

**Appendix B-8**

**LAKE TAHOE RESTORATION PROJECTS  
ESTIMATED NECESSARY EXPENSES & KEY MILESTONE DATES**

Project Name: Big Meadow Watershed Fire Regime Rest. Agency: US Forest Service (LTBMU)  
 Prepared by: Raul Sanchez Phone: 530-543-2679 EIP #: 10133  
 SNPLMA Project No.: SNG078

**Identify estimated costs of eligible reimbursement expenses:**

**1. Planning, Environmental Assessment and**

**Research Costs** (Develop individual burn plan, specialist doing pre- burn plan marking,)

\$ 20,000 6.4 %

**2. FWS Consultation—Endangered Species Act**

\$ 0 0 %

**3. Direct Labor (Payroll) to Perform the Project**

\$ 27,000 9 %

**4. Project Equipment** (tools, software, specialized equipment, etc.)

\$ 4,000 1.3 %

**5. Travel** (including per diem where official travel status required to carry out project, such as serve as COR, experts to review reports, etc.)

\$ 3,000 1 %

**6. Official Vehicle Use** (pro rata cost for use of Official Vehicles when required to carry out project)

\$ 5,000 1.7 %

**7. Cost of Contracts, Grants and/or Agreements to Perform the Project**

\$ 200,000 66.6 %

**8. Other Direct and Contracted Labor:** Agency payroll for the Contracting Officer to do project procurement, COR, Project Inspectors, Project Manager, Project Supervisor, reports, etc.; Also covered is the cost to contract for a Project Manager and/or Project Supervisor if contracted separately from other project contracts)

\$ 5,000 2 %

**9. Other Necessary Expenses** (See Appendix B-11)

\$ 36,000 12 %

**TOTAL:** \$ 300,000 100 %

**Estimated Key Milestone Dates:**

<b>Milestones/Deliverables:</b>	<b>Date:</b>
Treat 150 acres by hand thinning	November 30, 2009
Treat 50 additional acres by hand thinning	August 31, 2010
Burn 50 to 100 acres	October 31, 2010
Burn additional 50 to 100 acres	September 30, 2011
Burn additional 50 to 100 acres	December 31, 2012
Final Project Technical / Completion Report	December 31, 2012
Begin Project Close-Out Activities	January 31, 2013
Final Completion Date:	April 30, 2013

**COMMENTS:**

**APPENDIX K  
LAKE TAHOE CAPITAL PROJECT PROPOSAL  
ROUND 9**

**Consistency with Lake Tahoe nomination criteria:**

Project nominations must qualify as an Environmental Improvement Program (EIP) project and be the responsibility of the federal government (federal share responsibility); and have a willing and ready federal sponsor.

Project nominations must be consistent with one of the focus areas in the June 2006 Federal Vision (pp. 8-9) (<http://www.fs.fed.us/r5/lbmu/documents/lbec/revise-FV-Final.pdf>) and fit into at least one category.

**Capital Focus Area (2006 Federal Vision): Watershed & Habitat Improvement**

**Circle a minimum of one category:**

- (1.) Continued emphasis on fuels reduction in coordination with projects funded under the 2006 SNPLMA amendment (the "White Pine" amendment).
- (2.) Continued implementation of projects approved in Rounds 5 through 8 which implement the EIP. Project proposal should clearly describe the phase/product being produced along with the consequence of not completing the project phase proposed for Round 9.

List project(s): **F078 - EIP#:10133- If we do not obtain project implementation dollars, the project may have to be reanalyzed, and it may take longer to implement the project.**

3. Project is consistent with and contributes toward TMDL pollutant reductions within the four source categories (atmospheric, urban & groundwater, forested uplands, and stream channel).

List category(ies): \_\_\_\_\_

4. Control of aquatic invasive species and prevention of new aquatic invasive species.

-----  
**Project Name: Big Meadow Watershed Fire Regime Restoration      EIP #: 10133**

**Lead Agency:** USDA Forest Service

**Contact:** Raul Sanchez

**Threshold:** WQ, SC, V, F, W, SR, R  
530.543.2679

**Phone Number:**

**Threshold Standard:** WQ 1-6, SC2, V1&4, W1, F2-4, W1, SR3, R1

**Email Address** rsanchez@fs.fed.us

**Funding Requested in this Round:** \$300,000

**Total Project Cost:** \$695,000

**Is this a multi-year Project (If "Yes", describe in the Detailed Project Description below number of years or phases and which year the requested funding will cover) YES**

**Project Summary (maximum 200 words): (applicable ONLY to this Round 9 project):**

The primary purpose of the Big Meadow Watershed Fire Regime Restoration project is to enhance wildlife habitat through the re-introduction of a “natural” fire regime into the Big Meadow area, and to restore the ecological function of Big Meadow Creek Watershed to pre-disturbance conditions that existed prior to grazing, timber management, and fire suppression. The secondary benefit of the Big Meadow Project is to reduce the amount of dense even aged stands for the Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy in the watershed. Stage one will focus on preparing tree stands for burning by cutting dense even age stands in the meadows, aspen stands, and the general forest. Prescribed burning operations in the meadows, aspen stands, and the general Forest will occur in stage two. Stage two and stage two project implementation schedules are weather dependent.

**Detailed Project Description (focuses on what Round 9 is funding; list the number of years or phases the Round 9 requested funding will cover; if phased, briefly describe how this project links into previously phased projects including what remains for Rounds 10 and beyond).**

The purpose of the Big Meadow Watershed Fire Regime Restoration Project is to meet the needs by performing the following project activities:

- Introduce a mixed severity prescribed burn in the Big Meadow Watershed. Prescribed burning will be utilized where the risk of excessive tree mortality or fire escaping is minimal. Where a high density of ladder fuels presents an unacceptable level of risk, hand thinning will be implemented. Thinned materials will be piled and burned, lopped and scattered, or chipped (only where the chipper can access the site).
- Remove Lodgepole pines and white firs that have encroached into the meadows and aspen stands.
- Pile and burn conifer saplings including an understory burn on the fringes of the aspen stand adjacent to the meadow.

**SNPLMA Round 7**

The objectives of the round seven funding cycle is to scope this analysis with a technical advisory team (TAC) made up of Forest Service ecosystem restoration specialists, Forest Service silviculture and fire management specialists, vegetation management specialists from the Washoe Tribe, and local environmental permitting agencies, to develop specific treatments for the focus areas. Initiate and complete the NEPA analysis for this project, develop a restoration monitoring plan, and the associated NEPA resource surveys and reports. The TAC will develop a list of potential actions, which will then be analyzed as required by NEPA. Following a final decision on actions that are proposed, we will continue to work with the TAC team to develop an implementation schedule, and begin the process of securing all necessary environmental permits. The following schedule will be followed to achieve the goals and objective for round seven.

- **2007:** Initiate NFMA and NEPA process (EA) for potential project areas
- **2007-2008:** Complete planning, finish designs for specific treatments, and begin restoration implementation in focus areas.

## **SNPLMA Round 9**

Tree thinning (stage 1) and burning operations (stage 2) will be planned in the general Forest outside of the urban community in the Big Meadow Watershed (Figure 1). Prescribed fire will be used as the primary tool to burn vegetation on up to approximately 150 acres of forest and 50 acres of meadow, and thinning on approximately 200 acres of Forest for this funding cycle. A tree thinning contract will be sent out for bid in the spring of 2009 following contract selection and implementation in August of 2009. Tree thinning will occur prior to burning to allow the vegetation time to dry up for burning. The tree thinning contract is anticipated to be completed in one season over a three month period. The contract maybe extended to 2010 if inclement weather conditions persist during project implementation. Prescribed burning is also weather dependent; however, the prescribed burning operations will occur in the fall of 2010, and it will continue for two years until all of the treatment areas are burned. The Lake Tahoe Basin Management Unit fire suppression staff will be implementing the burning operations. The following project stages are specific examples of prescriptions in similar treatment areas as proposed for this project.

**The first stage of the project is to tree thin in meadows, aspen stands, and the adjacent Forest (Figure 2).**

### **Hand Thinning – Uplands & Stream Environment Zones**

For fuel reduction treatments, trees up to approximately 14” DBH would be thinned at variable spacing based on achieving desired residual trees per acre and/or basal area. The fuel would then be handpiled and burned, in openings to reduce scorching of adjacent conifer and riparian hardwoods. Underburning of residual fuels in the uplands would occur in strips as needed to achieve the desired fuel levels. Live trees removed would range between 1 to 14 inches DBH; dead trees would range between 1 to 20 inches DBH; and down logs would range will be determined at the site location of individual treatments. Hand treatments would receive follow-up treatments to remove a portion of the larger diameter understory trees where needed in order to achieve the desired stand densities as part of this project. The following photos are examples of mechanical treatment sites in dense stands with similar objectives as the Big Meadow Fire Regime Projects.

**Photo 1. Before Upland Treatment**



**Photo 2. After Upland Treatment**



### **Hand Thinning - SEZs**

Hand thinning in Sensitive Environmental Zone (SEZs) would include the same treatments as described for the uplands, but with prescriptions that also include basal areas and fuel loads that would maintain desired stream shading. Where possible without disturbance to the stream

channel, ground fuels would be removed from the SEZ to be treated by hand pile, lope and scatter, and burning. It is proposed to “back” fire into the SEZ. Any prescribed underburning would be designed to avoid adverse effect on soil and water resources; although the main focus of this project is to allow for a natural fire regime burn. Flame heights will be evaluated in the planning phase; however, flame height may not exceed two feet within 50 feet of stream courses or on wetlands unless higher intensities are required to achieve specific objectives. The following photos are examples of mechanical treatment sites in dense stands with similar objectives as the Big Meadow Fire Regime Projects.

**Photo 3. Before Meadow Treatment**



**Photo 4. After Meadow Treatment**



### **Meadows and Aspen Stands**

For meadows and aspen stands where lodgepole pine and other conifer species are encroaching, the prescribed treatment would include the removal of live conifers to increase the amount of hardwoods and other meadow vegetation that currently exists. The general prescription for hand treatments would primarily include removing all live conifers up to 14” DBH and falling and removing of all dead conifers up to 20” DBH. All dead and down conifers up to 20” DBH would also be burned. We will retain trees greater than 150 years old exhibiting characteristics such as flat tops, large limbs, and large bark plates that are desirable for wildlife habitat. The following photos are examples of mechanical treatment sites in dense stands with similar objectives as the Big Meadow Fire Regime Projects.

**Photo 5. Before aspen treatment**



**Photo 6. After aspen treatment**



The LTBMU/Rocky Mountain Research Station General Technical Report-178 “Ecology, Biodiversity, Management, and Restoration of Aspen in the Sierra Nevada” and findings of the Aspen Community Mapping and Assessment Project (USDA Forest Service, PSW-GTR-185) would be used in developing site-specific vegetation treatment recommendations for aspen habitat within the proposed action area. Integrated project design would include site-specific BMPs for aspen.

**The second stage of the project is to implement prescribe burning operations in meadows, aspen stands, and the adjacent Forest (Figure 2).**

### **Prescribed burning**

Prescribed fire will be used as a management tool to reach the desired environmental conditions in the Big Meadow Watershed. Prescribed burning consumes materials in the meadows, aspen stands, and adjacent conifer stands post thinning will be included for treatment. Prescribed burns in meadows, and aspen stands have not specifically been implemented on the Unit as the focus of the Forest fire and fuels objectives has been on the protection of communities in the urban interface. Therefore, the secondary benefit of the Big Meadow Project is to reduce the amount of dense even aged stands for Lake Tahoe Basin Multi-Jurisdictional Fuel Reduction and Wildfire Prevention Strategy in the watershed. The South Shore Fuels Reduction Project Focuses on the Wildland Urban Intermix (WUI) where fuels reduction projects concentrate on protecting structures that are within a distance to the general Forest, while the Big Meadow Fire Regime Project is not within a distance from a structure to define it as the WUI. The treatments were picked based on restoring the site from previous land management practices so we can reach our desired conditions at a faster rate, and to protect sensitive habitats types from catastrophic wildland fires.

Implementation is expected to occur in 2009 and be completed by 2012. The following schedule will be followed to achieve the goals and objective listed below for round nine, and the accomplishment report for that year. A qualitative project effectiveness report will be included in the accomplishment reporting process for each year of work.

- **2009:** Initiate tree thinning operations
- **2010:** Complete implementation of the tree thinning operations, initiate the prescribed burning operations including annual report of the acres treated will be submitted as a deliverable.
- **2011:** Continue prescribed burning operations including annual report of the acres treated will be submitted as a deliverable.
- **2012:** Complete prescribed burning operations including annual report of the acres treated will be submitted as a deliverable. A final report will be completed at the end of this project.

### **Future needs**

A proposal will be submitted for the Round 10 funding cycle to complete treatments in the Big Meadow Watershed. A total of 500 acres is targeted for treatment in the Big Meadow Watershed. Approximately 200 acres will be treated in the round nine funding cycle, and the remainder of 300 acres will be treated in the round ten funding cycle in the Big Meadow Watershed. If the project does not receive any funding in the round nine proposals, it's not likely to be implemented and/or the environmental documentation will eventually be invalid.

### **Describe the goals and objectives of the project (those applicable ONLY to this Round 9 project):**

The goals of this project are to move both old forest and meadow ecosystems toward a desired condition. Those conditions are based on an estimate of the natural trajectory that the vegetation in the watershed would have taken, had the natural fire regime not been altered.

If these projects are implemented, we anticipate that the ecological status of first and second growth forests to develop into late seral conditions, which include multiple layers, openings, large down material, and released conifers to grow into vigorous large diameter trees. The ecological status of meadows is also likely to shift to late seral, particularly where a more natural fire regime is reestablished in meadows where hydrologic function is recovering and the meadow is restored to a properly functioning condition.

In summary, the end result will be forests and meadows with a high similarity to the potential natural community. In forest areas, a diversity of age classes of conifers and under-story vegetation will be restored. In meadows and the recovery of a diverse assemblage of herbaceous grasses and hardwood shrubs will occur. The goal of this project is to implement the management prescriptions identified in the round seven funding cycle.

**Describe the anticipated project accomplishments (i.e. products or identifiable environmental benefits being produced or implemented under this project):**

The Big Meadow Watershed Fire Regime Restoration Project Ecosystem Restoration Project will accomplish the following:

1. Restore 50 acres of historic, fire-adapted meadow communities in the watershed to conditions approximating pre-European conditions.
2. Increase the diversity and forage quality of the meadow plant community such that it is composed of a diverse assemblage of herbaceous grasses and hardwood shrubs
3. Restore approximately 150 acres of historic, fire-adapted old-growth forest community complexes in the Big Meadow watershed to conditions that approximate those that existed prior to the implementation of total fire suppression and other Euro-American land use practices. Restoration will include forest thinning of dense second growth conifers, removing ladder fuels and the re-introduction of periodic, low-intensity fires.

With restoration we hope to:

- a. Reduce the current high risk of destructive, high-intensity fires.
- b. Produce a forest composed of a diversity of age classes of conifers and under-story vegetation.
- c. Improve the health of the old-growth trees.
- d. Enhance, improve and expand habitat for spotted owl, northern goshawk, and mule deer.
- e. Improve the health and extent of the aspen communities by re-introducing fire to prevent the encroachment of white firs.

**Describe the “readiness” of this project to move forward (urgency, capacity, capability, environmental documentation etc.):**

The Lake Tahoe Basin Management Unit (LTBMU) of the U.S. Forest Service (USFS) has completed an Ecosystem Assessment Report (EAR) for the Big Meadow Creek Watershed. The analysis showed that portions of the forest ecosystems and the meadow ecosystems are at risk primarily from historic fire suppression. The Forest Service has initiated the NFMA Forest Plan Consistency check including the completion of the Project Initiation Memo (PIM) that identifies a technical advisory team for this project. The TAC team will develop and implement specific treatments to restore the watershed to a more natural fire regime. The Project Initiation Letter (PIL) will be initiated in the 2008; NEPA resources inventories for plants and animals were completed in 2007; archeological surveys are completed. The

restoration monitoring plan for this project is being developed and results of the restoration monitoring will be used as part of the planning process for this project.

**Describe partnerships for this project. (if applicable, project should identify partner funding [committed/secured] and how it is integrated into the project)**

The reestablishment of a natural fire regime is well supported by the permitting agencies and many in the public throughout the Tahoe Basin. However, the reintroduction of fire into meadows will require close collaboration with both the Washoe and the state permitting agencies (Tahoe Regional Planning Agency and Lahontan Regional Water Quality Control Board) due to the contentious nature regarding the use of fire as a management tool in sensitive habitats. The LTBMU will work closely with these partners. Each will have a representative on the Technical Advisory Committee, and will assist with: NEPA analysis, development of project designs, and review all planning and design documentation.

**Describe the project monitoring that will be implemented as part of this project including:**

**1) The questions the monitoring program is designed to answer**

*Effectiveness Monitoring*

1. How effective was prescribed fire as a management tool in the restoration of native plant communities in Big meadow?
2. Are two consecutive years of burning required to successfully remove lodgepole pines from Big meadow?
3. Did removal of lodgepole pine in Big meadow increase groundwater levels?
4. To what degree was the project successful in achieving the goals of improving riparian, meadow and old growth habitat, and enhancing wildlife community richness and health?

**2) The monitoring approach (describe the methods and strategies [i.e. monitoring, research, or both] that will be used to verify whether the project goals and objectives have been met. A detailed monitoring/research plan is not required, but enough detail must be provided to allow someone that is unfamiliar with the project to understand and evaluate the proposed methods and strategies.)**

Round 9 funds will be used to conduct two years of post treatment monitoring to test the effectiveness of fire and thinning for reducing lodgepole pine, restoring native plant species composition, increasing groundwater levels, and improving habitat and wildlife communities in the Big meadow project area.

A monitoring and adaptive management plan will be developed before completion of the NEPA decision document using pre-restoration monitoring data, site potential, and desired conditions. Key elements of this plan will include:

- specific monitoring questions to be addressed that are linked directly to project objectives
- appropriate parameters to be measured and associated protocols
- Temporal and spatial frequency of sampling
- Methods for evaluating the monitoring data.

Monitoring protocols will likely include:

- Vegetation photo points.
- Vegetation trend transects
- Piezometer monitoring of ground water levels
- Meadow, riparian and upland forest wildlife survey plots

Future longer term effectiveness monitoring is expected to be funded through research proposals funded through the TSC process, or the USFS monitoring program funded through base appropriations and/or the SNPLMA funded NEPA Resource Surveys Project

**3) Whether this project monitoring fits into a larger monitoring or research program (including how information from the monitoring and research will be used to improve the continued performance of the proposed project or improve future similar projects)**

The monitoring identified for this project is part of the overall Forest Plan monitoring effort for the Lake Tahoe Basin Management Unit. Results and accomplishments of all Forest Monitoring are summarized every year in the Annual Forest Monitoring Report. When appropriate, interpretation of results is integrated at the programmatic, forest, and sometimes Regional level.

For this project integration at a larger scale is expected through 1) the comparison of project level monitoring data to the Meadow Restoration study (Project #F086, and Round 9 proposal: Restoration of Fire Adapted Meadow Ecosystems). The purpose of the Meadow Restoration project is to determine how plant communities, and in particular lodgepole pine, respond to wildland fire in meadows of the Basin. The Meadow Restoration study is also fundamental for developing meadow management plans for the Lake Tahoe Basin (LTB), and continues our long-term efforts to answer basic biological and ecological questions about meadow and fen habitats in the LTB (Safford et al 2007).

**Describe these two items which will be considered along with the above project monitoring information by the Tahoe Science Consortium related to research and monitoring resource areas and the effectiveness of environmental restoration activities:**

**1) Describe the specific goals and objectives of the project and describe how fulfilling those objectives will contribute to the achievement of one or more environmental thresholds.**

The Project is being designed to enhance habitat adjacent to the meadows and aspen stands in the watershed, and to reintroduce fire into the ecosystems to sustain a desirable environment for species of interest in the watershed. The wildlife threshold is focused on enhancing wildlife habitat desirable for Special Interest Species including northern goshawk, which is a Forest Sensitive species and it is a TRPA special interest species. This project is specifically being designed to improve and enhance habitat for special interest species.

**2) Describe the risk to the environment from failure of the proposed project (i.e. if the project fails what is the environmental consequence).**

The Big Meadow project watershed contains areas with high fuels loads up drainages, and near Sensitive Environmental Zones (SEZ's). In addition to a certain level of risk taken during burning operations, there is a risk of potential habitat loss due to a stand replacing wildland fire in the watershed. Due to the potential loss of containment of the fire during burning operations, a burn plan will be developed to address any potential risk of the fire to burn outside of the prescription, and it will address all mitigations measures for this project.

If no management is to occur in the watershed, a stand replacing wildland fire may convert the existing habitat type and cause a species composition shift to a different type of species that can effectively utilize the burned area for food, cover, water, and breeding. Greatly reduced forage and breeding opportunities for endemic sensitive wildlife species, due to a stand replacing wildland fire, could create an undesirable environment for these species.

In addition to habitat type conversion due to a stand replacing fire, hydrophobic soils created by a high wildland fire severity can result in a higher rate of erosion in the watershed. Soil particulates may end up in the drainages where water currently gets infiltrated into the existing soil(s) prior to reaching the drainages.

The visual quality of a prescribed burn is not also favorable for recreational opportunities in the area, and generally, a burn is not visual pleasing to the eye for some members of the public who enjoy recreating in the area. The “burned” vegetation will recover in the short term (1-2 years) and eventually grow into a vigorous healthy stand.

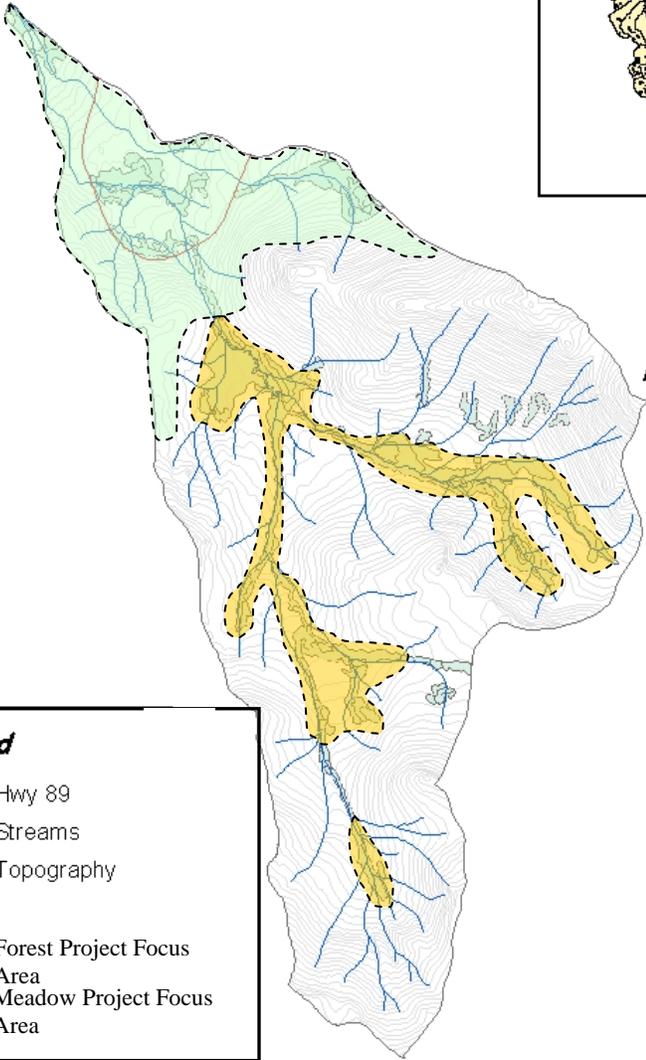
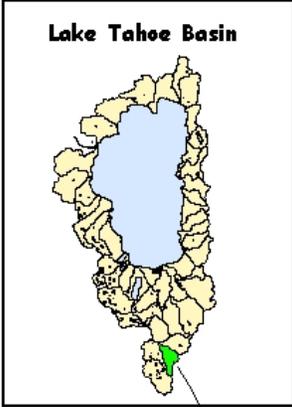
Although the habitat is being improved, habitat enhancement projects may not always attract focal species to the sight, and wildlife species do not always disperse into to a new site and successfully reproduce. However, the loss of succulent plants and forbs used by migratory birds that depend upon aspen stands and meadows for forage and breeding opportunities maybe lost if no management is done. This project focuses on improving these areas.

**Describe how the project results will be communicated and made available to the public.**

The information created from this project will be disseminated to three audiences: 1) the general public, 2) other resource agencies, and 3) the broader scientific community. The audiences will be informed respectively through the USFS website, and public/interagency meetings. Signs will be posted at the trail heads and along points of interest along the Big Meadow trail during project implementation.

**Figure 1. Proposed Project Area**

# Big Meadow Creek Watershed



**Legend**

- Hwy 89
- Streams
- Topography
- Forest Project Focus Area
- Meadow Project Focus Area



