DECISION NOTICE
and
Finding of No Significant Impact
for the
High Meadow Restoration Project

USDA Forest Service (FS)
Lake Tahoe Basin Management Unit (LTBMU)
El Dorado County, California

Background

Prior to around 1850, the project area conditions reflected a balance of uses and influences of the presence of Native Americans in the area and natural processes. Human activity markedly changed in magnitude and form beginning in the 1850's Comstock Era, when logging, grazing, and widespread resource extraction fed the mining boom in western Nevada and brought with it many deleterious changes to the natural resources and landscape in the Lake Tahoe Basin and High Meadow area. These activities set into motion many changes in the physical and biological processes fundamental to ecosystem function recognized today. Perhaps the greatest example of this influence was the grazing of meadow lands and the diversion of creek flows and natural drainage systems in and around the High Meadow Complex. Reclamation altered and in some cases eliminated overbank flooding and affected other important geomorphic and hydrologic processes that govern meadow preservation and the integrity of vegetation, aquatic systems, and wildlife habitat.

Beginning sometime after 1850, the High Meadow area was used by European settlers for timber extraction. Massive logging operations occurred throughout the Lake Tahoe Basin in the mid to late 1800s. Logging was initially spurred by the Comstock mining boom in Nevada and the need for timber to support mining operations. The logging started in the Carson Range along the east side of the Lake Tahoe Basin, and the Cold Creek Watershed was not spared in the process. Woodburns Mill was the first lumber mill in Lake Valley; it was constructed in 1860 on Trout Creek just upstream from Pioneer Trail not far from the lower end of the Cold Creek Watershed. Water from Cold Creek was used in later flume operations located at the confluence of Cold and Trout Creeks. The long history and proximity of the Pioneer Trail roadway likely contributed to expanded resource operations in the vicinity historically. In addition to the removal of old growth forests from the watershed, log skidding operations appear to have scarred portions of the landscape in the hills around High Meadow and the logging and resource activities left a disjunct network of roads through the area, some of which are used today by hikers, bikers, and horseback riders as part of a legacy backcountry trail network. Portions of these roadways have become absorbed in the landscape over time, but other exposed sections are highly degraded with ruts and runoff channels contributing increased sediment load in surface water runoff.

Seasonal grazing by cattle and sheep was a significant land use in the watershed, and meadow environments in particular, beginning in the late 1800s. These uses continued to some degree through the 1990s and were only terminated recently when the LTBMU acquired the land included in the project area in 2003. Vertical posts from former livestock corral structures are present in the meadow in the southeast portion of the Middle Meadow area of the High Meadow

Complex. Wood siding, metal fragments, and other debris are evidence of a former cabin-like structure on the south knoll near the former corral area.

Creeks were modified and waters diverted across the High Meadow Complex to support seasonal grazing operations. The irrigation strategy was generally to drain the meadows as soon as possible after seasonal spring snowmelt, then divert water from stream channels in late summer and disperse flow over broad sloping meadows from "high-line" ditches. The structures used to divert flow were fairly rudimentary, including rock/timber dams, slide gates, and simple hand excavated ditches. Some water was diverted west of the project area to the dry (west) side of the North/Northeast-trending lateral moraine, most recently to support irrigation for Christmas tree production on private land (Giovacchini Parcel).

The effects of grazing and irrigation practices are highly visible today in numerous diversion channels and structures, channelized and incised streams, hydrologic alteration (including dewatering) of former meadow areas, denuded meadows and stream banks, and soil disturbances. These changes have resulted in encroachment or invasion by lodgepole pine stands into meadow areas and the loss of woody riparian species (willow and alders) along stream channels. The effects of ditch construction and hydraulic diversion practices, combined with fire suppression and the cessation of native land management practices, negatively affected the landscape and meadow ecosystem function at the High Meadow Complex.

The LTBMU acquired the High Meadow Complex property in January 2003 under the authority of the Santini-Burton Act and currently manages over 90% of the land in the watershed. All activities included as part of this project are consistent with the Santini-Burton Act. Approximately 490 acres of the Cold Creek watershed remain in private ownership (principally the Giovacchini parcel in the lower watershed), and approximately 380 acres of the watershed are occupied by urban residential development near Pioneer Trail. The residential development is not within the project area. The reciprocal road easement (FS road 12N21) is the only part of this project that involves the Giovacchini parcel.

Decision and Rationale for Decision

Based on the Environmental Assessment (EA) and the Finding of No Significant Impact (FONSI), it is my decision to select Alternative 3 with one modification.

At this time I will not be making a decision on a two road reroute segments on the lower portion of FS road 12N21 where there is a reciprocal road easement with an adjacent private landowner. Based on comments from the private landowner who shares this reciprocal road easement with us, we need to continue to coordinate on the two options being considered: rerouting the two road segments (1.1 miles of decommissioning and .9 miles of construction) and/or reconstructing the two existing road segments.

We have the funding to complete the watershed and associated vegetation restoration work and would like to begin implementation in September. Since the FS has an existing easement on this section of road, delaying this decision will not affect the restoration and other road/trail work (implemented in 2010) being done on National Forest System (NFS) lands.

Not knowing how long it may take to reach an agreement on the main road, I felt it was prudent to make a decision on the portion of the project ready for immediate implementation. Once we agree on which course of action to proceed with on the lower FS road 12N21, I will issue a decision on this action in a separate decision document as analyzed in this EA. The EA currently retains the analysis of these two road options.

<u>The key considerations I used in making my decision include:</u>

- The project meets the purpose and need (pages 7-9 of the EA), integrates project design features (EA, pp. 24-26), site-specific resource actions (EA, pp. 26-32), and Best Management Practices (EA, Appendix A). Monitoring applicable to this project is described in Appendix C of the EA. These features, actions, and Best Management Practices (BMPs) are attached to this decision in Attachment A and B.

- The project was designed to be consistent with the LTBMU Land and Resource Management Plan (LRMP) as amended by this action. The consistency check is documented in the project planning record (Project Record Document B2).

- Our response to public comment is contained in the project planning record (Project Record Document G1). Early in the project analysis, the comment I heard most was regarding the Upper Cold Creek (from the ford up to the meadow) unclassified trail (i.e. user-created trail not designed to FS trail standards). After hearing this comment from hikers, I hiked the trail and FS road 12N21 at least three times on weekends to experience it myself.

    - As a result of public scoping comments, we developed and considered two more alternatives besides the proposed action and no action alternatives. Alternative 3 was designed to address public comment that wanted the unclassified (user-created) Upper Cold Creek trail (ford up to the meadow) location rather than the proposed action trail location. In order to meet the purpose and need of establishing a sustainable trail system that included water quality and resource

protection measures, the unclassified Upper Cold Creek trail will be rerouted in seven locations with six in the general vicinity of the existing user trail.

- My decision to select Alternative 3 designates a classified trail for construction and maintenance located along and in the vicinity of the user-created Upper Cold Creek trail. It is in the same general alignment (EA, Figure 5), which will be located and maintained to reduce current sediment and erosion from trail use, and provides the recreational experience of hiking through aspen stands and being near the creek.

- Early in the project analysis, I heard some comments regarding the uses of hikers and mountain bikers on the Cold Creek trail. During the two public comment periods, I read (email or letters) a couple of concerns about whether to further limit the uses currently allowed on this trail. After reading comments from the last public comment period, I felt I did not receive many concerns and for the short-term that both uses are appropriate for this trail. From a resource protection perspective, my staff and I feel the Upper Cold Creek trail can be located to address water quality effects and still provide an experience for multiple users including hikers and mountain bikers. We felt that monitoring visitor use and experience on the Upper Cold Creek trail (EA, Appendix C) will allow us to gather information regarding the degree, nature, and scope of user experience. These monitoring results may be used in the future to consider potential use changes.

Alternative 3 is approved as follows:

Management Area Designation

Incorporate 1,790 acres of newly acquired land into the LRMP. This will be considered a non-significant amendment to the LRMP. Adjacent management areas were analyzed against current uses of this area. Based on adjacent management area prescriptions and current non-motorized use of the area (biking, hiking, etc.) as well as the natural features found on the landscape (Cold Creek channel), the LRMP is amended as follows (EA, Figure 2):

a) Heavenly Management Area—Update this Management Area (MA) to include the portion of the project area north of Cold Creek from the west boundary to the power line as Prescription 9, Maintenance (444 acres). Management will maintain the camping and summer off-highway vehicle (OHV) and winter over-the-snow vehicle (OSV) closures from current forest orders while allowing for more opportunities for non-motorized dispersed recreation (Cold Creek trail).

b) Freel Management Area—Update this MA to include the area south of Cold Creek and east of the power line as it crosses Cold Creek as Prescription 3, Unroaded Recreation (1325 acres). Management will maintain the summer OHV and winter OSV closures while improving non-motorized trail access (Star Lake trail, trail to Monument Pass).

c) Tahoe Valley Management Area—Update this MA to include the area north of Cold Creek and west of the boundary with Heavenly MA as Prescription 10, Timber Stand Maintenance

(5 acres) and Prescription 11, Reduced Timber (22 acres). Management will provide dispersed recreation opportunities via the Cold Creek trail.

Ecosystem Restoration

Actions include:

- Remove lodgepole pine in the areas surrounding the meadow using mechanical (113 acres) and manual methods (165 acres). See Figure 3 in the EA for locations of stand boundaries for treatment. This includes, removal of conifers in aspen stands that are at risk due to overtopping of the aspen canopy by encroaching conifers and reduction of aspen stand regeneration.
- Construct approximately 5 temporary landings to facilitate vegetation removal (EA, Figure 4a).
- Prescribed underburn the lodgepole pine removal areas and the meadow complex (approximately 350 acres). See Figure 3 in the EA for the treatment stand boundaries, including Stand 8, which includes the meadow complex and areas of lodgepole pine removal within and immediately adjacent to the meadow environment.
- Construct approximately 8,700 linear feet of new channels and associated floodplain terrace on the mainstem, East Fork, and North Fork of Cold Creek within High Meadow.
- Use of onsite materials to construct new channels, including excavating one acre of the North Fork alluvial fan to extract approximately 700 cubic yards of gravel/cobble from the North Fork fan for grade control/riffle construction, 1,000 tons of boulders for weir grade control structures from project area, harvesting meadow sod from designated salvage areas around Lower, Middle and East Meadow (approximately 2.2 acres) to stabilize and vegetate new channel banks, and harvesting logs adjacent to the meadow for use in riffle structures, stream bank and meadow enhancements.
- Fill/decommission approximately 6,660 linear feet of existing stream channel.
- Remove/fill approximately 8,500 linear feet of “highline” ditches and 15,000 feet of other diversion ditches and gullies throughout the meadow complex.
- Install grade control (boulder weir) and a low-water vehicle crossing at the downstream end of the project near the Powerline Crossing.
- Utilize 4.4 miles of road for vegetation treatment and stream channel repairs. There will be approximately 700 feet of temporary roads installed for vegetation removal and roughly 9,300 feet of temporary roads installed for channel restoration. Approximately 150 feet of temporary road installed for channel restoration will also be used for vegetation removal.

See Appendix D, Figures A-1 through A-3 in the EA for an overview of the location of the stream channel relocation and specific actions associated with the channel relocation and restoration.

A description of fuel treatment methods is given below. For stand specific treatments and stand locations see EA (EA, pp. 12-13; Figure 3).

A. Mechanical Removal/Thinning—113 acres
The general prescription for ground based mechanical treatments will be to remove understory trees that are less than 20 inches in diameter at breast height (dbh). All dead trees will be removed to achieve desired conditions for fuel loading (< 15 tons per acre), retaining a minimum of three of the largest snags per acre of the largest diameter classes. The type of mechanical equipment used for thinning operations will depend on vegetation removal needs, operational feasibility, and cost efficiency. They could include whole tree yarding using mechanical harvesters and whole tree skidding, commercial fuelwood sales using small skidders, and cut-to-length harvest with log forwarding operations. Treated material will be removed either as sawlogs, fuelwood, or biomass. Activity fuels will be lopped and scattered, outside of drip line of residual trees whenever possible. Approximately 700 feet of temporary road will be constructed for mechanical thinning and will be restored following management activities. Approximately 150 feet of temporary road installed for channel restoration will also be used for vegetation removal. Existing landings will be used where available; otherwise, new landings will be constructed. New landings may average 1 to 2 acres in size in order to safely facilitate the handling and removal of biomass (woody) material. See Figure 4a in the EA for locations of these potential landings. When operations have been completed, rehabilitation of landings will be implemented. Rehabilitation will include measures to insure proper drainage and provision of sufficient groundcover. All treated stands will be underburned to reduce fuel loadings to desired levels.

The prescription for hand thinning in Protected Activity Centers (PACs) that include aspen is to thin all conifers from aspen stands up to 14 inches dbh resulting in residual trees consisting of approximately 20 aspen trees per acre of various size classes and about 30 lodgepole pine per acre with diameters that range between 14 inches and 30 inches. All dead trees up to 20 inches dbh will be felled, while retaining a minimum of six snags per acre of various size classes of which three will be greater than 15 inches dbh (or of the largest size classes available) for wildlife habitat.

A short-term forest order closing a portion of the project area during implementation could occur depending upon visitor use and the timing of fuels treatment activities. Generally fuels treatment activities will occur Monday through Friday.

B. Manual Removal/Treatment—165 acres
The prescription for hand thinning treatments includes understory thinning of trees up to 14 inches dbh based on a desired residual tree per acre and average spacing (approx. 70 trees per acre and 25 feet between residual trees). Hand thinned stand treatments include hand cutting of trees along with lopping and scattering of activity fuels. Live trees less than 14” inches dbh will be felled; dead trees up to 20 inches dbh will be felled, while retaining a minimum of three of the largest snags per acre (6 snags per acre in goshawk PAC; stands 6, 7 and southern end of stand 4) in the largest diameter classes. Hand treatments may need future follow-up treatments (10 to 20 years) to remove a portion of the larger (greater than 14 inches dbh) understory trees in order to achieve the

desired stand densities. All treated stands will be under-burned to reduce fuel loadings to desired levels.

Access Travel Management (ATM) Plan

The ATM plan is intended to establish a managed and maintained road and trail system through restoration, re-routes, and new construction. Stream crossings will be designed to facilitate natural hydrologic processes, geomorphic function, and free movement for aquatic dependent species. Roads and trails will be located to reduce effects to wildlife from existing recreation uses. These actions will allow for dispersed non-motorized recreation, access for forest management and restoration activities, access to the main power line to South Lake Tahoe, and protection of restored resources. Trails and roads will provide non-motorized multiple uses and administrative vehicle use. Interconnecting roads and trails forming loops are inherent to the system of routes. The re-routes and new construction will provide a loop with the Tahoe Rim Trail from Monument Pass to Star Lake. Specific actions include:

- Restore approximately 6.4 miles of unclassified road.
- Maintain and reroute one segment of classified FS road 12N21 (5.7 miles). Reroute (construct) .3 miles and decommission .3 miles located under the powerline (upper section of road). This road services utility lines and provides administrative access (i.e. firefighting, emergencies, forest health treatments, provide for reciprocal easement access).
- Place barriers at the eastern end of the private property boundary including at FS road 12N21. Barriers could include a gate, boulders, logs, etc. and would allow for short-term vehicular administrative access to implement this project.
- Maintain 0.5 mile of classified FS road 12N21A that services the utility line. No specific road work is proposed in this decision though I have confirmed that this road segment will be managed as a classified FS road.
- Construct approximately 8.7 miles of new non-motorized trail. This includes converting the Cold Creek trail from an unclassified (user-created) to classified trail. Upper Cold Creek trail would receive seven reroutes and restore approximately 0.8 miles. These trails will be approximately 18 inches to 24 inches wide (a "Class 2" trail, consistent with the Forest Service Handbook 2309.18 criteria for trail classes).

Classified roads and trails through this decision will be managed as follows:

Trail Name	Trail Type	Trail Class	Use	Length
Monument Pass Trail	Native Surface Trail	2 – 18 to 24 inches wide.	Trail would be designed for bicycle use and would be managed for hiker, biker and horse use. All motorized use prohibited.	2.1

Trail Name	Trail Type	Trail Class	Use	Length
Cold Creek Trail	Native Surface Trail	2 – 18 to 24 inches wide.	Trail would be designed for hiker use and would be managed for hiker and biker use. Horse use would be allowed but discouraged. All motorized use prohibited.	3.2
Star Lake Trail	Native Surface Trail	2 – 18 to 24 inches wide.	Trail would be designed for bicycle use and would be managed for hiker, biker and horse use. All motorized use prohibited.	3.4
Road Name	**Road Type**	**Road Maintenance Level**	**Road Design Level**	**Length**
12N21	Gravel	2 – High clearance vehicles. Long term use of the road would be to maintain level 2. No change from current use.	Road is designed to Traffic Service Level D (per Forest Service Handbook 7709.56, Chapter 4). High clearance vehicles such as SUV's and pick ups are considered the design vehicle with critical vehicle being an American Association of State Highway and Transportation Official (AASHTO) H20 vehicle (typically a dump truck type vehicle.	5.7
12N21A	Gravel	2 – High clearance vehicles. Management would be to maintain level 2. No change from current use.	Use of the road is for the power company to access the powerline for maintenance. Road is designed to Traffic Service Level D, same as 12N21.	0.5

The EA (EA, Figure 4a) identifies locations of road and trail construction, restoration, and decommissioning. Both decommissioning and restoration may include: recontouring, subsoiling, mulching, planting, and adding drainage features. FS engineering or hydrology staff will determine in the field which methods are to be applied to specific roads or trails. All road development, use, and closure will occur on a phased basis, closing or restoring part of the system before opening a new section. Road restoration will occur after vegetation removal activities are completed. Temporary roads constructed for vegetation treatments and stream restoration will be closed and rehabilitated following completion of activities. The system roads remaining after project completion will be designed to Forest Service safety and environmental standards. Temporary BMPs will be employed during construction or reconstruction to ensure the environment is protected. The remaining road system, following project completion, will be added to the Forest Service System and be subject to continued maintenance and management. The remaining roads will be for administrative purposes only; the meadow will remain as a non-motorized public access recreation area.

The trail alignment in this alternative will keep recreationists as close to Cold Creek as possible while creating a sustainable trail. There are seven re-route segments totaling 6,134 feet (EA, Figure 5). The re-routes are included to respond to the need to reduce sedimentation from the

unclassified portion of the upper Cold Creek Trail into Cold Creek. One reroutes has a 2,278-foot segment (segment 2, EA, Figure 5) that will take the trail approximately 750 feet upslope from the existing alignment to bypass a steep, erosive segment adjacent to the stream to address water quality concerns. The remaining six reroutes closely follow the existing trail alignment with segments 1 (580 feet), 3 (908 feet) and 5 (422 feet) aligned closer to the stream than the existing alignment. The seven segments of existing trail that are re-routed will be restored by outsloping or eliminating the existing trail bed and restoring trail crossings or barren stretches of trail where erosion is occurring. The new location of the trail as described in the proposed action (Alternative 1) will not be built.

All trails constructed will be added to the LTBMU's classified trail system and receive regular maintenance.

Other Alternatives Considered

In addition to the selected parts of Alternative 3, I considered two other alternatives in detail:
Alternative 1, Proposed Action (EA, pp. 9-15), proposed the Cold Creek Trail alignment be rerouted further away from Cold Creek than Alternative 3. All other proposed actions were the same as Alternative 3; and
Alternative 2, No Action (EA, pg. 23), in which no actions will be implemented but current management will continue.

I developed but did not consider in detail, another alternative that would have implemented the Cold Creek Trail alignment from the proposed action (Alternative 1) and the Upper Cold Creek trail modified in its location to address water quality and FS trail standards. I did not consider it further because most of the feedback I received was supportive of having the Upper Cold Creek trail location for multiple-use (primarily hiker and mountain biker). There was no need to construct another trail that users did not want or would not use.

Public Involvement

As part of the public involvement process and consistent with our management direction (Sierra Nevada Forest Plan Amendment Record of Decision, pg. 62), we conducted a peer review on our initial meadow restoration project design. On August 28 and 29, 2007, the proposed meadow restoration activities were reviewed by Mr. Matt Kiesse of River Run and Toby Hanes of Hydro Science. The peer review findings were documented in a letter to us from Mr. Mitchell Swanson of Swanson Hydrology and Geomorphology, dated September 7, 2007 (Project Record Document N). This letter lists numerous observations about the proposed activities and includes recommendations to slightly modify the final proposal. We reviewed this letter, concurred with its findings, and revised the final proposal to reflect the peer review.

The proposal was listed in the Schedule of Proposed Actions on October 1, 2006. The proposal was provided to the public and other agencies for comment during scoping, which began on March 7, 2008, and ended on April 7, 2008. Public scoping included a public meeting held on March 27, 2008, at the LTBMU Forest Supervisor's Office in South Lake Tahoe, and 39 scoping letters (Project Record Document C1) mailed or hand delivered on March 10, 2008, to interested parties requesting comments for consideration in the High Meadow Projects EA by April 7, 2008. Additionally, a public notice was placed in the *Tahoe Daily Tribune* on March 20, 2008, notifying readers of the public meeting held on March 27, 2008 and where to go for more

information (Project Record Document C4). Approximately 15 people attended the public meeting. In response to the scoping request, input was received, summarized and responded to in a Scoping Summary Report (EA, Appendix B). Alternative 3 and future monitoring of the Upper Cold Creek Trail was developed to respond to concerns raised during scoping.

A 30 day comment period was provided for the Pre-Decisional EA. The legal notice for the 30 day comment period was published on May 23, 2009 in the *Tahoe Daily Tribune* and a letter notifying interested parties of the opportunity to comment was mailed to scoping respondents, agencies, and interested public (Project Record Documents A5 and A6). A total of 11 letters were received providing comments to the project record (Project Record Documents D1-D11). Our response to those comments is found in the EA (EA, Appendix D). To address public comments, the interdisciplinary team and I developed Alternative 3 and updated the monitoring section of the EA (EA, Appendix C) to include future monitoring to inform us if there is a need to address user conflicts on the Cold Creek Trail.

Finding of No Significant Impact

After considering the environmental effects described in the EA, I have determined that these actions will not have a significant effect on the quality of the human environment considering the context and intensity of impacts (40 CFR 1508.27). Thus, an environmental impact statement will not be prepared. I base my finding on the following:

1. **Beneficial and adverse impacts -** My finding of no significant environmental effects is not biased by the beneficial effects of the action (EA, pp. 35-88). Design features and BMPs implemented will mitigate effects to less than significant (DN, Attachment A). Meadow/channel restoration, lodgepole pine removal/prescribed underburning, road/channel decommissioning, water diversion closure and decommissioning, trail relocation/ construction, boulder weir installation, and stream channel decommissioning and reconstruction will result in overall beneficial effects for the Cold Creek drainage.

2. **The degree to which the proposed action affects public health or safety** - There will be no significant effects on public health and safety and design features address public health and safety. The project involves routine work and will signs warning public users of project activities such as vehicles using the road, vegetation cutting, burning and equipment usage. Public health and safety is built into the prescribed fire burn plans and approved by the State. The use of any mechanized equipment will require a hazardous material spill plan and procedures to minimize any spills adjacent to water. A short-term forest order closing a portion of the project area during implementation could occur depending upon visitor use and the timing of fuels treatment activities. Trail work is anticipated to occur without needing any public closures.

3. **Unique characteristics of the geographic area –** The meadow itself is considered a unique characteristic of the geographic area and there will be no significant effects on the meadow. There will be short-term disturbance to the meadow during conifer thinning, prescribed underburning and stream restoration, but those disturbances will heal and restore within five years to a natural, sub-alpine meadow (EA, pp. 52-53). The purpose of the project is to restore the form and function of this meadow and riparian ecosystem.

4. **The degree of controversy over environmental effects** - Public involvement with interested and affected individuals and agencies throughout the environmental analysis did not identify any controversy over the environmental effects of the implementing the actions. The environmental analysis uses common methods to evaluate the environmental effects such as reduction of sediment into the creek.

   The comments generated on the Upper Cold Creek trail generated consideration of two more alternatives, including the selected alternative (3), which identified another option to address public comment and still meet the purpose and need. These comments related to the range of alternatives and not the disclosure of environmental effects.

5. **The degree to which the possible effects on the human environment is highly uncertain or involves unique or unknown risks** - The LTBMU has considerable experience and success with the types of activities to be implemented (i.e. Cookhouse Meadow, Blackwood Canyon, Roundhill Fuel Reduction, Corral Trail System). The effects analysis in the EA shows the effects from trail construction, ecosystem restoration, conifer thinning, and prescribed underburning are not uncertain, and do not involve unique or unknown risk (EA, pp. 35-88).

6. **The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration** - The action will not establish a precedent for future actions with significant effects (EA, pg. 37). My decision to delay the decision on the lower portion of FS road 12N21 is still expected to occur in the future and is a separate action that does not rely on implementing the actions in this decision.

7. **Whether the action is related to other actions with individually insignificant but cumulatively significant impacts** - There are no known significant cumulative effects between this project and other ongoing or planned projects in or adjacent to this project. The effects of other foreseeable future actions as well as past actions and ongoing actions were included in the analysis (EA, pp. 43-45; 51-52; 54; 57-58; 62-65; 67-70; 72-73; 77-80; 82; 85-88).

8. **The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places, or may cause loss or destruction of significant scientific, cultural, or historical resources** - The action will have no significant adverse effect on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places (EA, pp. 86-87 and Project Record Documents F and G).

9. **The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973** - The action will have a "no effect" on any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973. No federally-listed endangered or proposed species were identified by the FWS within the analysis area. No critical habitat for federally-listed threatened or endangered species is designated within the Lake Tahoe Basin. The project BE/BA

(Project Record Documents C and J) determined no proposed or designated critical habitat exists in or near the project action area (EA, pp. 59-62).

10. **Whether the action threatens a violation of Federal, State, or local law or other requirements imposed for the protection of the environment** - The action will not violate Federal, State, and local laws or requirements for the protection of the environment. Applicable laws and regulations were considered in the EA (EA, pp. 19-22). The action was designed to be consistent with the LTBMU LRMP (EA p. 19; Project Record Document B2).

Findings Required by Other Laws and Regulations

As indicated in significance factor number 10 above, this project is in accordance with Federal, State, and local laws. The following specifically apply:

National Forest Management Act

This Act requires the development of long-range land and resource management plans. The LTBMU LRMP was approved in 1988 as required by this Act. It has been amended several times, including the Sierra Nevada Forest Plan Amendment, (2004). The LRMP provides guidance for all natural resource management activities. The Act requires all projects and activities are consistent with the LRMP. The LRMP has been reviewed in consideration of this project. The design of the High Meadow Restoration Project is consistent with the LRMP. A Forest Plan consistency matrix and review for this project was completed (Project Record Document B2).

Endangered Species Act

In accordance with Section 7(c) of the Endangered Species Act, the United States Fish and Wildlife Service list of "endangered and threatened species that may be affected by Projects in the Lake Tahoe Basin Management Area" (updated on January 31, 2008) was reviewed (Project Record Document E3). The action will have a "no effect" on any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

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 (Project Record Document E10). The State Historic Preservation Officer provided a determination that there were no cultural sites eligible for listing on the register of National Historic sites (Project Record Documents E11 and E12).

Clean Water Act (Public Law 92-500)

All Federal agencies must comply with the provisions of the Clean Water Act. The Clean Water Act regulates forest management activities near federal waters and riparian areas. The

design features associated with the proposed action ensure that the terms of the Clean Water Act are met, primarily pollution caused by erosion and sedimentation. Cold Creek is listed as a 303(d) impaired waterbody under Category 4(B), which means that no TMDL needs to be developed for this waterbody. Lahontan Regional Water Quality Control Board Staff recognized that the High Meadow Restoration Project is expected to improve water quality.

Clean Air Act (Public Law 84-159)

The Forest Service will follow specified provisions for smoke management whenever fire is prescribed for underburning. The following documents provide guidance and direction for smoke management to protect air quality: (1) Interim Air Quality Policy on Wildland and Prescribed Fires, issued by the Environmental Protection Agency in 1998; (2) Memorandum of Understanding between the California Air Resources Board (CARB) and the USDA Forest Service, signed on July 13, 1999; and (3) Smoke Management Guidelines in Title 17 of the Code of Federal Regulations.

The project area lies within the Lake Tahoe Air Basin and the El Dorado Air Quality Management District. As a matter of regional policy, a smoke management plan will be submitted to and approved by El Dorado Air Quality Management District, who will issue a Burn Permit to the LTBMU prior to any underburning that will occur within the High Meadow Restoration project area. Several communities lie within proximity of the areas where both pile and prescribed underburning is will to occur. Adherence to the smoke management plan for underburning will reduce negative impacts to communities. The smoke management plan will be approved by me and the El Dorado Air Quality Management District and will be implemented to ensure particulate matter emissions from underburning will not violate California Ambient Air Quality (CAAQ) emission standards. Dust abatement will be implemented as described in the EA (pp. 27, 2.2.2 hydro/soils design feature).

Other Agency Involvement

Lahontan staff has been actively involved in the preparation of the Storm Water Pollution Prevention Plan (SWPPP) for the stream/meadow restoration portion of the Ecosystem Restoration, including review of the draft SWPPP. Additionally, Lahontan staff facilitated the preparation of a Board Resolution, which resulted in the LTBMU being granted a Basin Plan Prohibition Exemption for Waste Discharge for turbidity (Board Order R6T-2009-004 High Meadow Restoration Exemption to Waste Discharge Prohibitions)(July 8, 2009). This Prohibition Exemption only applies to the stream/meadow restoration portion of this project. Continued coordination will occur with other portions of the project (fuels treatment, road/trails).

Tahoe Regional Planning Agency has provided a letter of concurrence with this project (Project Record Document H1).

Implementation Date

If an appeal is filed, implementation may occur on, but not before fifteen business days from the date of appeal resolution. If no appeal is filed, implementation may begin five business days from the close of the appeal period.

Administrative Review or Appeal Opportunities

This decision is subject to administrative review (appeal) pursuant to 36 CFR Part 215. Individuals or organizations who 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-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, newspaper of record, 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.

Contact

For additional information concerning this decision or the Forest Service appeal process, contact:

Stephanie Heller or Matt Dickinson
Lake Tahoe Basin Management Unit
35 College Drive
South Lake Tahoe, CA 96150
Phone (530)543-2600, Fax (530)543-2693

Terri Marceron

TERRI MARCERON
Forest Supervisor
Lake Tahoe Basin Management Unit

7/22/09

DATE

Attachment A - Project Design Features

Design Features Common to All Alternatives

Activities associated with implementation of all action alternatives could have localized, short-term effects. In order to minimize potential environmental effects and in response to public comments on the proposal, the following requirements are applicable to all action alternatives. These design features are intended to minimize or avoid effects to soils, water, vegetation, wildlife, fisheries, heritage resources, recreational resources, and air quality. The applicable Best Management Practices (BMPs) are listed in Appendix A of the EA.

General Design Features (Applicable to all activities)

Hydrology/Soils

1. Generally plan surface disturbance activities to begin after June 15 and no later than October 15, depending on stream flow and weather conditions unless a grading ordinance exemptions are obtained from the TRPA.
2. Implement water quality protection best management practices (BMPs) during and following project activities. See Appendix B for a list of BMPs.
3. A spill prevention plan will be established for each activity of this project and maintained, and the contractor will be required to maintain a cache of materials to contain and treat any spill.

Recreation

1. Prepare a Project Implementation Plan to ensure that all potential effects to recreationists and users are minimized through a well planned schedule, phased implementation, and timing of project activities. The Plan will address the following phases and requirements:

A. Pre-Construction Phase

Develop a Communication and Sign Plan that includes:

- News Releases describing project activities.
- Signage posted at the various access roads and trailheads that describe the purpose of the project and safe travel suggestions.

B. Construction Phase

Due to potential safety hazards to the public inherent in the construction process, implement the following strategies:

- Alternative Routes and Signage: In lieu of an all out closure, some existing travel routes could be detoured to redirect users around construction activities. Detours should be adequately posted with signage that meets Forest Service design standard guidelines.

- Closures and Signage: Use of heavy equipment on access routes may preclude the safe use of those routes by the public; therefore, the area should be temporarily closed. Temporary closures should be adequately posted with signage that meets Forest Service design standard guidelines.

C. Post Construction Phase

A Sign Plan will be implemented at the completion of the project to provide public information regarding appropriate trail use and etiquette, as well as seasonal information on such issues as fire restrictions or other administrative concerns affecting public uses.

Scenic Resources

1. Native materials or similar imported materials local to the surrounding landscape will be used for construction of any required drainage armoring or other constructed features.

Heritage Resources

1. All known cultural sites (except for the road system), will be flagged and all activities will avoid these areas. Along the boundaries, trees will be felled away from the boundaries to avoid inadvertent effects.
2. In the event that any new sites are discovered during project implementation, the Forest Archaeologist will be notified and the procedures of 36 CFR Part 800 will be implemented.
3. All project areas not previously surveyed will be surveyed prior to commencement of activities on any new or existing trails. In the event that any new sites are discovered during surveys, the project activities will be adjusted (i.e. trail alignments routed around, sites flagged and avoided) to avoid impacts to any cultural sites.

Wildlife and Fish

1. For northern goshawk PACs: a limited operating period (LOP) will be maintained, prohibiting vegetation treatments within approximately 0.25 mile of the nest site during the breeding season (February 15 through September 15) unless surveys confirm that northern goshawks are not nesting. If the nest stand within a PAC is unknown, either apply the LOP to a 0.25-mile area surrounding the PAC, or survey to determine the nest stand location. (SNFPA 60.76). LOP may be waived for use of early season underburning in up to 5% of LTBMU goshawk PACs per year (SNFPA 61.79).
2. For California spotted owl PACs: a LOP will be maintained, prohibiting vegetation treatments within approximately 0.25 mile of the activity center during the breeding season (March 1 through August 15) unless surveys confirm that California spotted owls are not nesting. Prior to implementing activities within or adjacent to a California spotted owl PAC and the location of the nest site or activity center is uncertain, conduct surveys to establish or confirm the location of the nest or activity center (SNFPA 60.75).
3. Surveys will be conducted in compliance with the Pacific Southwest Region's survey protocols during the planning process when vegetation treatments are likely to reduce habitat

quality are in suitable northern goshawk nesting habitat that is not within an existing California spotted owl or northern goshawk PAC. Suitable northern goshawk nesting habitat is defined based on the survey protocol (SNFPA 54.34)

4. Culverts or other stream crossings will not create barriers to upstream or downstream passage for aquatic-dependent species (e.g., bottomless culverts with natural bed material) (SNFPA 63.101).
5. All trash created during construction will be properly contained in wildlife-proof containers and removed at the end of each day. No trash will be left overnight on site due to the potential of attracting wildlife.

Ecosystem Restoration Design Features

Hydrology/Soils

Disturbance to surface water and subsurface water may occur during any stream channel/floodplain restoration activity that requires excavation, fill, or use of heavy machinery in or near wet areas. Some short term, localized disturbance to soil and water quality will occur during construction of the new channels and associated inset floodplains and during initiation of flow into the new channel, and to a lesser extent filling of the existing channel, and clearing and grading for temporary access roads. A variety of best management practices (BMPs) will be employed to prevent negative impacts to soil and water resources. Detailed specification for these BMPs will be documented in the final design plans for the project. These design plans will be available at the LTBMU offices and will also be attached to the Storm Water Pollution Prevention Plan (SWPPP), required by the Lahanton Regional Water Quality Control Board (LRWQCB) to obtain the necessary permits prior to project implementation. Additionally, the LTBMU will apply for a Basin Plan Prohibition Exemption for waste discharge from LRWQCB for implementation of the stream/meadow restoration because even with all BMPs in place it is likely that turbidity in the stream channel will at some point during the project be elevated above the water quality standard. A summary of BMPs is presented below as design features to protect soil and water quality:

1. Stream channel construction activities will occur after groundwater levels within channel construction zones are five feet below the ground surface elevation (as measured from existing groundwater piezometers). From previous groundwater data, this is estimated to occur around August 1.

2. No permanent roads or trails will be constructed for stream channel/floodplain ecosystem restoration; temporary roads will be designed to minimize soil erosion, compaction, and stream bank deterioration. Temporary roads will be completely restored following project activities.

3. Soil erosion controls will be installed, such as filter fabric, silt fencing, straw wattles or other suitable means to contain material on site. BMPs of this nature will be used along areas such as temporary access roads, the stockpile areas, the gravel extraction site, and along the haul road between staging area and the existing LTBMU roads. In the event that the implementation requires more than one field season, fill used for temporary

meadow access roads will be removed, stockpiled at the staging area, and reinstalled at the beginning of the next field season. Stockpile locations will be placed in upland areas along existing roads. Stockpiles remaining after October 15 will be winterized, which will include covering the piles.

4. Onsite dust abatement procedures will be implemented as necessary on all disturbed areas sites including forest system and temporary access roads, stockpile areas, and the gravel extraction site, to ensure fine sediments are not transported offsite as airborne particles. Abatement procedures will include both watering and physically covering bare soils.
5. The project will be phased such that the new channel will be completed and allowed a minimum of one growing season to revegetate, prior to any diversion of the existing stream. Live sod will be placed on newly excavated channel banks and watered, to facilitate rapid establishment of stabilizing bank vegetation. The newly constructed channel segments and reactivated historic watercourses will be treated by pumping limited flows into the new channel, before new channels are connected to Cold Creek flows. Treatment will include allowing water to infiltrate in the constructed channel and pumping turbid water within pools of the newly constructed channels and dispersing out onto the floodplain through sprayers until turbidity standards are met as defined in the Storm Water Pollution Prevention Plan and Basin Plan Prohibition Exemption. Channels will be fully connected to Cold Creek (mainstem channel), or floodplain outlet (lower meadow channel), once turbidity levels are achieved.

6. Once flows are fully diverted into the newly constructed channels, the existing channel will be allowed to drain completely. The existing channel will then be filled with excavated material from new channel construction stored at the stockpile areas. The filled channel will be revegetated with sod plugs, native seed, live willows, and mulch.

7. Sod borrow sites and filled channel will be restored using approved revegetation techniques as outlined in the Cold Creek Restoration Project Design Report (Project Record Document C2). These sites will be irrigated for at least one year, and up to two years, post construction.

8. Water from the stream will be siphoned to use as water supply for construction activities such as dust abatement and irrigation. A screen will be placed over the siphon to avoid impacts to fish. Siphoning will be ceased if stream flow level falls below a level that will affect fisheries resources, as determined by a LTBMU fisheries biologist.

Scenic/Visual Quality

1. All stockpiled materials will be removed following activity, and minimize visual evidence of all construction activity.
2. Final grade, topsoil, and vegetation will be established in any in-filled stream channels consistent with surrounding landscape. Should 50% of any planted material not survive, it will be replanted.

Wildlife and Fish

1. Water drafting sites will be located to avoid negative effects to in stream flows and depletion of pool habitat for brook trout (SNFPA 63.101). Use screening devices for water drafting pumps. Use pumps with low entry velocity to minimize removal of aquatic species, including juvenile fish, amphibian egg masses, and tadpoles, from aquatic habitats (SNFPA 64.110).
2. Salvage/recovery of fish will be conducted within anticipated construction dewatering or diversion zones operations by electro-shocking or other suitable means as developed through consultation with the California Department of Fish and Game and LTBMU fisheries staff.
3. Riparian vegetation, expected to be displaced during construction operations, will be stockpiled and transplanted either after the bird breeding season or after any active bird nests within the plants have fledged young.

Botany

1. The population of sensitive moss species Bolanders candle moss (*Bruchia bolanderi*) will be buffered, flagged, and avoided to prevent restoration activities from impacting the occupied and surrounding habitat.
2. There are two populations of Yosemite moonwort or little grapefern (*Botrychium simplex*), which is not a sensitive plant but is uncommon in the Basin within the footprint of the project. Its habitat is easily damaged with disturbance. The Botrychium simplex populations will be buffered, flagged, and avoided to prevent restoration activities from impacting the occupied and surrounding habitat.
3. Botanical surveys have been conducted for the project area. If any sensitive plants or noxious weeds are found, additional design features and mitigations will be added to the project design to avoid effects.
4. Rehabilitation of sod borrowing areas will occur to prevent the establishment of noxious weeds on newly disturbed areas.
5. Use of plant species native to the area or species approved (by Forest Service botany staff) for local use will be required when revegetating disturbed sites and landscaping improvements.

Fuels Treatment Design Features

Air Quality

1. A burn plan will be prepared and reviewed by the Lake Tahoe Basin Management Unit Forest Fire Management Officer prior to implementation of any prescribed underburning. This burn plan will include a Smoke Management Plan, which is the basis for obtaining a burn permit from the El Dorado County Air Quality Management District. In order to minimize the effects of prescribed underburning 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.

Botany

See design features for ecosystem restoration above.

Hydrology/Soils

1. To provide ground cover and protect soil resources in areas of ground disturbance, including landings and temporary roads, masticated or chipped material will be spread over the disturbed areas, with a maximum depth of approximately 4”

2. Temporary roads and landings used for Mechanical Thinning will be completely restored following project activities.

3. High Meadow SEZ stands that determined to be suitable for treatment with ground based equipment using the SEZ Sensitivity Rating System as deemed appropriate by a LTBMU hydrologist or soil scientist may be treated with ground- based equipment under operable soil moisture conditions.

4. Mechanical equipment operations in SEZs will be limited to CTL operations or operations using equipment that has been demonstrated to adequately protect soil and water resources (i.e. equipment that is lighter on the land, rubber-tired equipment, equipment that operates on a bed of slash, or other innovative technologies that reduce impacts to soils).

5. SEZ stands that are determined not suitable for ground based equipment using the SEZ Sensitivity Rating System as deemed appropriate by a LTBMU hydrologist or soil scientist will be treated by hand crews, endlining, or mechanical over-snow operations.

6. When only a portion and SEZ stand is determined not suitable for ground based equipment by an LTBMU hydrologist or soil scientist using the SEZ Sensitivity Rating, the less sensitive part may be treated with mechanical equipment, but the sensitive portions of these stands will be treated by hand crews, endlining, or mechanical over-snow operations. Areas not suitable for ground base treatments, those with wet soils or other sensitive features, will be flagged for hand treatment prior to commencement of mechanical operations.

7. No ground based mechanical equipment will be allowed to operate within 25 feet of a perennial stream or waterbody. When removing trees within the 25 foot buffer, equipment may reach in, however ground contact must be avoided.

8. Prescribed fire will be planned to ensure that fire intensity and duration do not result in detrimentally burned soils.

9. Underburning prescriptions will be designed to avoid negative effects on soil and water resources. Flame heights will not exceed two feet within 50 feet of stream courses or on wetlands unless higher intensities are required to achieve specific objectives consistent with the Forest Plan standards, above.

10. No ignition will be allowed in SEZs; fire will be allowed to back into these areas.

11. Specific prescribed fire design criteria will apply within SEZs to address the resource concerns associated with underburning in SEZs:
    a. A 50-foot buffer (no burning) will be maintained along perennial or intermittent streams, lakes, bogs, and fens.
    b. Fire will be allowed to creep into this buffer, maintaining flame lengths of less than two feet in height, except where sensitive plant occurrences, fens, and noxious weeds (cheatgrass) are present.

Recreation

1. A short-term forest order closing a portion of the project area during implementation could occur depending upon visitor use and the timing of fuels treatment activities. Generally fuels treatment activities will occur Monday through Friday.

Scenic

1. The size of mechanical harvest landings will be minimized, and mechanical harvest areas will be located outside of views from the Tahoe Rim trail, if possible.

2. For fuel treatments and thinning work within the foreground of the Star Lake and High Meadow trail segments, mitigation treatment measures such as 6-inch stumps, or lop and scatter of vegetative material to minimize the visual effects will be included. For public safety, felling of trees immediately adjacent to the Star Lake and High Meadow trails will be completed in the spring and early summer months, and a spotter will be present to facilitate safe visitor passage.

3. Construction of temporary roads, meadow restoration, and stand improvement work will be accomplished to the extent practical in a manner that closely duplicates the existing lines, forms, colors, and textures of the surrounding landscape character. Straight linear project activities will be avoided so that linear management activities will not be visible from the Tahoe Rim trail or the Star Lake/High Meadow trail.

Wildlife and Fish

For treatments within aspen stands:

1. Wood slash will be removed to allow sunlight to reach the forest floor, unless a prescribed fire is planned to stimulate additional suckering. In the latter case, only

scattered branches and tops will be left (broadcast burning of heavy fuel loadings will likely kill too many shallow aspen roots and result in poor suckering).

2. Prescribed fire treatments will be designed to minimize disturbance of groundcover and riparian vegetation in RCAs.
    a. Prescribed underburn activities in meadows and aspen stands are desired; however, they should be designed to protect existing late seral vegetation (e.g., willow along streams and within meadows, larger overstory aspen trees).
3. Some mid- and large-diameter live trees that are currently in decline, have substantial wood defect, or that have desirable characteristics (teakettle branches, large diameter broken top, large cavities in the bole) will be retained to serve as future replacement snags and to provide nesting structure (SNFPA 51.11).
4. Snags will be clumped and distributed irregularly across the treatment units (SNFPA 52.11).
5. Small patches of mortality will be retained in old forest emphasis areas (Stand 1), as per SNFPA 53.17.
6. Larger diameter trees (e.g., large coarse woody debris) will be left on the ground (including recently felled trees) to the extent possible without exceeding a desired fuel load of 10 tons per acre, with the exception of areas within goshawk PACs where fuel loads may exceed this average level. Emphasize retention of wood in the largest size classes and in decay classes 1, 2, and 3. Consider the effects of follow-up prescribed fire in achieving desired down woody material retention levels (SNFPA 51.10).
7. To achieve the desired conditions for fuel loads, stand densities, and desired stream shading, dead and live trees removed will range between 3 to 30" dbh, beginning with the smallest diameter and retaining the largest trees. Treatments will include the removal of primarily understory, and some overstory trees, in order to reach the desired residual stand density and wildfire behavior.
8. Basal areas greater than 150 ft^2 and fuel loads in excess of 15 tons per acre will be prescribed where needed to maintain desired stream shading.
9. Jeffrey/ponderosa and sugar pine will be favored for retention, as well as desired riparian species, such as aspen and willow.
10. Large snag (> 15" dbh) will be maintained within PACs at densities > 3/acre and down woody material levels > 15 tons/acre where possible.

Access Travel Management Design Features

Recreation

1. User conflicts will be reduced or minimized on trails through the use of informational signage, including trail signs with allowed uses.

Scenic

1. Irregularly spaced tree branches and slash will be distributed over the surface of decommissioned or restored roads and trails, and areas adjacent to these travel routes.

Botany

1. Botany surveys will be completed for TES plant species and noxious weeds for all of the portions of the ATM that have not had previous surveys conducted or where previous surveys have expired. If any sensitive plants or noxious weeds are found, additional design features and mitigations will be added to the project design to avoid effects.

Attachment B - Best Management Practices

Best Management Practice	Description
PSW Region BMP 1-5: Limiting the Operating Period of Timber Sale Activities	The timing of harvest or fuels/vegetation 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 in the project design measures.
PSW Region BMP 1-8: Streamside Management Zone Designation	Roads, skid trails, landings and other timber harvesting or fuels/vegetation facilities will be kept at a prescribed distance from designated stream courses. Riparian Conservation Areas (RCAs) will be designated on the contract a 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) and their associated protection measures will be designated on the contract 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 or fuels/vegetation activity is allowed, unit specific design features will dictate the type and location of the activity.
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.

Best Management Practice	Description
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 contract administrator). 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 contract 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 1-16: 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 without approval from the Forest Service, 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. Exceptions to this BMP are allowed for the purpose of implementing the stream channel and meadow restoration work, with activities within the meadow and streamcourse environment approved in advance by the Forest Service.

Best Management Practice	Description
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. Exceptions to this BMP are allowed for the purpose of implementing the stream channel and meadow restoration work, with activities within the meadow and streamcourse environment approved in advance by the Forest Service. 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 1-22: 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 or service contract clauses,, 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 effects 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.

Best Management Practice	Description
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.
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 2-24: 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 to protect the road surface and reduce soil loss. Exceptions to this BMP are allowed for the purpose of implementing the stream channel and meadow restoration work, with activities within the meadow and stream course environment approved in advance by the Forest Service.
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: Decommission of roads	Existing non-system road will be obliterated or decommissioned following any use for implementation of the project. 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. Exceptions to this BMP are allowed for the purpose of implementing the stream channel and meadow restoration work, with activities within the meadow and stream course environment approved in advance by the Forest Service.

Best Management Practice	Description
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, gullying, 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, 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.
Protection of Water Quality from Prescribed Burning Effects	Burning of slash will be located beyond 50 ft of any stream channel or standing water to the extent practicable.
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.