affected by this decision. Results of the surveys indicate that some archaeological sites exist but would be protected from impacts due to project design features. In the event that any new sites are discovered during project implementation, the Forest Archaeologist will be notified

and the procedures in accordance with the Advisory Council on Historic Preservation Regulation's 36 CFR Part 800 will be implemented.

Native American Graves Protection and Repatriation Act - The Native American Graves Protection and Repatriation Act (NAGPRA) covers the discovery and protection of Native American human remains and objects that are discovered in federal lands. It encourages avoidance of archaeological sites that contain burials or portions of sites that contain graves through "in situ" preservation, but may encompass other actions to preserve these remains and items. During the Burned Area Emergency Rehabilitation Assessment, a resource advisor from the Washoe Tribe assisted in site surveys. Surveys were conducted for Native American religious or cultural sites, archaeological sites, and historic properties or areas that may be affected by this decision. Results of the surveys indicate that no such sites exist in the project area. In the event that any sites are discovered during project implementation, the Forest Archaeologist will be notified and the procedures in accordance with the Advisory Council on Historic Preservation Regulation's 36 CFR Part 800 would be implemented.

National Environmental Policy Act - This Act requires public involvement and consideration of potential environmental effects. The entirety of documentation for this decision supports compliance with this Act.

Prescribed hazard tree mitigations and removal methods are consistent with the Forest Plan as amended. The project design features have been developed to avoid permanent impairment of site productivity and ensure conservation of soil and water resources. The project has been developed to be practical in terms of planning; preparation and administration costs while meeting the defined purpose and need for action.

SCOPING & PUBLIC INVOLVEMENT:

Scoping letters outlining this project were mailed to 42 individuals and organizations on July 19, 2007. The project proposed action along with a news release were posted on the LTBMU website for scoping on July 26, 2007. In addition, a news release for scoping was published in the Tahoe Daily Tribune on July 30, 2007. To ensure timeliness of project implementation comments were requested by August 10, 2007.

Scoping comments received included 8 individuals and 3 agencies or organizations. Most comments were supportive for hazard tree removal. Comments of concern were submitted by 5 individuals or organizations. These comments include but are not limited to the topics of SEZ and water quality protection, retaining old growth trees, protecting recreation access to Angora Ridge Road (1214), rehabilitation of roads and trails, other alternatives for hazard tree mitigation, and economic analysis.

A field visit that was initiated by the Forest Service ID team leader, occurred on August 24, 2007 to portions of the project area in units 5 and 6. The field visit included two Forest Service specialists working on the project, two members of the public, and two representatives from environmental groups. The field visit clarified which areas would receive mechanical removal and which areas would receive mitigation with hand felling and leaving trees on the ground. At the field meeting the Forest Service specialists described generally which trees qualify as hazards and which trees would be left standing or on the ground and a brief description of stream crossings, SEZ protection, and landing locations.

The Federal government has trust responsibilities to Tribes under a government-to-government relationship to insure that Tribes reserved rights are protected. Consultation with tribes helps ensure that these trust responsibilities are met. The government-to-government consultation was initiated (Scoping Letter, Exhibit C1) and a response was received from the Washoe Tribe of California and Nevada. The response indicated that heritage sites should be evaluated and

protected. The project would protect these sites through avoidance by equipment and hand felling of hazard trees within and away from the sites. No specific traditional cultural property concerns were identified for this project.

A scoping summary was prepared for this scoping process: this report is available in the project record (Exhibit D1). The scoping summary report summarizes the comments received during the public scoping process and presents LTBMU's responses to the comments. The scoping process identified public comments associated with the Proposed Action and was used by the project Interdisciplinary (ID) team to determine areas where additional assessment, information, or clarification was necessary to address public comment and concerns.

A 30 day comment period was provided pursuant to the July 2, 2005 order issued by the U.S. District Court for the Eastern District of California in case *Earth Island Institute vs. Ruthenbeck*. On September 16, 2005, and October 19, 2005, the Court issued additional clarifying orders for projects of this nature to be subject to legal notice for comment and appeal per 36 CFR 215 procedures. The legal notice for the 30 day comment was published on October 25, 2007 in the Tahoe Daily Tribune and was mailed to scoping respondents, agencies, and interested public (Exhibit E1 and E2). A total of 5 letters were received providing comments to the project record (Exhibits E3-E7). The Forest Service response to those comments is found in Exhibit E8. To address public comments, the Forest Supervisor, project ID team leader and public affairs officer met with six members of the public and environmental groups on November 30, 2007 to listen to their comments and concerns (Exhibit E9). As a result, the project marking guidelines were clarified in order to further explain hazard tree criteria to the public. Further responding to public concerns the project will document the reasons for marking trees 30" dbh and larger. In addition, a public field trip to view marked hazard trees within the project area prior to mechanical treatment will be announced to inform and demonstrate the hazard tree mark in one project unit. A news release to announce the field trip will also be published in the Tahoe Daily Tribune.

ADMINISTRATIVE REVIEW OR APPEAL OPPORTUNITY:

This decision is subject to administrative review (appeal) pursuant to 36 CFR Part 215. Only those individuals or organizations that provided comments or otherwise expressed interest in the proposal by the close of the comment period are eligible to appeal the decision pursuant to 36 CFR part 215 regulations. The notice of appeal must meet the appeal content requirements at 36 CFR 215.14. The appeal must be filed (regular mail, fax, email, hand-delivery, or express delivery) with the Appeal Deciding Officer at:

Randy Moore, Regional Forester
USDA Forest Service
Pacific Southwest Region
1323 Club Drive
Vallejo, CA 94592
Email: appeals-pacificsouthwest-ltbmu@fs.fed.us and appeals-pacificsouthwest-regional-office@fs.fed.us
Phone: (707) 562-8737
Fax: (707) 562-9091

The office business hours for those submitting hand-delivered appeals are: 7:30 AM to 4:00 PM Monday through Friday, excluding holidays. Electronic appeals must be submitted in a format such as an email message, plain text (.txt), rich text format (.rtf), or Word (.doc) to the email address listed above. In cases where no identifiable name is attached to an electronic message, a verification of identity will be required. A scanned signature is one way to provide verification. Appeals, including attachments, must be filed within 45 days from the publication date of this notice in the Tahoe Daily Tribune, the newspaper of record. Attachments received after the 45 day appeal period will not be considered. The publication date in the Tahoe Daily Tribune is the

exclusive means for calculating the time to file an appeal. Those wishing to appeal this decision should not rely upon dates or timeframe information provided by any other source.

IMPLEMENTATION DATE:

If no appeals are filed within the 45-day time period, implementation of the decision may begin on, but not before, the 5th business day following the close of the appeal-filing period (36 CFR 215.15). When an appeal is filed, implementation may occur on, but not before, the 15th business day following the date of appeal disposition (36 CFR 215.2). In the event of multiple appeals, the implementation date is controlled by the date of the last appeal disposition.

Project implementation may begin in the late Spring through Fall of 2008 starting with hazard tree and boundary marking in the Spring and early Summer. Mechanical treatment by removal and rehabilitation of trails would occur in the Summer through Fall of 2008. Units 2a, 4, and 5 will have a one time entry associated with them. This means that specific to this project, after initial removal and rehabilitation activities are complete in these units, hazard tree removal using ground-based mechanical equipment is not required. With the exception of the units described above, the monitoring of post fire tree mortality and subsequent hazard tree activities along the road and trail system will last up to three years from the date in which the Angora Fire was called out (November 15, 2007).

CONTACT PERSON:

Duncan Leao
Lake Tahoe Basin Management Unit
35 College Drive
South Lake Tahoe, CA 96150
(530) 543-2660

SIGNATURE AND DATE:

APPROVED BY:

/s/ Terri Marceron
TERRI MARCERON
Forest Supervisor, Lake Tahoe Basin Management Unit

3-21-08
Date

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Appendix A.

Angora Fire Forest Service System Road and Trail - Hazard Tree Marking Guidelines

Hazard trees are any dead, dying or living tree, that because of significant fire damage, insect attack, disease, or mechanical damage poses or will pose a hazard to people, structures or other personal property if they are to fall.

The following are fire salvage tree guidelines, for use in marking hazard trees to cut within the Angora Fire Forest System Roads and Trails. Guidelines address all tree species and are adapted on a project specific level from fire salvage marking guidelines found in Forest Health Protection, Region 5, USDA Forest Service 2007 report # R0-07-01, and Cluck and Woodruff (June 2007).

Mark to Cut trees if:

1. There is 0% green foliage remaining. No green needles that are ocularly visible from on the ground inspection are left in any parts of the crown (i.e. trees with green needles in the crown will be considered as living trees), and the tree has a height sufficient to reach a target road or trail
2. The trees are considered a potential hazard because one or more defects are severe enough to cause the tree, or a portion of the tree, to fall and strike a road or trail. All trees exhibiting one or more of the following defects should be considered a hazard depending on the severity and if in combination with fire damage. If a tree would not have been cut prior to the fire due to the presence of a defect(s) including old fire scars or basal scars, and the Angora fire did not severely damage the tree, then the tree will not be cut.
 - Dead trees or live trees with dead, broken, or hanging branches and dead tops.
 - Lean of a tree and factors contributing to the lean – trees that lean more than 5 degrees from vertical should be carefully inspected and felled if also damaged in the fire.
 - Tree has been root-sprung (lateral root anchorage has been compromised) – 50% of the root system is undermined, exposed or damaged.
 - Forked tops – evidence of splitting, decay, or other weakness at the crotch.
 - Evidence of insects or disease such as frass and/or boring dust, and pitch tubes.
 - Bole cracks, cankers cat faces, loose or missing bark, and trees with enough decay to significantly reduce structural soundness (i.e. defects that weaken one or more sides of the tree).
3. Hazard trees with a DBH greater than 30” will be documented by marking a number on the tree bole and recertified by project Forester or Silviculturist.

Appendix B.
Summary of Best Management Practices (BMP) for the LTBMU Angora Hazard Tree Removal Project

| Best Management Practice | Description |
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| BMP 1-1: Timber Sale Planning Process (TSPP) | The ID Team included a hydrologist, forester, engineer, biologist, and landscape architect, who evaluated onsite watershed characteristics and the potential environmental consequences of activities related to the proposed hazard tree removal project. In specific, the ID Team identified RCAs, SEZs and areas with slopes greater than 30%, and designed specific mitigation measures for these areas as documented in the following BMPs and the design features detailed in the decision document. |
| PSW Region BMP 1-2: Timber Harvest Unit Design | All roadside hazard tree removal areas are designed to preserve the conditions of water flow and water quality by conforming to Forest Service Guidelines, National Forest Management Act (NFMA) requirements, and existing topographic features. These areas are along Forest Service system roads and trails where hazard trees pose a threat to Forest visitors. Mitigations or changes needed to stabilize slopes or improve stream courses have been incorporated into the Unit specific project design. |
| PSW Region BMP 1-3: Determination of Erosion Hazard Rating (EHR) for Timber Harvest Unit Design | An EHR will be completed for representative areas in each treatment Unit using the protocol developed by the California Soil Survey Committee. Mitigation measures will be required which prevent the concentration of surface flows, such as hand-raking grooves created from logs dragging over the soil surface, requiring that ground cover be supplied to areas lacking, or prohibition of ground-based equipment. |
| PSW Region BMP 1-4: Use of Sale Area Maps (SAMs) for Designating Water Quality Protection Needs | A Sale Area Map (SAM) will be developed during the sale preparation process. It will identify stream courses to protect, harvest unit boundaries, skidding and yarding methods, areas where log hauling is prohibited or restricted, and other relevant features required by the TSC provisions. The Interdisciplinary Team (IDT) identified water quality protection features, such as the location of stream courses and riparian zones to be protected as part of the environmental documentation process. The Sale Preparation Forester will include them on the SAM at the time of contract preparation. |
| PSW Region BMP 1-5: Limiting the Operating Period of Timber Sale Activities | The timing of harvest operations, including operating areas and erosion prevention and control, are dictated by the TSC provisions requiring an operating plan and schedule. Outside the normal operating season and during wet periods of prolonged precipitation, a wet weather operations agreement must be submitted. Limited operating periods have been identified specific to each unit by the IDT. |
| PSW Region BMP 1-8: Streamside Management Zone Designation | Roads, skid trails, landings and other timber harvesting facilities will be kept at a prescribed distance from designated stream courses. Riparian Conservation Areas (RCAs) will be designated on the sale area map, however specific guidelines for these areas were not developed any different than the general treatment area due to the need to treat the hazards present along the entire length of these travel routes. Instead, Stream Environment Zones (SEZs) were identified, and their associated protection measures will be designated on the sale area map, and will be marked on the ground prior to operations. Ground based equipment is prohibited within SEZs, except in areas where the existing system road or trail crosses the SEZ already. Where harvest activity is allowed, unit specific design features will dictate the type and location of the activity. |
| PSW Region BMP 1-9: Determine Tractor Loggable | Mechanized equipment will be prohibited from to slopes >30%, and end-lining will be used instead in these areas to remove the material from the site. EHR |

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| Ground | evaluations were conducted in each unit proposed for ground based equipment operations, and indicate that approximately 50% ground cover would need to be provided on slopes >25% in order to compensate for the loss of canopy cover associated with treatments. |
| PSW Region BMP 1-10: Tractor Skidding Design | The careful control of skidding patterns serves to avoid onsite and downstream channel instability, build-up of destructive runoff flows, and erosion in sensitive watershed areas such as meadows and SEZs. To the extent practicable, where slopes exist above 10%, material will be skidded along slope contours, or at an angle to the slope, to avoid creating ruts in the soil oriented downhill. |
| PSW Region BMP 1-11: Suspended Log Yarding in Timber Harvesting | End-lining in SEZs will require skidding at an angle to the stream channel, avoiding lining material out of these areas perpendicular to the channel. End-lining on steep areas (>30% slope) will require hand raking grooves created by end-lining (need determined by a watershed specialist), and providing ground cover over disturbed areas to avoid concentrating flow downhill. |
| PSW Region BMP 1-12: Log Landing Location | Where available, existing landings will be used. Where new landings will be required for operations, landing locations must be agreed to by the Sales Administrator (SA). An acceptable landing will be evaluated according to a set of criteria that includes the following: the excavated size of landings should not exceed that needed for safe and efficient skidding and loading operations; to the extent feasible, landing locations that involve the least amount of excavation, erosion potential, and least number of trees needing to be removed will be selected; and where feasible, landings will be located away from headwater swales, in areas that will allow skidding without crossing stream channels or causing direct deposit of soil and debris to the stream. |
| PSW Region BMP 1-13: Erosion Prevention & Control Measures During Timber Sale Operations | Ground based equipment will not be operated when ground conditions are such that excessive damage will result. Erosion control work that is identified in the project design features and this BMP list shall be completed within 15 days of completion of skidding operations relating to each landing, or within 15 days of the Sale Administrator's designation of erosion prevention measures. Erosion control work shall be completed by the grading deadline (i.e. Oct. 15 or another date identified in a grading extension). Erosion control measures will be kept current, which means daily, if precipitation is likely, or at least weekly, when precipitation is predicted. |
| PSW Region BMP 1-14: Special Erosion Prevention Measures on Disturbed Lands | In the areas of system roads or trails that were covered with hydromulch under the BAER prescribed treatment to avoid sediment movement, a minimum of 70% cover of native material supplied by chipping or mastication shall be provided to stabilize the soils due to the sensitivity of these areas. |
| PSW Region BMP 1-16: Log Landing Erosion Prevention and Control | All landings will be ditched and outsloped for proper drainage, and may be required to be ripped or subsoiled with provisions for revegetation to permit the drainage and dispersal of water, as determined by a watershed specialist. |
| PSW Region BMP 1-17: Erosion Control on Skid Trails | Drainage dips will be installed on haul routes and main skid trails located on system roads and trails at an average spacing of 150 linear ft. Drainages will be located to fit the landscape and prevent discharge of sediment to surface waters wherever possible. |
| PSW Region BMP 1-18: Meadow Protection During Timber Harvesting | Ground based equipment will be prohibited from meadows within the project area, except where the existing system road or trail crosses the meadow, in which case metal landing mats will be placed over the meadow surface to protect the soil and |

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| | vegetation from skidding and hauling operations. Damage to designated meadows and/or their associated protection zones will be repaired by the purchaser in a timely manner, as agreed to by the SA and Hydrologist. Damage to a streamcourse or stream environment zone (SEZ) caused by unauthorized purchaser operations will be repaired by the purchaser in a timely and agreed upon manner. |
| PSW Region BMP 1-19: Streamcourse Protection (Implementation and Enforcement) | Ground based equipment will be prohibited from stream courses within the project area, except where the existing system road or trail crosses the stream, in which case specific design features have been developed for each stream. Any damage to stream courses, including banks and channels, must be repaired to the extent practicable. Equipment use in designated SEZs will be limited or excluded, as detailed in the unit specific design features. |
| PSW Region BMP 1-20: Erosion Control Structure Maintenance | During the period of the TSC, the purchaser will provide maintenance of soil erosion structures constructed by purchaser until they become stabilized, but not for more than 1 year after their construction. If the purchaser fails to do seasonal maintenance work, the Forest Service may assume the responsibility and charge the purchaser accordingly. |
| PSW Region BMP 1-21: Acceptance of Timber Sale Erosion Control Measures Before Sale Closure | TSC provisions specify erosion prevention and control measures, and maintenance of such measures. Erosion control work will be inspected prior to sale closure to determine whether the work will be approved as acceptable, if maintenance work is needed, the practicality of the treatments, and the necessity for modifying standards. "Acceptable" erosion control work means only minor deviation from established objectives, so long as no major or lasting damage is caused to soil or water. SAs will not accept erosion control measures that fail to meet these criteria. |
| PSW Region BMP 1-22: Slash Treatment in Sensitive Areas | Units which require ground cover be provided after operations, such as those with slopes >30% and those identified using the EHR methodology as requiring additional ground cover to maintain or the improve the EHR, must meet effective ground cover goals established for each area. |
| PSW Region BMP 1-24: Non-recurring "C" Provisions that can be used for water quality protection | Non-recurring special "C" provisions, such as directionally felling of timber away from stream channels or cross slope, will be developed as needed for certain units to ensure that adequate erosion control occurs as part of the sale contract. |
| PSW Region BMP 1-25: Modification of Timber Sale Contract | It may be necessary to modify a TSC due to new concerns about the potential affects of land disturbance on a water resource. Where the project is determined to unacceptably affect watershed values, the appropriate Line Officer will take corrective actions, which may include contract modification. |
| PSW Region BMP 2-1: General Guidelines for the Location and Design of Roads | To locate and design roads with minimal resource damage the contractor and Forest Service will agree to new temporary road locations and approved use of existing non-system roads prior to implementation. |
| PSW Region BMP 2-12: Servicing and Refueling Equipment | To prevent pollutants such as fuels, lubricants, and other harmful materials from being discharged into watercourses or other natural channels, unless otherwise agreed upon by the hydrologist, service and re-fueling areas shall be located outside of SEZs. If fuel storage capacities meet or exceed those stated in TSC provisions, project Spill Prevention, Containment, and Counter Measures (SPCC) plans are required. Operators are required to remove service residues, waste oil, and other materials from National Forest land and be prepared to take responsive actions in case of a hazardous substance spill, according to the SPCC plan. |

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| PSW Region BMP 2-22: Maintenance of Roads | Provide the basic maintenance required to protect the system road and to ensure that damage to adjacent land and resources is prevented. At a minimum, maintenance must protect drainage facilities and runoff patterns. Additional maintenance includes surfacing and resurfacing, outsloping, clearing debris, etc. |
| PSW Region BMP 2-23: Road Surface Treatment to Prevent Loss of Materials | When necessary, contractors, purchasers, special users, and Forest Service project leaders will undertake road surface treatment measures such as watering to minimize loss of road materials. |
| PSW Region BMP 2-24: Traffic Control during Wet Periods | Hauling on native surface roads will be restricted to the dry season when roads are stable. Wet areas crossed by skid trails (i.e. system roads or trails treated with this project) will be covered with metal landing mats to protect the road surface and reduce soil loss. |
| PSW Region BMP 2-25: Snow Removal Controls to Avoid Resource Damage | Removal of snow shall be consistent with TSC provisions and the wet weather/winter operations agreement. The contractor is responsible for snow removal that will protect roads and adjacent resources. Rocking or other special surfacing may be necessary before the operator is allowed to use the roads. |
| PSW Region BMP 2-26: Decommissioning of roads | One existing non-system road will be obliterated or decommissioned following its intended use. The decommissioning may include grading, subsoiling, providing ground cover, and revegetation. |
| PSW Region BMP 5-2: Slope Limitations for Mechanical Equipment Operations | Ground based equipment will not be operated on slopes greater than 30% to reduce gully and sheet erosion and associated sediment production. |
| PSW Region BMP 5-3: Tractor Operation Limitation in Wetlands and Meadows | Ground based equipment will not operate in SEZs (with the exception of existing crossings along system roads and trails), but rather will end-line material out of the SEZ when fuel loads warrant removal. |
| PSW Region BMP 5-6: Soil Moisture Limitations for Tractor Operation | Soils will only be operated on with ground based equipment when soil moisture conditions are such that compaction, gulying, and/or rutting will be minimal, or when snow conditions are at depth and temperatures are suitable for over-the-snow operations. Winter logging will be allowed as long as wet weather/winter operating guidelines are agreed to prior to operations. |
| PSW Region BMP 6-2: Consideration of Water Quality in Formulating Fire Prescriptions | To ensure water quality protection while achieving management objectives through the use of prescribed fires (i.e. pile burning), prescription elements will include, but not be limited to, factors such as fire weather, slope, aspect, soil moisture, and fuel moisture. The prescription will include at the watershed and subwatershed level the optimum and maximum burn block size, aggregated burned area, and acceptable disturbance for the riparian/SEZ. |

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| PSW Region BMP 6-3: Protection of Water Quality from Prescribed Burning Effects | Hand piling and burning of slash will be located beyond 50 ft of any stream channel or standing water. |
| PSW Region BMP 7-4: Forest and Hazardous Substance Spill Prevention Control | Equipment operators shall have tools and materials necessary to clean up small and large spills on site at all times. Necessary tools and materials will vary depending on volume of hazardous materials on site. Mitigation of spills is described in the LTBMU spill plan. |
| PSW Region BMP 7-7: Management by Closure to Use | Thinning units (hand and mechanical) will be closed to public use during the time equipment is operating in the unit. |
| PSW Region BMP 7-8: Cumulative Off-Site Watershed Effects | A Cumulative Watershed Effects (CWE) analysis was completed as part of the environmental analysis, and is included in the Soil and Hydrology Specialist Report. Since the majority of the harvest activity will take place along existing system roads and trails, and no new roads will be constructed under this project, additional cumulative watershed effects will be negligible if all BMPs and the project design features are met. |

Appendix C.

USDA Forest Service Lake Tahoe Basin Management Unit Best Management Practices Evaluation Program Summary June 2007

I. Introduction

Each year, the Lake Tahoe Basin Management Unit (LTBMU) completes evaluations for the Best Management Practices Evaluation Program (BMPEP), as part of the Pacific Southwest Region's effort to evaluate the implementation and effectiveness of BMPs created for protecting soil and water resources associated with timber, engineering, recreation, grazing, and revegetation activities.

The objectives of the Forest Service (USFS) BMPEP for the LTBMU are to: 1) fulfill USFS monitoring commitments to the State Water Resources Control Board (SWRCB), as described in the SWRCB/USFS Management Agency Agreement and *Water Quality Management for National Forest System Lands in California (USDA Forest Service, 2000)*; 2) assess and document the efficacy of the USFS water quality management program, specifically the implementation and effectiveness of BMPs; and 3) facilitate adaptive management by identifying program shortcomings and recommending improvements. Additional details on the BMPs, protocols, and site selection can be found in *Investigating Water Quality in the Pacific Southwest Region, Best Management Practices Evaluation Program (BMPEP) User's Guide (USDA Forest Service, 2002)* and *Water Quality Management for National Forest System Lands in California (USDA Forest Service, 2000)*.

II. Methodology

Onsite evaluations are used to assess both BMP implementation and effectiveness. Implementation evaluations determine the extent to which planned, prescribed and/or required water quality protection measures were actually put in place on project sites. Effectiveness evaluations gauge the extent to which the practices met their water quality protection objectives. For sites with poor implementation or effectiveness scores, observers are asked to identify the reasons and suggest corrective actions. For those sites with poor effectiveness, evaluators estimate the degree, duration and magnitude of any existing or potential impacts to water quality, based on published Region 5 guidelines. This type of "hillslope monitoring" uses indirect measures to evaluate BMP effectiveness; poor scores represent potential, rather than actual, impairment of beneficial uses by a given activity.

For BMP implementation, evaluators' answer a variety of specific questions intended to determine whether the project was executed on the ground, as planned and described in project documents. A range of possible scores are allocated to each question, depending on its relative importance and the degree to which a particular requirement is met (e.g., whether the project exceeds, meets, departs immaterially, or departs substantially from requirements). Scores for all implementation questions are then summed and compared to a pre-determined threshold to conclude whether a given suite of BMPs were implemented. BMP effectiveness is determined through evaluation of indirect measures of water quality protection, including observations (e.g., evidence of sediment delivery to channels) and quantitative measurements (e.g., amount of ground cover, percent of stream shade). A scoring system similar to that used for BMP implementation is used to determine BMP effectiveness.

IIa. Sampling Design

BMPEP protocols are applied to both randomly and non-randomly selected project sites. The number of random evaluations to be completed each year is assigned to the National Forests by the Regional Office based on: 1) the relative importance of the BMP in protecting water quality in the Region; and 2) those management activities most common on the individual Forest. The USFS Region 5 target for the LTBMU for BMPEP is typically between 40 and 45 evaluations for 29 different types of BMPs, approximately half of which apply to timber projects. Forests can supplement these randomly selected sites with additional sites based on local monitoring needs, such as those prescribed in an environmental document. The combination of random BMP evaluations and those specific to a given project provide valuable information about implementation and effectiveness of BMPS across the LTBMU. The assumption is that the random selection of BMPs evaluated will be representative of the implementation and effectiveness of BMPs forest-wide.

The list of BMPs evaluated with this Program that are associated with timber harvest activities include:

- T01: Streamside management zones
- T02: Skid trails
- T03: Suspended yarding
- T04: Landings
- T05: Timber sale administration
- T06: Special erosion control and revegetation
- T07: Meadow protection
- E08: Road surface and slope protection
- E09: Stream crossings
- E10: Road decommissioning
- E11: Control of sidecast material
- E12: Servicing and re-fueling
- E13: In-channel construction practices
- E14: Temporary roads
- E15: Rip rap composition
- E16: Water source development
- E17: Snow removal
- E18: Pioneer road construction
- E19: Restoration of borrow pits and quarries
- E20: Management of roads during wet periods
- F25: Prescribed fire
- V28: Vegetation manipulation
- V29: Revegetation of surface disturbed areas

Below are results from the BMPEP program taken over the last five years (see table below). Results show that 88% of BMPs in the LTBMU are implemented and effective. Also, important to note, is that BMPs for skid trails, landings, and special erosion control have shown a past success of greater than 95%. With the use of project level

implementation monitoring, these BMPs may prove the most success of being implemented and effective.

**LTBMU BMPEP IMPLEMENTATION EFFECTIVENESS
YEARS 2002-2007**

SELECTION METHOD
R01 (RANDOM)

| BMP FORM | IE (%) | NIE (%) | INE (%) | NINE (%) | # EVALUATIONS |
|----------------|-------------|------------|------------|------------|---------------|
| T01 | 85.7 | 0.0 | 14.3 | 0.0 | 7 |
| T02 | 100.0 | 0.0 | 0.0 | 0.0 | 5 |
| T04 | 95.0 | 5.0 | 0.0 | 0.0 | 20 |
| T05 | 87.5 | 12.5 | 0.0 | 0.0 | 8 |
| T06 | 100.0 | 0.0 | 0.0 | 0.0 | 16 |
| T07 | 66.7 | 0.0 | 0.0 | 33.3 | 3 |
| E08 | 77.8 | 0.0 | 14.8 | 7.4 | 27 |
| E09 | 86.2 | 3.4 | 6.9 | 3.4 | 29 |
| E10 | 100.0 | 0.0 | 0.0 | 0.0 | 10 |
| E11 | 85.0 | 5.0 | 10.0 | 0.0 | 20 |
| E13 | 71.4 | 28.6 | 0.0 | 0.0 | 14 |
| E15 | 100.0 | 0.0 | 0.0 | 0.0 | 5 |
| E19 | 100.0 | 0.0 | 0.0 | 0.0 | 1 |
| E20 | 76.9 | 0.0 | 23.1 | 0.0 | 13 |
| Average | 88.0 | 3.9 | 4.9 | 3.2 | 178 |

IE - IMPLEMENTED, EFFECTIVE
 NIE - NOT IMPLEMENTED, EFFECTIVE
 INE - IMPLEMENTED, NOT EFFECTIVE
 NINE - NOT IMPLEMENTED, NOT EFFECTIVE

Appendix D. Attached Maps